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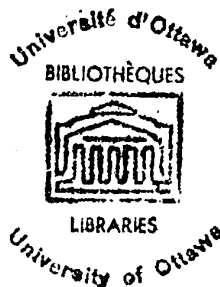
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A COMPARISON OF SUPERVISORS' RATINGS OF  
MOST EFFECTIVE AND LEAST EFFECTIVE INDUSTRIAL ARTS  
TEACHERS ON THREE COMPETENCY DIMENSIONS

by Morton Margules

Thesis presented to the Faculty of  
Education of the University of  
Ottawa as partial fulfillment of the  
requirements for the degree of Doctor  
of Philosophy



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## CURRICULUM STUDIORUM

Morton Margules was born October 8, 1919, in Jersey City, New Jersey. He received his Bachelor of Science degree in Industrial Arts Education from Newark State College, Union, New Jersey, in 1947. He received the Master of Education degree in Educational Administration and Supervision from Rutgers - The State University, New Brunswick, New Jersey, in 1948. The title of his preliminary study was The Relationship of Certain Proficiencies to Success in Teaching Industrial Arts.

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## INTRODUCTION

### 1. Statement of the Problem.

A major problem facing school administrators is that of evaluating teacher performance. Many investigators have concerned themselves with the problem of teacher effectiveness. Yet, there appears to be no consensus as to the best approaches or methods which will provide reliable and useful dimensions for measuring effectiveness. In addition, little or nothing is known about the criteria used by supervisors when a determination is made concerning which teacher is effective and which teacher is not.

A review of the literature revealed studies which correlated rated effectiveness with personality characteristics, successful college career, test scores, and teacher or community organization involvement. These studies had in common the correlation of effectiveness of teaching, as measured by ratings, with either other ratings or with other factors not directly demonstrated to be related to teaching behavior in the instructional setting. It was also noted that there appears to be no agreement on what specifically is meant by effective teachers or teaching. Also, little attention had been paid to the differences in teaching processes among teachers of different subject matter areas. Another weakness inferred from these studies was that the teaching process

involved the teacher's personality and his ability to relate to others while almost completely disregarding any interaction that might have existed with competencies in teaching techniques and technical proficiency. It may be for these reasons that the problem of developing reliable criteria against which to measure teaching effectiveness has had only partial solution.

Approaches to measuring teacher effectiveness included supervisory judgment. This investigator attempted to relate teacher effectiveness, as viewed by the supervisor, to dimensions of the teaching process which were derived from an analysis of the instructional process by observation and discussions with leaders in the field. Recognizing that the nature of the subject matter occasions differences in the teaching process, it was deemed advisable to consider teaching in a more uniform setting, such as would be found in a single field. Therefore, the particular field of industrial arts was selected.

Industrial arts is considered a unique area of education because behavioral changes in students are sought by the use of course content and facilities which closely approach that which is relevant for our highly industrialized society. The teacher of industrial arts is required to have the personal qualities which allow him to communicate effectively with his students. In addition, the specialized subject matter requires that he possess competencies not usually required or found in

other teachers. The literature indicated he should possess high competencies in the area of teaching techniques which allow him to use a variety of appropriate teaching methods and approaches to effect desirable learning and that he should also possess exceptional technical proficiency in the understanding of technical information and the use of industrial materials and tools. Then, it may be concluded that industrial arts teachers to be effective must possess high competency in their interpersonal relations, their teaching techniques, and their technical abilities.

The few studies concerned with teacher effectiveness that exist in industrial arts have used supervisors as raters. However, after the initial rating the supervisor has been forgotten. If the supervisor's rating is the keystone to teacher effectiveness evaluation, more ought to be known about his approach to rating. Yet, there was no study which examined the factors underlying his judgment or sought to determine the factor or factors most significantly related to teacher effectiveness.

Supervisors of industrial arts teachers apparently used a variety of factors in assessing teacher effectiveness. Yet it would seem reasonable in dealing with teaching in industrial arts that the teacher's ability to relate to others, his ability to use a variety of teaching techniques, and his grasp of appropriate technical concepts and skills

are dimensions which should determine his effectiveness. Therefore, the purpose of this study was to determine the degree to which industrial arts supervisors consider or weigh such dimensions as interpersonal relations, teaching techniques, and technical proficiency in their evaluation of industrial arts teachers and how these dimensions relate to teacher effectiveness.

## 2. An Evaluation of the Problem.

### Reason for the Study

We live in a technologically oriented world in which each individual should become self-sustaining and a contributing member of society. It is primarily through education that an understanding of technology and the development of industrial skills is developed within the individual. The industrial arts curriculum in our secondary schools purports to do this. Consequently, the teacher of industrial arts must be a person with two orientations. One, as a teacher he must be able to relate to people in a positive manner for teaching is considered a social behavior and, two, he must be technically skilled in order to understand and instruct in the manipulative and skill processes of industry. How successful he is in accomplishing these two purposes is assessed by his supervisor or his administrator.

The rapid growth of industrial arts education in New Jersey has seen a parallel increase in local industrial arts supervisors who have the responsibility for not only improving industrial arts instruction, but also for evaluating the teaching of each individual shop teacher under their jurisdiction. Nowhere in the literature, to the knowledge of this investigator, has there been a study which has concerned itself with specific dimensions of the teaching process upon which an industrial arts supervisor bases his evaluations of his subordinates' teaching effectiveness.

The need to know more about the relevant dimensions used by supervisors for gauging their teachers is imperative so that more objective criteria may be developed for retaining the most adequate teachers, so that teacher education programs may be modified, and so that pupil growth may be enhanced.

#### What the Study Explores

The major purpose of this study was to determine whether the three dimensions of interpersonal relations, teaching techniques, and technical proficiency could in fact serve to differentiate between industrial arts teachers who were rated most effective by their supervisors and those who were rated least effective and to examine the weight given each of these dimensions by the supervisor. This study was exploratory in nature. It was intended to supplement the

general research in teacher effectiveness and stressed industrial arts teacher evaluation from a supervisory point of view.

### Objectives

The objectives of this study were:

1. To develop a method for evaluating the importance of the three dimensions used by industrial arts supervisors in their ratings of teacher effectiveness.
2. To show the significant relationships of each of these dimensions and the supervisor's overall rating.
3. To supplement research findings in teacher effectiveness.
4. To make available to teachers, supervisors, administrators, and teacher educators the practical findings and their implications.

### Significance

The literature revealed a heterogeneity of approaches to the problem of measuring teacher effectiveness. Most investigators had utilized procedures whereby a large number of variables were correlated with ratings of successful or unsuccessful job performance. For the most part the criteria for ratings of degrees of effectiveness in teaching have not been based on an analysis of the complexities of the teaching process which varies widely among subject areas. Teacher effectiveness was usually considered as a unidimensional quality for all teachers. For example, many investigators

attempted to correlate scores on such devices as a personality test with ratings of effectiveness. No one has applied dimensions to a particular job description such as that which industrial arts teaching represents.

One possible contribution of the present study to the existing knowledge was to demonstrate the value of relating ratings of effectiveness to observed dimensions of the teaching process. If the analysis is correct, it may then be possible to apply this study of teacher effectiveness to other subject areas.

This study is significant in its timeliness. Generally speaking, throughout the country and particularly in New Jersey, there has existed, and will continue to exist in the foreseeable future, a tremendous shortage of competent industrial arts teachers. It is hoped that this study will point the way to developing the most salient approach which could be used for selection procedures, so that teacher recruitment outside the teaching profession may be less subjective.

From a theoretical point of view two significant contributions may be:

1. to show a relationship between judgments of effectiveness and underlying generic dimensions;
2. to stimulate comparisons across subject matter areas of the various dimensions to teacher effectiveness.

From a practical aspect, three significant contributions may be:

1. to provide a basis for training supervisors to make objective judgments of teacher effectiveness;
2. to provide a basis for the development of instruments upon which supervisors can render objective judgments of teacher effectiveness;
3. to stimulate industrial arts teacher educators to consider supervisors' expectations of teacher behavior.

### 3. The Problem Delimited.

### Hypotheses

1. When the three dimensions of interpersonal relations, teaching techniques, and technical proficiency are considered cumulatively, teachers rated most effective will receive significantly higher overall ratings of competency than teachers rated least effective.
2. All three competency dimensions will not prove equally significant in discriminating between most effective and least effective industrial arts teachers.

### Definition of Terms

Commonly used terms and phrases in this study are defined below. Should a term or phrase be used in this study with a meaning other than the one defined, it will be indicated:

1. Industrial arts is the study of technology, including industrial tools, materials, processes, products, occupations, and related problems. It involves activities conducted in shops, laboratories, drafting rooms, and elementary school classrooms.<sup>1</sup>
2. Dimension is an aspect of human behavior.
3. Interpersonal relations refers to everything that "goes on" between one person and another (or others) by way of perception, evaluation, understanding, and mode of reaction.<sup>2</sup>
4. Teaching techniques are the processes involved in the action necessary to establish a common bond between teacher and learner.
5. Technical proficiency is the knowledge, skill, and degree of expertness with which the principles of industrial arts, mechanical arts, and sciences are applied.
6. Supervision means all efforts of designated school officials directed toward providing leadership to teachers and other educational workers in the improvement of instruction.<sup>3</sup>

#### Limitations and Scope of the Study

This study was limited to selected industrial arts supervisory personnel at the secondary level of education in the State of New Jersey. Teacher effectiveness was judged by supervisors who had experience in rating teachers and who

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<sup>1</sup> American Vocational Association, Industrial Arts in Education, Washington, D.C., American Vocational Association, Inc., (no date), p. 3.

<sup>2</sup> Julius Gould and William L. Kolb, (Eds.), A Dictionary of the Social Sciences, New York, The Crowell-Collier Publishing Co., 1964, p. 350.

<sup>3</sup> Carter V. Good, (Ed.), Dictionary of Education, New York, McGraw-Hill Book Co., Inc., 1959, p. 539.

through academic preparation and successful teaching experience were capable of making such judgments.

By limiting this study to a specific group within the teaching profession, a clearer understanding was obtained as to whether dimensions rationally derived from the teaching process could, in fact, be used to gauge teaching competency.

The scope of this study is further limited by the following: (1) the approach to the complex problem of industrial arts teacher effectiveness is made in terms of the three dimensions stated; (2) it was not the purpose of this study to determine which of these dimensions is most needed for effective teaching. Rather, the purpose was to analyze and determine the relationships, if any, between these dimensions and judgments of teacher effectiveness by supervisors. Thus, this was not a study of the behavior of teachers but a study of the nature of supervisors' perceptions of and judgments about teachers' behavior.

#### Foundational Educational Theory

The theoretical premise upon which this study was based has already been advanced as it applies to teachers in general. Teachers behave, act, and provide overt demonstrations of their effectiveness during the teaching process. Ryans defined teacher behavior as "[...]those activities that are concerned with the guidance or direction of learning of

others."<sup>4</sup> This assumption, when extended for the purpose of this study, lead to the two dimensions noted as interpersonal relations and teaching techniques.

Proceeding further, Ryans discussed the fact that judgments are derived from behavior as observed by others. This, according to Ryans, assumed that the manifestations of behavior

[...] are of a tangible nature and may be identified objectively, either by direct observation of samples of behavior, or by approaches that provide correlative indices of teacher behaviors [...].<sup>5</sup>

Sub-assumptions noted by Ryans were: (1) teacher behaviors are different but may possess common elements which can be noted under observation; (2) the differences in behavior characteristics allow others to distinguish the behavior; (3) behaviors may be qualified and quantified; and (4) behaviors may be shown by a representative act.

It is well to note that the previous theoretical considerations do not extend to the area of technical proficiency as defined for the purposes of this study. From a study on occupational research by Shartle, Dvorak, and Heinz,<sup>6</sup> the

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<sup>4</sup> David G. Ryans, "Theory Development and the Study of Teacher Behavior", The Journal of Educational Psychology, Vol. 47, No. 8, December 1956, p. 467.

<sup>5</sup> Ibid., p. 471

<sup>6</sup> C.L. Shartle, Beatrice J. Dvorak, C.A. Heinz, et al., "Ten Years of Occupational Research, 1934-44", Occupations, Vol. 22, No. 7, April 1944, p. 387-446.

skill involved in the manipulations of materials and objects was considered a key factor for job proficiency. This same note was made by M. Ray Karnes<sup>7</sup> when he stressed the need for the high school teacher of industrial arts to have meaningful experiences in the subject matter areas and great depth in at least one industrial area of our technological culture.

Many studies of teaching effectiveness have investigated one of the three dimensions used here to the exclusion of the others. There has not been an approach in the specific field of industrial arts teaching which has recognized the fact that industrial arts teaching effectiveness cannot be evaluated unless a multiplicity of the complex skills required in the teaching process are included. Certainly, the three competency dimensions included in this study would seem to be essential in the teaching process based on any analysis of teaching acts.

#### 4. Plan of the Report.

The review of the literature provides the necessary foundation for an understanding of the research already completed in the area of industrial arts teacher effectiveness. This study then dealt with a method for designing and validating

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<sup>7</sup> M. Ray Karnes, "What Competencies Are Needed by the Industrial Arts Teachers to Meet the Challenge of the Future?", Improving Industrial Arts Teaching, Conference Report, Office of Education, Washington, D.C., June 1960, p. 61.

a device to measure the characteristics of teacher behavior along the three dimensions described above as they are perceived by supervisors for teachers selected as most or least effective. The data were then gathered and analyzed.

The results obtained were subjected to analysis of variance to determine the significance of each dimension in each effectiveness group. Comparing the cell means was accomplished through the use of the Scheffé S-method. Based upon the analysis, results, conclusions and further implications were discussed.

The appendices contain additional material and the various information gathering devices used which may be helpful to future researchers.

## CHAPTER I

### REVIEW OF THE LITERATURE<sup>1</sup>

#### 1. Introduction.

Literature concerned with the problem of teacher effectiveness and competency is voluminous. It was necessary to sift through untold numbers of articles and research studies related to this subject to find studies which would be appropriately applied to the area of teacher effectiveness as viewed by a supervisor. Few authors directed their thoughts outside of the academic classroom presentation of the pupil-teacher relationship in exposition of models of "most effective teachers". Studies have been made of the problem of teacher effectiveness and competency through a variety of methods and procedures. This variety includes studies using as criteria: traits and personality characteristics; scholastic attainment; student characteristics-- growth, behavior, and opinion; organization and community involvement; teacher ratings; and teacher behavior.

Those studies which have become "classics" as they apply to the broad area of teacher effectiveness will first

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<sup>1</sup> For a more detailed discussion, see original preliminary study, Morton Margules, "Chapter I, Review of the Literature", The Relationship of Certain Competencies to Effectiveness in Teaching Industrial Arts, 1966, viii-94 p., on file in the Library of the University of Ottawa, Ottawa, Canada.

be placed in perspective and then summarized. Then studies specifically in the field of industrial arts will be discussed as an integral base upon which the theory and significance of this study will rest.

## 2. Historical Perspective.

Since the early 1900's, researchers have been attempting to develop answers to the question of teacher effectiveness and competency.

In 1906, L.L. Meriam<sup>2</sup> studied the relationship between teaching efficiency and scholarship as evidenced by the success in normal school education. Correlations were found insignificant, while the correlation between actual teaching and practice teaching evaluation was seen to be significant. This study is believed to be the earliest attempt at "scientific" evaluation of teacher effectiveness.

Prior to 1920, there were few studies considered to be of value. However, there was much interest generated to study teacher effectiveness and competency by the following authors, who paved the way to broader study in this field.

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<sup>2</sup> L.L. Meriam, "Normal School Education and Efficiency in Teaching", Teachers College Contributions to Education, No. 1, New York, Columbia University, 1906, p. 51-103.

Pittenger<sup>3</sup> discussed the objections raised against commonly used methods of rating teachers. He felt that the investigators developed objectives and rating scales with the thought in mind that they were applicable to all teachers in both elementary and secondary schools, regardless of the subject matter taught. His premise was that educators lacked the ability to measure the results of teaching and that it would be almost impossible to credit a single teacher with the gain shown by a pupil. He suggested that teacher effectiveness investigations be limited to observation of performance in the classroom.

Brooks<sup>4</sup> based his study on pupil gain. He measured the teacher's ability to get results. He used a standardized test based on six evaluating criteria: knowledge of the subject matter; managing ability; natural aptitude for work; method and technique of teaching; interest and industry in work; and personality - including character, temperament, personal appearance, manners, and tact.

Knight<sup>5</sup> used teacher ratings, supervisor ratings, and pupils' estimates in arriving at the general ability of the

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<sup>3</sup> B.F. Pittenger, "Problems of Teacher Measurement", Journal of Educational Psychology, Vol. 8, No. 2, February 1917, p. 103-110.

<sup>4</sup> Samuel S. Brooks, "Measuring the Efficiency of Teachers by Standardized Tests", Journal of Educational Research, Vol. 6, No. 4, November 1921, p. 255-264.

<sup>5</sup> F.B. Knight, "Qualities Related to Success in Teaching", Teachers College Contributions to Education, No. 120, New York, Columbia University, 1922, x-67 p.

teacher. He said:

[...] in judging particular traits, general estimates influence the particular estimate to such a degree that judgments of particular traits are in themselves of little practical use.<sup>6</sup>

Pyle<sup>7</sup> did a study in the Detroit school system which sought to establish a relationship of intelligence and practice teaching to successful first- and second-year teachers. His conclusions determined that there was no relationship established. He did, however, show that success in practice teaching was slightly valuable in determining success in future teaching as measured by school principals.

Madsen<sup>8</sup> attacked the use of personality ratings as indicative of effectiveness. He determined that superintendents' concepts of meaningful personality traits were too flexible to make that technique valuable as a measuring stick.

Charters and Waples,<sup>9</sup> however, endeavored to use criteria which were considered desirable personality traits and to combine those with other factors that might have

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<sup>6</sup> Ibid., p. x.

<sup>7</sup> W.H. Pyle, "The Relation Between Intelligence and Teaching Success", Educational Administration and Supervision, Vol. 14, No. 4, April 1928, p. 257-267.

<sup>8</sup> I.N. Madsen, "The Prediction of Teaching Success", Educational Administration and Supervision, Vol. 13, No. 1, January 1927, p. 39-47.

<sup>9</sup> W.W. Charters and Douglas Waples, The Commonwealth Teacher - Training Study, Chicago, University of Chicago Press, 1929, 666 p.

implications for teacher effectiveness. They established a list of traits and competencies after extensive interviews with administrators, teachers, parents, students, and others as to what they believed were essential qualities for successful teaching. The list was ranked in order of importance and recommendations were made concerning teacher training curricula at teacher institutions.

By the 1930's and early 1940's, several important authors appeared to help define and further refine teacher effectiveness evaluations.

Almy and Sorenson<sup>10</sup> took their cue from Charters and Waples to devise a rating scale. They maintained further that there was a correlation between practice teaching and academic grades and that "[...] teacher rating is both feasible and practicable [...]. A teacher's success is based upon behavior exhibited beyond the bare teaching act."<sup>11</sup>

Barr and Emans<sup>12</sup> analyzed 209 rating scales with 6,939 items. Out of the analysis they developed two hundred items of teacher effectiveness. Using the summarized list

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<sup>10</sup> H.C. Almy and Herbert Sorenson, "A Teacher Rating Scale of Determined Reliability and Validity", Educational Administration and Supervision, Vol. 16, No. 3, March 1930, p. 179-186.

<sup>11</sup> Ibid., p. 180.

<sup>12</sup> Alvin S. Barr and L.M. Emans, "What Qualities Are Prerequisites to Teaching Success", Nations Schools, Vol. 6, No. 3, September 1930, p. 60-64.

of their own and that of Charters and Waples, they derived twenty-five items.

Barr<sup>13</sup> extended his studies by using the above rating scale and testing devices to develop some pupil-teacher correlations. He further tested for validity of his instrument and, by doing so, brought into focus the need to be concerned with the teacher in action or with those aspects of teacher behavior which have a bearing on teacher performance in a real teaching situation. Barr's emphasis pointed to teacher behavior which would ultimately change pupil attitudes.

Brookover<sup>14</sup> developed a Person to Person Interaction Rating Scale as he examined the interaction of pupils to teachers. He used rating criteria of pupils and administrators in devising his scale. The students' rating of the teacher when correlated with the administrator's rating was statistically insignificant.

Smalzried and Remmers<sup>15</sup> utilized the Purdue Rating Scale for Instructors together with pupil reaction to the

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13 Alvin S. Barr, "The Systematic Study of Learning and Teaching Efficiency", Journal of Educational Research, Vol. 32, No. 9, May 1939, p. 641-648.

14 Wilbur B. Brookover, "Person-Person Interaction Between Teacher and Pupils and Teaching Effectiveness", Journal of Educational Research, Vol. 34, No. 4, December 1940, p. 272-287.

15 N.T. Smalzried and H.H. Remmers, "A Factor Analysis of the Purdue Rating Scale for Instructors", Journal of Educational Psychology, Vol. 34, No. 6, September 1943, p. 363-367.

teacher as a basis for judging professional maturity. They found low correlations between pupils' and administrators' ratings of teacher effectiveness.

By the year 1945, statistical sophistication became evident. Gotham,<sup>16</sup> under Barr's supervision, developed a personality rating scale which aimed at accumulating information about pupil change in citizenship, teacher rating, qualities associated with teaching success, and a composite of these three. Correlations with the instrument and teacher effectiveness were scant.

Witty<sup>17</sup> attempted an entirely new approach. He tabulated letters written by students who gave their views on what they thought was the effective teacher. This highly subjective evaluation resulted in teacher qualities which included being friendly, helpful, and appreciative of the difficulties which the child encountered in the classroom.

Through the 1940's and 1950's, continued emphasis was placed upon characteristics, personality factors, and scholastic factors as determinants of teacher effectiveness. It was in only the last decade that more emphasis was placed

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<sup>16</sup> R.E. Gotham, "Personality and Teaching Efficiency", Journal of Experimental Education, Vol. 14, No. 2, December 1945, p. 157-165.

<sup>17</sup> Paul A. Witty, "Analysis of the Personality Traits of the Effective Teacher", Journal of Educational Research, Vol. 40, No. 9, May 1947, p. 662-671.

upon correlation between pupil attainments as being directly related to teacher behavior in the school and community. Authors concerned with studying teacher evaluation appeared to place much emphasis upon subjective value judgments that lent themselves to generalizations rather than specifics about teacher competency.

### 3. Global Overview.

Ever since the 1940's, authors have concentrated on measuring teacher effectiveness by devising varieties of rating scales to obtain their criteria. The scales which we have now, as a result of work in the field for the past twenty-five years, are attempts at obtaining an evaluative instrument which would include aspects of former instruments that measured teacher worth and effectiveness in a meaningful way. It might be said that greater emphasis was placed upon arriving at criteria rather than upon examining the implications behind those people responsible for developing the criteria. The development of the criteria appears to be accumulative. Each author borrowed from the other to contribute toward devising standard techniques to measure teacher effectiveness. The criteria, however, appear to take shape on a highly subjective base, which utilized the supervisor's or administrator's subjective evaluative judgment.

Among the important authors contributing toward criteria or standardization of evaluation during the last

two decades are: Ryans, Martindale, Jensen, Remmers, Grotke, Popham and Standlee, Mitzel, Medley and Mitzel, Turner, Erikson, Shannon, Van Denburg, and Singer.<sup>18</sup>

Many studies by the authors cited above proposed common rating scales and evaluative instruments which they considered to be universally applicable to teacher evaluation. Aside from those studies which dealt with bibliographies and general information as it applies to teacher effectiveness, most were concerned with isolated situations. The findings of a particular study would not, therefore, lend themselves to generalizations which could be universally applied to the total problem of gauging teacher effectiveness. Not only that, but applying those findings to measuring teacher competencies in the field of industrial arts logically makes such application somewhat strained.

In studies dealing with relationships between teacher effectiveness and personality characteristics, either conflicting results have been obtained or differences in characteristics have been so slight as to be practically meaningless. Studies that included or were entirely devoted to the personal relationships of teachers showed that significant correlations were obtained between this characteristic and teaching efficiency.

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<sup>18</sup> Margules, Op. Cit., p. 16-51.

Since the criteria in past studies leaned heavily upon criteria offered by the supervisor in his role as an evaluator, we should not continue to evaluate teachers while overlooking the dimensions used by the supervisor. This situation must be corrected if we consider that past studies have generated meaningful criteria for rating teacher effectiveness.

#### 4. Relevant Studies in Industrial Arts Education.

When looking at the industrial arts setting, the paucity of research on teacher evaluation is glaring. Moreover, research related to industrial arts supervisory practices has been largely neglected. In analyzing the literature on teacher effectiveness in the industrial arts setting, the following authors have undertaken studies germane to this problem.

Hunter's<sup>19</sup> annotated list of eight hundred theses and dissertations was the earliest attempt to develop a bibliography in this field. Only one study in the eight hundred, that of Smith's,<sup>20</sup> dealt with material related to this paper.

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19 William L. Hunter, et al., Annotated List of 800 Graduate Theses and Dissertations in Industrial Arts Education and Vocational-Industrial Education Accepted by Institutions of Higher Learning in the United States from 1892 to 1933, Ames, Iowa, Iowa State College, 1933, 89 p.

20 Homer J. Smith, The Administration and Supervision of Vocational Education in Cities with Particular Reference to Industrial Education, unpublished doctoral dissertation, Minneapolis, University of Minnesota, 1926, viii-245 p.

Smith's study was the earliest one which delved into the problems of the industrial arts supervisor. However, he was primarily concerned with the route taken to become a supervisor, the duties and responsibilities as a supervisor, and the teacher education implications. He felt that there was not only a need to know how a supervisor rates his teachers, but also why particular aspects were given greater weight over others. His data, however, did not explore his question.

Montross'<sup>21</sup> analysis of the "good teacher" considered fluency of expression, motor skills, and temperament. He found no clear correlations. Hale's<sup>22</sup> approach was through those qualities a counselor considered best for an effective industrial arts teacher. He found that the personality factor was not considered as important as the space relations factor when industrial arts teaching was involved. Monroe<sup>23</sup> utilized vocational and personality inventories like the Strong Vocational Interest Blank and the Edwards Personal Preference Schedule to determine the most successful and the

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21 Harold W. Montross, "Temperament and Teaching Success", Journal of Experimental Education, Vol. 23, No. 1, September 1954, p. 73-97.

22 Peter P. Hale, "Isolating Objective Factors for the Teaching Profession", Journal of Educational Research, Vol. 48, No. 7, March 1955, p. 497-507.

23 H.B. Monroe, Personality Variables of Industrial Arts Teachers, unpublished doctoral dissertation, Greeley, Colorado, Colorado State College, 1960, xiii-78 p.

least successful industrial arts teacher. From the data, he concluded that the Edwards did differentiate the successful from the least successful industrial arts teacher. The Cooper Scale of the Strong Vocational Interest Blank did not. Morgan<sup>24</sup> followed Monroe's technique and from his investigations developed a twelve-item rating scale. Morgan's conclusions were substantially the same as Monroe's with the addition of the supervisor's rating scale. This scale was used by a supervisor to determine the most successful and the least successful industrial arts teacher.

Upon examining the contributions of Montross, Hale, Monroe, and Morgan, we find great emphasis placed on the personality of the teacher. As seen in the general education studies, the classroom, the teacher, and the teacher's relationship to the student were the chief concerns. The supervisors' role in all these studies was that of an evaluator, yet this role was overlooked in the analysis. Both Monroe and Morgan based their entire study on the evaluation of one city supervisor who was completely forgotten after making the rating.

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<sup>24</sup> J.B. Morgan, Personality Variables of Industrial Arts Teachers, unpublished doctoral dissertation, Greeley, Colorado, Colorado State College, 1962, xi-135 p.

Two of the more extensive studies in the field were done by Giachino<sup>25</sup> and Ehrenborg.<sup>26</sup>

Giachino wanted to find answers to two questions. What specific qualities must industrial arts teachers have to be competent teachers? Is there a correlation between training received in teacher education institutions and factors considered by supervisors of industrial arts to be important to teaching success? He developed a rating list from the literature, discussions with supervisors, teacher trainers, and graduate students. From his instrument he produced a list of items considered most important to supervisors and teacher educators in evaluating teacher effectiveness. The weakness in this study was that no effort was made to validate the list and groupings. Giachino's conclusions further pointed up the need to examine the supervisor's judgment in determining the evaluative list.

Ehrenborg sought to develop a rating device to determine the successful industrial arts teacher in the secondary school. He endeavored to determine the relationship between the device and the principal's rating as a criterion of

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25 J.W. Giachino, An Analysis of the Success Qualities That Should be Emphasized in the Training of Candidates to Become Competent Teachers of Industrial Arts, unpublished doctoral dissertation, University Park, Pennsylvania, Pennsylvania State University, 1949, xi-205 p.

26 D. Ehrenborg, The Validation of a Device for Identification of Industrial Arts Teaching Success, unpublished doctoral dissertation, Los Angeles, University of California, 1963, xiii-307 p.

success. His study dealt mainly with the specific aspects of industrial arts teaching that had application to teaching in general. He made no effort to determine the technical proficiency of the teacher and the effect this proficiency would have on the pupil. His rating device considered the uniqueness of the secondary school industrial arts program by listing these differences: physical plant, methods and management of the physical plant, curricular substance, teacher background, and student population. He assumed in his study that job rating would be an effective measurement of teacher effectiveness. There was no attempt to determine the degree to which all these aspects were statistically significant in the study of teacher effectiveness.

#### 5. Conclusions.

It appears that most research in the area of teacher effectiveness has been undertaken in the field of general education. The major portion of the studies involved the teacher at the elementary school level. Very few involved the teacher at the high school level and only two dealt with a specific subject area. No study in the area of general education delved into the dimensions with which a supervisor might be concerned when evaluating his teachers.

Studies of teacher effectiveness in the field of industrial arts are scant. There are no new techniques for

rating the teacher in this setting and there are even fewer studies which attempt to include the role of the supervisor in the rating picture. Those that do involve the supervisor emphasize his function as that of an upgrading force rather than as a significant evaluator or rater. For, as is the case in the academic setting, from a procedural standpoint, the industrial arts teacher is evaluated by the supervisor. For this reason a firmer base of understanding the supervisor's views must be developed.

In the extensive search through the literature, no one study has been found which endeavored to learn about the global teaching dimensions which may be used by a supervisor when he makes a judgment about teacher effectiveness. Yet the literature clearly indicates what appears to be a definite structuring of effectiveness studies about two dimensions, interpersonal relations and teaching techniques, with much less attention paid to technical proficiency as a global dimension.

On the basis of training an industrial arts teacher, desirable teaching techniques and technical proficiency are an accepted part of the curriculum. Interpersonal relations, as such, are not formally structured into the teacher training program. Thus, it would seem that more weight would be given to technical proficiency and teaching techniques than to interpersonal relations when considering teacher effectiveness.

With the exception of technical proficiency, the dimensions stated above have been considered by most studies cited. But technical proficiency is a most important ingredient when we consider industrial arts teacher effectiveness. It is even more important when we consider its significance in the supervisor's criteria for evaluating the teacher. No study has been undertaken which uses the dimensions this investigator has devised to determine what considerations might apply when the supervisor of industrial arts evaluates teachers in his charge.

This study will endeavor to bring into sharper perspective these global aspects of the industrial arts teaching role and how these aspects are viewed by the supervisor.

Therefore, the following hypotheses are offered:

1. When the three dimensions of interpersonal relations, teaching techniques, and technical proficiency, are considered cumulatively, teachers rated most effective will receive significantly higher overall ratings of competency than teachers rated least effective.
2. All three dimensions will not prove equally significant in discriminating between most effective and least effective industrial arts teachers.

The next chapter will deal with the design to test the hypotheses.

## CHAPTER II

### EXPERIMENTAL DESIGN

The purpose of this chapter is to show the design of the study so that procedures are clearly indicated.

#### 1. Hypotheses to be Tested.

The purpose of this study was to examine the relationship between industrial arts supervisors' judgments of teacher effectiveness and their judgments of teacher competency in the areas of interpersonal relations, teaching techniques, and technical proficiency. The specific null hypotheses to be tested were:

1. When the three dimensions of interpersonal relations, teaching techniques, and technical proficiency are considered cumulatively, teachers rated most effective will not receive significantly higher overall ratings of competency than teachers rated least effective.
2. All three dimensions will prove equally significant in discriminating between most effective and least effective industrial arts teachers.

These hypotheses will be accepted or rejected at the .05 level of significance.

#### 2. Population of the Study.

The population of this study was limited to those individuals who were designated by their local administrators to be directly concerned with the supervision of secondary

school industrial arts programs. These supervisors were listed in the New Jersey State Directory of Industrial Arts Teachers, 1967-68.<sup>1</sup>

The secondary schools in which these people carry on their duties are located throughout the state and serve youth from rural, suburban, and urban population areas. These schools provided a cross-sectional view of the educational structure which includes six-year programs, seventh through twelfth grade; four-year programs, ninth through twelfth grade; and three-year programs, tenth through twelfth grade. Districts in which these are located have populations comprised of all socio-economic levels.

The duties of the supervisors were relatively similar, and all included the responsibility for evaluating teachers. No known fixed teacher-supervisor ratio existed in any school district. Dependent upon the number of teachers supervised, teaching may have been included as part of the work load.

The supervisors who comprised the sample were those who had a minimum of five years<sup>2</sup> of experience in

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1 Division of Vocational Education, New Jersey State Directory of Industrial Arts Teachers, 1967-68, Trenton, New Jersey, State Department of Education, 1967, 49 p.

2 David G. Ryans, "A Study of the Extent of Association of Certain Professional Data with Judged Effectiveness of Teacher Behavior", Journal of Experimental Education, Vol. 20, No. 1, September 1951, p. 67-77.

this capacity and who, by virtue of their assigned location, were in daily contact<sup>3</sup> with their supervised teachers.

### 3. Supervisor Inventory and Questionnaire Form.<sup>4</sup>

Preparation of the initial supervisor inventory form was undertaken after it was discovered that no comprehensive record of the supervisor's background existed outside the local district's personnel files. Records at the State Department of Education contained only information on the number of college credits, salary, type of certificate held, and teaching load. Therefore, it was necessary that several other aspects of the supervisor's characteristics and experiences be learned before the study could be undertaken. These aspects aided in the selection of supervisors who had daily relationships with their teachers and also made it possible to select those who had at least five years of industrial arts supervisory experience. Additional potentially useful data were also obtained.

The questionnaire was designed to provide an unstructured opportunity for supervisors to indicate those characteristics which they felt the ideal industrial arts teacher

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<sup>3</sup> Earl M. Grotke, "A Study of Professional Distances Between Raters of Teachers and Teachers Rated", Journal of Experimental Education, Vol. 24, No. 1, September 1955, p. 1-41.

<sup>4</sup> Appendix 1.

should possess. Answers were guided only to the extent that they were categorized within the three dimensions of the inquiry. No further structuring seemed desirable in order to allow the supervisors to put down their own thoughts.

The first Supervisor's Inventory and Questionnaire was sent to each of the 172 supervisors listed in the Directory. One hundred and sixty-one were returned. As the study progressed, a second Supervisor's Inventory Form<sup>5</sup> was developed and sent to 205 supervisors known to be in this position. One hundred and ninety-three were returned. This second inventory aided in gathering fresh and potentially more useful information.

#### 4. Preparing the Dimension Scales.

The three dimensions used were interpersonal relations, teaching techniques, and technical proficiency. The operational definitions follow:

1. Interpersonal relations refers to everything that "goes on" between one person and another (or others) by way of perception, evaluation, understanding, and mode of reaction.
2. Teaching techniques refers to the processes involved in the action necessary to establish a common bond between teacher and learner.
3. Technical proficiency refers to the knowledge, skill, and degree of expertness with which the principles of industrial arts, mechanical arts, and sciences are applied.

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<sup>5</sup> Appendix 2.

The rating method used was a modified form of the Likert Scale<sup>6</sup> which allows for a method of summated ratings. This scale has been typically used in studies of this nature and has proven acceptable.

The following steps were taken to develop and validate the scale:

Step 1.- Statements were gathered from the literature and the responses of the supervisors to the questionnaire. These were carefully edited so as to eliminate the irrelevant, ambiguous, and otherwise misleading and faulty items. Abstract and blanket terms were removed and the statements made objective, workable and behavior-oriented. One hundred and eighty-two items remained in all three dimensions.

Step 2.- These items were then submitted to a jury composed of University, State College, and State Department of Education professional personnel in industrial arts and vocational-technical education. This group of judges was requested to eliminate those items which they felt had no value in determining industrial arts teacher effectiveness in each of the three dimensions. They were then asked to rank order the remaining items on the basis of value for ascertaining the most effective industrial arts teacher.

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<sup>6</sup> Rensis A. Likert, "A Technique for the Measurement of Attitude", Archives of Psychology, Contributions to Education, No. 140, New York, Columbia University, 1932, p. 1-55.

Step 3.- The ranked frequencies were then established. The mean for each item was calculated and all items were placed in a final ranking. It was evident that items ranked beyond the thirty-fifth place had little validity for the pilot device. It was suggested by the jurors that several items be divided into two statements. This was done. A total of 109 items was derived--thirty-seven in both the interpersonal relations and technical proficiency dimension and thirty-five in the teaching techniques dimension.

Step 4.- These items were then set up so that for one half of them the favorable response was to be in positive terms, whereas in the other half, the favorable response was to be in negative terms. This was done by changing all items to provide a negative response. Those items that were clear, up to one half the total items, were then used in the pilot device as negative response items. By so reversing the meaning of the response, it was hoped to discourage the development of a response set on the part of the supervisors. The items were then put into a numerical response scale of one to five. The value of five was used to indicate the most effective category. The items were then scrambled and placed in the pilot device.

Step 5.- The supervisors' inventory was then used to cull from the supervisor population those who had five or more years of supervisory experience. The names of these supervisors were placed on cards and shuffled. To avoid selection bias a

random selection of ten supervisors was then made. They then rated their most effective and least effective teacher. Effectiveness scores on twenty teachers were thus obtained.

Step 6.- In scoring the returned devices, caution was exercised to be certain that the favorable item response score was converted to the lowest counterpart weight designation. An item analysis, using the Pearson product-moment correlation coefficient as prepared by Flanagan,<sup>7</sup> was then undertaken to determine the discriminatory power of each item and to establish the internal validity of the device.

Step 7.- After the item analysis was completed, a total of sixteen items for each dimension remained. Flanagan correlations ranged from .70 to .87. Only three items were .70, whereas twenty were over .80. The final scale<sup>8</sup> was then developed by using these items.

Step 8.- After the final scale of forty-eight items, sixteen for each dimension, was developed, it was given to each of the original ten supervisors to re-rate the same teachers. Four weeks elapsed between the use of the pilot scale and the final scale. The items of the second testing were then correlated with the corresponding items on the

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<sup>7</sup> John C. Flanagan, "General Considerations in the Selection of Test Items and a Short Method of Estimating the Product-Moment Coefficient at the Tails of the Distribution", The Journal of Educational Psychology, Vol. 30, No. 9, December 1939, p. 674-680.

<sup>8</sup> Appendix 3.

original scale, using the Flanagan<sup>9</sup> Pearson product-moment correlation coefficient.

Step 9.- Based upon the dual criteria of consistency on the test-retest and the Flanagan  $r$ , two items in each dimension scale were dropped due to low  $r$ 's. Correlations on the remaining items ranged from .56 to .87. This is shown in Table I.

Step 10.- The final device was then sent to the fifty-seven supervisors who met the criteria of five years of supervision and close proximity to their teachers. Only one set remained outstanding. Two supervisors indicated an unwillingness to participate in the study. Of the fifty-four returned, two could not be used as an obvious misunderstanding of the directions proved them to be of no value. Fifty-two were usable for the study and provided a ninety-one per cent return.

So as to provide additional criterion, a previous administrator's rating of the participating teacher was obtained and was correlated with the score of overall effectiveness obtained from the supervisor.

### 5. Analysis Plan.

A two-by-three analysis of variance with repeated measures on one factor was used to analyze the data.<sup>10</sup> The

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<sup>9</sup> Flanagan, Op. Cit., p. 674-680.

<sup>10</sup> E.J. Winer, Statistical Principles in Experimental Design, New York, McGraw-Hill, 1962, p. 298-378.

Table I.-

Flanagan Pearson Product-Moment Correlations of Items on the Pilot and Final Device.

Item Number		Competency Dimension <sup>a</sup>	r	
Pilot	Final		Pilot	Final
103	1	TP	.74	.74
15	2	IR	.81	.78
83	3	TT	.76	.81
3	4	IR	.70	.30 <sup>b</sup>
88	5	TT	.81	.74
102	6	IR	.76	.78
21	7	TP	.87	.84
86	8	TT	.84	.78
29	9	TP	.87	.84 <sup>b</sup>
99	10	TT	.70	.48 <sup>b</sup>
65	11	TP	.76	.51 <sup>b</sup>
101	12	IR	.76	.74
109	13	TT	.76	.78
106	14	IR	.81	.78
4	15	TP	.81	.78
98	16	IR	.76	.30 <sup>b</sup>
60	17	TT	.87	.81
54	18	TP	.76	.84
67	19	TT	.84	.59
41	20	IR	.87	.84
47	21	TP	.81	.69
79	22	IR	.76	.56 <sup>b</sup>
81	23	TT	.76	.51 <sup>b</sup>
43	24	TP	.84	.84
104	25	TT	.81	.63
76	26	TP	.74	.78
73	27	TT	.74	.81
80	28	IR	.74	.63
95	29	TP	.81	.69
87	30	IR	.70	.81
71	31	TT	.84	.78
72	32	IR	.74	.69
107	33	TT	.74	.69
62	34	TP	.81	.87
105	35	IR	.87	.78
57	36	TP	.76	.23 <sup>b</sup>

Table I.- (Cont'd.)

Flanagan Pearson Product-Moment Correlations of Items on the Pilot and Final Device.

Item Number		Competency Dimension	r	
Pilot	Final		Pilot	Final
34	37	TT	.76	.74
50	38	TP	.84	.69
89	39	IR	.74	.78
74	40	TP	.74	.81
69	41	IR	.76	.56
84	42	TT	.76	.78
64	43	IR	.76	.81
44	44	TT	.81	.81
91	45	TP	.76	.74
82	46	TT	.81	.74
90	47	IR	.74	.74
40	48	TP	.81	.69

a Competency Dimensions

IR = Interpersonal Relations

TT = Teaching Techniques

TP = Technical Proficiency

b Items dropped before analysis due to low correlations.

effectiveness factor (A) was designated  $a_1$  for teachers rated most effective and  $a_2$  for teachers rated least effective. The dimensions factor (B) were designated  $b_1$  for interpersonal relations scores,  $b_2$  for teaching techniques scores, and  $b_3$  for technical proficiency scores.

Table II represents the cell structures. Cell  $ab_{11}$  contains the interpersonal relations score of each teacher rated most effective. Cell  $ab_{12}$  contains the teaching techniques score of each teacher rated most effective. Cell  $ab_{13}$  contains the technical proficiency score of each teacher rated most effective. Cells  $ab_{21}$ ,  $ab_{22}$ , and  $ab_{23}$  contain the three competency dimension scores of each teacher rated least effective.

Three effects were tested:

1. the main effect of effectiveness rating (A);
2. the main effect of the specific competency area (B); and
3. the interaction between the effectiveness rating and the specific competence area (AB).

Hypothesis 1 predicted a significant main effect of A with  $\bar{A}_1 > \bar{A}_2$ . If the concept of effectiveness as judged by the supervisors is based on the three specific competency dimensions, then the judgment of "most effective" should be coupled with the judgment of "most competent" in the specific dimensions.

Table II.-  
Analysis of Variance for Cell Structure.

Teacher Effectiveness Rating	Specific Competency Scores			Sum
	Interpersonal Relations $b_1$	Teaching Techniques $b_2$	Technical Proficiency $b_3$	
Most Effective $a_1$				$\sum a_1$
Least Effective $a_2$				$\sum a_2$
	$\sum b_1$	$\sum b_2$	$\sum b_3$	

No main effect of B was specifically expected. However, it is possible that supervisors may perceive teachers overall as being more able in teaching techniques and technical proficiency than in interpersonal relations, especially in a field such as industrial arts.

It was hypothesized (hypothesis number 2) that the interaction of A and B would be significant.

For each significant effect the Scheffé S-Method<sup>11</sup> of comparing means was undertaken. The Scheffé method provided a technique for comparing cell means using the total error variance ( $S_w^2$ ). Several statisticians have commented on the appropriateness of the Scheffé S-Method for making a posteriori mean comparisons in a repeated measures design.<sup>12,13,14</sup>

The administrators' ratings were correlated with the scores on the three dimensions individually for the effective and ineffective teachers separately. This was done to compare the discriminability of the administrators' ratings with that of the supervisors'.

The following chapter will deal with the analysis of the data.

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11 George A. Ferguson, Statistical Analysis in Psychology and Education, New York, McGraw-Hill, 1966, p. 296.

12 Ibid., p. 297.

13 Quinn McNemar, Psychological Statistics, New York, John Wiley & Sons, Inc., 1962, p. 285-287, 345.

14 Winer, Op. Cit., p. 114, 309.

## CHAPTER III

### PRESENTATION OF RESULTS

The study procedures were discussed in chapter two, Experimental Design. The results of the data analysis will be presented in this chapter.

#### 1. Introduction.

Supervisors of industrial arts teachers use a multitude of subjective factors in assessing teacher effectiveness. If ways of making judgments are to be standardized, dimensions for rating must be decided upon a priori and must be shown to discriminate significantly between the most effective and the least effective teacher. It would seem reasonable that in dealing with the area of teaching in industrial arts that the teacher's ability to relate to others, his ability to use accepted and innovative teaching techniques, and his grasp of the appropriate technical concepts are dimensions which should determine his effectiveness. This study is thus aimed at determining if industrial arts supervisors' overall ratings of teacher effectiveness are related to objective measures of teacher effectiveness based upon these three dimensions.

The specific hypotheses were: (1) when the three competency dimensions of interpersonal relations, teaching

techniques, and technical proficiency are considered cumulatively, teachers rated most effective will receive significantly higher overall ratings of competency than teachers rated least effective and (2) all three competency dimensions will not prove equally significant in discriminating between most effective and least effective industrial arts teachers.

## 2. Supervisors' Characteristics.

The study was limited to randomly selected industrial arts supervisors who had at least five years of supervisory experience and were in daily contact with the teachers they supervised. These data were gathered from the Supervisor's Inventory Form.<sup>1</sup>

The Supervisors of Industrial Arts - Teacher Characteristic Schedule,<sup>2</sup> developed for the purposes of this study, was used to gather the teacher assessment data from a sample of industrial arts supervisors. The fifty-two supervisors in this study varied in age, education, professional experience, and supervisory responsibility. Table III provides the range and means of selected characteristics of these supervisors.

The mean age of the supervisors (47.42), together with the mean number of years taught (14.35), and the mean

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1 Appendix 2.

2 Appendix 4.

Table III.-  
Range and Means of Selected Characteristics of  
Supervisors (N=52).

	Age	Education <sup>a</sup>	Years of Professional Experience		Supervision Time Available <sup>b</sup>	No. of Teachers
			Teaching	Supervision		
Range	30-66	2-6	3-36	4-30	0-8	2-19
Mean	47.42	5.06	14.35	7.92	3.21	6.35

Supervisors' Inventory Form

- a Education - 4 = Bachelor degree  
                   5 = Master's degree or its equivalent  
                   6 = Sixth year level equivalent
- b Time available for supervision during the day.

number of years of supervisory experience (7.92), seem to suggest that each of the supervisors in the sample has had many years in which to become an astute observer of teacher behavior. It is felt that the criteria established for the selection of the supervisors, supported by the data in Table III, reasonably assure that the judgments made in rating teacher effectiveness are representative of the kind of ratings that would be made by the supervisors in general for the teachers who served in this investigation. If the supervisors in this study differ at all from the standard supervisor, then it is in the direction of being more experienced, and perhaps, therefore, more sensitive. This conjecture is supported by Table III.

The educational preparation of the fifty-two supervisors who served as subjects shows a mean of over five years, which indicates an average level of at least a Master's degree. Obliquely, this might suggest that the supervisors, as a group, have been somewhat prepared for their role as upgraders of instruction which, per force, includes evaluation. It is well to note that a few supervisors had less than four years of college preparation. This is entirely realistic in terms of the ages of several of these men. It appears that they are products of the two-year normal school of the 1920's.

Although the mean for the number of daily class periods available for supervision is 3.21, the range of 0-8

indicates that there is a large number of supervisors who have fewer than three periods per day in which to perform their supervisory duties.

The supervisors were asked to select their most effective and their least effective teacher. Then, using a Schedule for each, they evaluated the two teachers on each item contained therein. No indication was given to the participating supervisors as to the three dimensions structured into the Schedule. A total of 104 teachers was thus evaluated, fifty-two most effective and fifty-two least effective.

The Schedule provided the raw scores for each teacher on the three competency dimensions. These scores represented the professional judgment of the supervisor on the quality of the teacher's competency in each of the three dimensions. A total raw score for each teacher was obtained by adding the scores given by the supervisor on each of the competency dimensions. In addition to these four scores a numerical rating of one to four in half steps, previously established by an administrator, was obtained for each teacher. This was done to provide congruent validity.

### 3. Results of Analysis of Variance.

A two-by-three analysis of variance with repeated measures on one factor<sup>3</sup> was used to analyze the data. The

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<sup>3</sup> B.J. Winer, Statistical Principles in Experimental Design, New York, McGraw-Hill, 1962, p. 298-378.

effectiveness factor (A) was designated  $a_1$  for teachers rated most effective and  $a_2$  for teachers rated least effective. The competency dimensions factor (B) was designated  $b_1$  for interpersonal relations scores,  $b_2$  for teaching technique scores, and  $b_3$  for technical proficiency scores. The results of the analysis of variance of effectiveness and competency dimensions appear in Table IV.

Three effects were tested:

1. the main effect of effectiveness rating (A);
2. the main effect of the specific competency dimension (B); and
3. the interaction between the effectiveness rating and the specific competency dimension (AB).

#### Main Effect of Teacher Effectiveness

The main effect of the effectiveness rating was significant ( $F = 103.18, p < .001$ ). An examination of Table V, showing the means obtained for all cells as well as the marginal means, indicates that teachers selected as most effective obtain a higher overall rating across the three competency dimensions (Mean = 63.0) than teachers selected as least effective (Mean = 44.7). Therefore, industrial arts supervisors do discriminate significantly between the most effective teacher when the three competency dimensions of interpersonal relations, teaching techniques, and technical proficiency are considered as a composite. On this basis,

Table IV.-

Analysis of Variance of Effectiveness (A) and Competency (B).

Source of Variation	SS	df	MS	F
Between subjects	51,736	103		
A (effectiveness)	26,017.66	1	26,017.66	103.18
Subjects within groups	25,718.34	102	252.14	
Within subjects	1,915	208		
B (competency)	703.82	2	351.91	74.01
AB	213.48	2	106.74	21.80
B x subjects within groups	997.70	204	4.89	

B.J. Winer, *Statistical Principles in Experimental Design*, New York, McGraw-Hill, 1962, p. 307.

Table V.-

Summary Table for Teacher Effectiveness (A) and Teacher Competencies (B) Mean Scores (N=52).

Effectiveness Rating	Competencies			Sum
	Interpersonal Relations b <sub>1</sub>	Teaching Techniques b <sub>2</sub>	Technical Proficiency b <sub>3</sub>	
Most Effective a <sub>1</sub>	62.6 <sup>a</sup>	62.3	64.0	63.0
Least Effective a <sub>2</sub>	44.6	41.9	47.6	44.7
Sum	53.6	52.1	55.8	

Note: All cell means differ significantly from one another (except between cells a<sub>1</sub>b<sub>1</sub> and a<sub>1</sub>b<sub>2</sub> and between a<sub>1</sub>b<sub>1</sub> and a<sub>1</sub>b<sub>3</sub>) by the Scheffe' S-method.<sup>a</sup> Except for between cells a<sub>1</sub>b<sub>2</sub> and a<sub>1</sub>b<sub>3</sub> which differ at the .05 level, all other significant differences attain the .01 level of confidence.

<sup>a</sup> George A. Ferguson, Statistical Analysis in Psychology and Education, New York, McGraw-Hill, 1966, p. 296.

therefore, null hypothesis one was rejected at the .01 level of confidence.

#### Main Effect of Competency Dimensions

The main effect of the specific competency scores (B) was significant ( $F = 74.01, p < .001$ ). Comparisons among the three competency dimension overall means through the use of the error term ( $S_W^2 = 4.89$ ) and the Scheffé S-method, demonstrated the significant difference of interpersonal relations (Mean = 53.6) from teaching techniques (Mean = 52.1) and technical proficiency (Mean = 55.8). The significance of teaching techniques from technical proficiency was also demonstrated. All three competency dimension means differed significantly at the .001 level of confidence.

From a study of Table V, supervisors do perceive their teachers as being more competent in technical ability than in either interpersonal relations or teaching techniques.

#### Interaction Between Effectiveness and Competency Dimension

The interaction between the effectiveness rating and the specific competency dimension (AB) was significant ( $F = 21.8, p < .001$ ). From Table V, a comparison of cell means was undertaken using the Scheffé S-method. It was shown that supervisors do not significantly discriminate between the interpersonal relations and the teaching techniques competencies

of their most effective teachers (Means = 62.6 and 62.3 respectively,  $p > .05$ ). Also, supervisors do not significantly discriminate between the interpersonal relations and the technical competencies of their most effective teachers (Means = 62.6 and 64.0 respectively,  $p > .05$ ). However, they do significantly discriminate between the teaching techniques and the technical competencies of this group of teachers (Means = 62.3 and 64.0 respectively,  $p < .05$ ).

It was shown through the use of Scheffe's method that supervisors do significantly discriminate between the interpersonal relations, the teaching techniques, and the technical competencies of their least effective teachers (Means = 44.6, 41.9, and 47.6 respectively,  $p < .001$ ). It may be concluded that supervisors' scores for the least effective teachers featured greater discriminability among the three competency dimensions than is true for their scores for the most effective teachers. Thus, null hypothesis two was rejected.

#### 4. Relationship of Supervisors' and Administrators' Judgments.

The administrator's rating was correlated<sup>4</sup> with the scores on the three competency dimensions individually for the most effective and the least effective teacher separately.

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<sup>4</sup> Lawrence T. Dayhaw, The Dayhaw Correlation Chart, Ottawa, Canada, University of Ottawa Press, 1956.

Also, a correlation was made between the administrator's rating and the total of all scores given to each of the 104 teachers by their supervisors. The results of these correlations appear in Table VI.

While the overall judgments of supervisors and administrators agreed significantly ( $n = 104$ ,  $r = .733$ ,  $p < .01$ ), this level of agreement was not comparable for the three competency dimensions or for the most and least effective teachers. Significant agreement between supervisors and administrators was greatest for the dimension of teaching techniques ( $n = 104$ ,  $r = .734$ ,  $p < .01$ ), but considerably less for the dimension of technical proficiency ( $n = 104$ ,  $r = .663$ ,  $p < .01$ ), and less yet for the dimension of interpersonal relations ( $n = 104$ ,  $r = .635$ ,  $p < .01$ ). Thus administrators and supervisors are in greater agreement, however implicit, on what is meant by teaching techniques than is true for either of the other two competency areas. Implications of this varying comparability will be discussed in more detail in the next chapter.

Table VI also shows that significant agreement between supervisors and administrators is greater for the least effective teachers ( $n = 52$ ,  $r = .493$ ,  $p < .01$ ) than for the most effective teachers ( $n = 52$ ,  $r = .421$ ,  $p < .01$ ). Thus, administrators and supervisors have a greater implicit agreement as to what the performance of a less effective teacher looks like as compared to the more effective one.

Table VI.-

Pearson Product-Moment Correlations Between Supervisors' Competency Scores and Administrators' Rating (N=52).

Effectiveness Rating	Competencies			Total Score
	Interpersonal Relations b1	Teaching Techniques b2	Technical Proficiency b3	
Most Effective a <sub>1</sub>	.293	.383	.505	.421
Least Effective a <sub>2</sub>	.333	.499	.458	.493
Total Score <sup>a</sup>	.635	.734	.663	.733

Lawrence T. Dayhaw, The Dayhaw Correlation Chart,  
Ottawa, Canada, University of Ottawa Press, 1956.  
a n = 104.

The smallest area of significant agreement is that of the most effective teacher in the competency dimension of interpersonal relations ( $n = 52$ ,  $r = .293$ ,  $p < .05$ ). However, all correlations were significant at the .05 level of confidence.<sup>5</sup> A consideration of the correlations of each dimension for each effectiveness group separately will be treated in more detail in the discussion chapter.

The next chapter is entitled Discussion of Results.

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<sup>5</sup> George A. Ferguson, Statistical Analysis in Psychology and Education, New York, McGraw-Hill, 1966, p. 413.

## CHAPTER IV

### DISCUSSION OF RESULTS

The statistical data for this study, presented in chapter three, were drawn from a sample of fifty-two supervisors. These were randomly selected from a total of 114 industrial arts supervisors in the State of New Jersey who met the stated criteria of the study. It was hypothesized that when they rated their teachers most effective and least effective, the most effective teachers would receive significantly higher overall ratings on the three competency dimensions, interpersonal relations, teaching techniques, and technical proficiency. It was also hypothesized that all three of the competency dimensions would not prove equally significant in discriminating between these two groups of teachers. This prediction was borne out and the major hypotheses of the investigation were supported at the .01 level of confidence by the following results.

1. The sample of supervisors as a group appears to possess characteristics which should indicate competency in discriminating between most effective and least effective teachers.
2. The teachers selected as most effective obtained a significantly higher overall rating across the three competency dimensions than the teachers selected as least effective.
3. Industrial arts supervisors perceive their teachers as being significantly more competent in technical ability than in either interpersonal relations or teaching techniques.

4. The supervisors did not discriminate between interpersonal relations and teaching techniques competencies of their most effective teachers, whereas they did discriminate between the interpersonal relations and teaching techniques competencies of their least effective teachers.
5. For the most effective group technical proficiency scores significantly exceeded the scores for teaching techniques but not for interpersonal relations.
6. For the least effective group technical proficiency scores significantly exceeded the scores on the other two competency dimensions.
7. Supervisors' scores for the least effective teachers showed greater discriminability among the three competency dimensions than was true for their scores for the most effective teacher.
8. The overall judgment of supervisors and administrators showed a marked agreement.
9. The level of agreement was not comparable across the competency dimensions, nor was it comparable for the most and least effective teacher.
10. The agreement between supervisors and administrators was greatest for the dimension of teaching techniques; less agreement for the dimension of technical proficiency; and least agreement for the dimension of interpersonal relations.
11. Agreement between supervisors and administrators was greater for the least effective teacher than for the most effective teacher.

The results and their significance will be discussed in this chapter.

#### 1. Supervisors' Characteristics.

From a review of the selected characteristics of the supervisors used in this study there does not seem to be any discernible criteria used to move a person into this position.

It appears that the range of ages, education, and professional backgrounds does not lend itself to developing a formula which would aid an administrator in making a selection of a supervisor qualified to do the many varied job functions involved in supervising industrial arts teachers. It is apparent that in most instances the supervisors who were a part of this study have approximately similar amounts of general and professional education. However, when one considers the means of the characteristics studied, it was totally unexpected that the age level of the supervisors would be as high as, in fact, it was.

The mean of five years for educational background for the supervisors was expected in light of the constant drive of administrators to improve the educational qualifications of their personnel. Another reason for this expectation was the relationship of educational qualifications to salary. Most school salary guides in the State of New Jersey provide additional salary increments or adjustments upward when additional college credits are earned.

The means of fourteen years for teaching and eight years for supervision should not be considered high. It is within only the past ten years that emphasis has been placed upon industrial arts as a curriculum area. Apparently many of these supervisors have had long teaching experience. This might lead to the conjecture that they were present at the time of industrial arts growth in their district. It is not

unreasonable to assume that perhaps competency was not the major consideration in their appointment, but that seniority might have been the overriding factor in many instances.

A totally unexpected fact brought to light dealt with the number of periods available for supervision and the number of teachers supervised. One questions the wisdom of having appointed a supervisor when little or no time is provided for him to exercise the expected responsibilities of the position. This fact is particularly troublesome when one considers it possible that in some instances the duties may involve supervising several teachers. This leads to the question of how well and how effective the entire supervisory role can be in terms of the on-going observations and discussions which should lead to up-grading instruction.

## 2. The Main Effect of Teacher Effectiveness.

The results showed that the most effective teacher group had overall higher ratings across the three dimensions than the least effective teacher group. This was expected in view of the fact that the supervisors had a priori made the effectiveness selection and, therefore, were likely on any evaluative item to indicate their effective teachers were superior to their ineffective teachers.

The great difference in means, however, suggests that there is a wide differentiation being made between these two

effectiveness groups of teachers by the supervisor when he evaluates their behaviors in terms of an overall effectiveness score.

### 3. The Main Effect of Competency Dimensions.

It was shown that supervisors of industrial arts considered both the most effective and the least effective teacher groups as being significantly more competent in technical proficiency than in either interpersonal relations or teaching techniques. This was somewhat expected when the curriculum of industrial arts teacher education institutes is considered. Approximately one-third of the courses given are devoted to providing experiences designed to lead to technical competencies in the subject matter areas which comprise industrial arts education.

It was relatively unexpected that among the three competency dimensions teaching techniques would be significantly lower than the other two for each of the two effectiveness groups. This suggests that our teacher education programs, although stressing the methodology of teaching industrial arts subjects, apparently are not adequately designed to provide the teaching techniques which supervisors deem necessary for their industrial arts teachers. Or perhaps the instructional methodology provided at the college is more in tune with contemporary thinking, and the supervisors are not familiar with

the latest methods of lesson presentation. An example of this would be the use of modern computerized equipment and the visual aids approach to teaching drafting.

It is also suggested, from a perusal of the overall means on the competency dimensions, that industrial arts teachers as a group are seen by their supervisors as relatively more effective in dealing with others than in presenting instructional material. Subtly, it may suggest that industrial arts teachers as a group are less articulate in presenting instructional material where demonstration and verbal communication are factors.

It was anticipated that among the three competency dimensions interpersonal relations would be significantly lower than the other two for each effectiveness group. This assumption was based upon the lack of formal curricula to develop this type of competency in the teacher education setting. Also, it was felt that industrial arts teachers as a group might be looked upon as more oriented toward objects and/or the task and less oriented towards people. This was clearly not the case for the least effective teachers who were seen as lowest on teaching techniques, while for the most effective teachers interpersonal relations and teaching techniques were equally low.

#### 4. Interaction Between Effectiveness and Competency Dimensions.

The data presented show that the most effective teacher was far superior to the least effective teacher on the three dimensions. The differences between the two effectiveness groups were extremely large for each dimension. However, relatively small differences were shown between competency scores within each group. In fact, between cell differences within each effectiveness group were numerically only thirteen per cent as large as mean differences between effectiveness groups. It appears that the sensitivity of the supervisor is small within effectiveness groups, but extremely large between the groups. In retrospect it might appear wiser to have used a full range of teachers instead of the two extreme effectiveness groups. This method might have shown less gross differences between effectiveness groups and greater differences within effectiveness groups between the three competency dimensions. Were the two groups not so sharply dichotomized, their overall effectiveness judgment would have been closer. However, the inclusion of teachers of more marginal effectiveness might have forced supervisors to make finer discriminations among their various competencies. Nevertheless, within the limitations of the method employed, it is still possible to describe trends accounting for the significant interaction.

The gross differences of the means of the three dimensions between effectiveness groups suggest that these global dimensions might each serve equally as an index of industrial arts teacher effectiveness. While this would generally be successful, the significant interaction shown to exist among the three dimensions would lead one to conclude that all three should be considered in the overall judgment of industrial arts teacher effectiveness.

The interaction is primarily based upon the within group differentiation evidenced from the data. In judging the most effective teacher, only the competency dimension of technical proficiency was differentiated. Differentiation between interpersonal relations and teaching techniques was not shown. This finding suggests that competency in interpersonal relations may be closely related to competency in teaching techniques when the most effective teacher is considered. Competency in teaching techniques may be related to the desirable interpersonal relations exhibited by the teacher. This may then lead to the point of view that highly desirable interpersonal relations are necessary to present instructional material effectively. In addition to this point of view, it can be inferred that the supervisor cannot tell the difference between interpersonal relations and teaching techniques when the most effective teacher is observed in action.

It may be conjectured that in evaluating the most effective teacher, the supervisor merges all dimensions into the overall effectiveness rating. Whereas in evaluating the least effective teacher, he uses more care in trying to determine the reason for ineffectiveness.

Differentiation among the three dimensions was evidenced when the supervisors judged their least effective teachers. Since a great deal of teacher effectiveness research supports the positive relationship of interpersonal relations and effective teaching, it was reasonable to expect the same type of relationship to exist when industrial arts teacher effectiveness was considered. This expectation was derived from the theory that teaching is a form of social behavior. This was reinforced in this study.

When a relationship of interpersonal relations to teaching techniques was drawn for the least effective teacher, a significant deficiency in the teaching techniques dimension appeared. One explanation may be that industrial arts teaching techniques are more easily observed and classified than interpersonal relations. For the ineffective teacher who is ineffective in all areas,<sup>1</sup> it becomes easier for the supervisor to anchor on the more visible dimension of teaching techniques. Also the deficiency of adequate interpersonal relations coupled

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<sup>1</sup> Scheffe' comparisons between the two effectiveness groups were significant at the .001 level of confidence.

with the suggested relation of teaching techniques to that dimension may imply a lack of appropriate teaching techniques. It may be that deficiencies in one contribute to deficiencies in the other.

Teaching techniques, when related to technical proficiency, showed an even more marked differential when the least effective teacher was concerned. This suggests that a modicum of technical proficiency cannot overcome deficiencies in teaching techniques.

The lowest mean in all cells was shown for the least effective teacher in the teaching techniques competency dimension. This was quite unexpected when one considers the additional courses required in teaching methods. These courses purport to develop an understanding of the principles of teaching so that a variety of techniques, methods, and approaches may be adapted to effect learning. One might conclude that what is gained from methods courses is not commensurate with the time spent on them. However, this conclusion should be tempered, because we are discussing an overall less effective teacher. This low mean does seem to indicate the concern supervisors have for the techniques that may be used to establish an effective teaching-learning climate.

The technical proficiency mean exceeded the means of the other dimensions in both teacher effectiveness groups. However, an explanation may be in the tangibility of the end

product of technical competencies. Technical proficiency, particularly as a characteristic of an industrial arts teacher, is a highly visible attribute and as such would immediately be brought to the attention of an astute observer.

It is apparent from the data that technical proficiency is not an adequate basis for considering a teacher effective in industrial arts. It is probably true that when evaluating teachers, supervisors perceive the more tangible outcomes of technical proficiency quite easily. Their perception may be enhanced by the fact that industrial arts teachers are, rightly or wrongly, considered to be technicians with highly developed technical abilities and skills. However, since the content and concepts of industrial arts are becoming more complex and involved due to the contemporary technology, supervisors may be viewing the teaching of industrial arts in new terms. They may now be looking for competencies other than those strictly manipulative acts and immediately discernable related knowledges. They feel rather that these other competencies should be part of the professional teacher's repertoire. The teacher needs to understand the basic principles of teaching and learning and he must be able to organize learning experiences by using a variety of methods appropriate to the lesson at hand.

It can be concluded that the most effective industrial arts teacher has exceptional competencies in the areas of

interpersonal relations, teaching techniques, and technical proficiency. But more of concern, it can be concluded that the least effective industrial arts teacher has deficiencies in all three dimensions, but is particularly deficient in teaching techniques.

#### 5. Relationship of Supervisors' and Administrators' Judgments.

A marked significant correlation was obtained between the supervisors' total scores and the administrators' ratings. However, a consideration of the correlations for each dimension for each of the effectiveness groups separately did not yield totally valid correlations. This was attributable to the use of only one-half of the total effectiveness data in computing such correlations. Therefore, the correlation within each cell was spuriously low. However, one can interpret the relative sizes of such correlations.

From these correlations, it may be concluded that supervisors and administrators are most inclined to agree on the dimension of teaching techniques as concerns the least effective teachers. Thence, more evidence for the visibility of this dimension among poor teachers. Of note also is the fact that agreement within cells is highest for the most effective teacher on technical proficiency, while for the least effective teacher agreement is highest on teaching techniques.

Thus, a teacher is probably judged most effective because of his high technical proficiency.

It is also suggested from this analysis that industrial arts supervisors and administrators, although significantly in agreement on their overall evaluation of industrial arts teachers, may be perceiving a different set of behaviors exhibited by the teachers when these three dimensions are considered. Or they may be reacting to them differently. It further suggests that the technical proficiency dimension has relatively high visibility for both the supervisor and the administrator, particularly when compared to interpersonal relations. This may be due to the concrete nature of technical skills and knowledges. When considering interpersonal behaviors and teaching techniques, most administrators bring to bear an academic background and, consequently, an orientation somewhat different from the industrial arts trained supervisor. In spite of this difference in background, however, one is struck by the agreement rather than disagreement between judges.

#### 6. Relevance of Findings.

A conservative interpretation brings into focus what is believed to be the major significant contributions of this study for supervisors, teachers, administrators, and others. The following are points which have a bearing on supervisor evaluation practices:

1. A study of supervisory practices in evaluating teachers is entirely feasible.
2. The approach to teacher evaluation through the use of global dimensions of the teaching process does provide new insights.
3. Positive relationships were shown to exist between certain generic teaching dimensions and supervisors' judgments of teacher effectiveness.
4. Effective industrial arts teaching requires more than technical proficiency.

The findings of this study may also:

1. Reflect a need for teacher improvement programs in teaching techniques and interpersonal relations.
2. Provide a basis for training supervisors to make objective judgments of teacher effectiveness.
3. Provide a basis for the development of instruments upon which supervisors can render objective judgments of teacher effectiveness.
4. Stimulate industrial arts teacher educators to consider supervisors' expectations of teacher behavior.
5. Engender a comparison across subject-matter areas of the relative contributions of the various dimensions to teacher effectiveness.

## SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine the relationship between industrial arts supervisors' judgments of teacher effectiveness and their judgments of teacher competency on the dimensions of interpersonal relations, teaching techniques, and technical proficiency. It was hypothesized that when supervisors rated their teachers most effective and least effective, the most effective teachers would receive significantly higher overall ratings on the three dimensions. It was also hypothesized that all three competency dimensions would not prove equally significant in discriminating between these two groups of industrial arts teachers.

### 1. Summary.

#### Method

The subjects used in this investigation were randomly selected secondary school industrial arts supervisors who were in daily contact with their teachers and had at least five years of supervisory experience.

The initial 232 items related to the three competency dimensions used in the study and the data concerning the supervisors were gathered through a review of the literature and the use of a supervisor inventory form.

The items were then submitted to a jury of experts in the field of industrial arts education. This jury reviewed the items and rank-ordered them with regard to teacher effectiveness. A pilot study was then undertaken which provided the data for a Flanagan item analysis. A further test of the final items established the internal validity and reliability of the device. The final device contained forty-eight items, sixteen for each dimension. This Schedule, as it is called, was then used by each supervisor to evaluate his most effective and least effective teacher. Of the fifty-seven Schedules sent out, fifty-two of those returned were usable. One hundred and four teachers thereby served as the vehicle for providing the data.

A previous rating given by an administrator was used to provide an additional criterion to the overall effectiveness score obtained from the supervisor.

Analysis of variance and the Scheffe' S-method of comparing means was used to test the null hypotheses:

1. When the three dimensions of interpersonal relations, teaching techniques, and technical proficiency are considered cumulatively, teachers rated most effective will not receive significantly higher overall ratings of competency than teachers rated least effective.
2. All three dimensions will prove equally significant in discriminating between most effective and least effective teachers.

The administrators' ratings were then correlated with the supervisors' overall scores and the scores for each competency dimension in each effectiveness group.

### Results

The means derived for the supervisors' characteristics indicated that the participating group had had relatively long educational and supervisory experience. Their educational preparation mean indicated an attainment of at least the Master's degree level. The mean for time allotted to supervision appeared to be relatively low when considering the number of teachers supervised.

It was shown by the data concerning supervisors' scores for teachers that the teachers selected as most effective obtained higher overall ratings across the three dimensions than those selected as least effective. The supervisors perceived their teachers as being more competent in technical ability than in either of the other two competency dimensions. There appeared to be no significant differentiation between interpersonal relations and teaching techniques among the most effective teacher, while there was significant differentiation between these two competencies for the least effective teacher. For the most effective group technical proficiency scores significantly exceeded the scores for teaching techniques but not for interpersonal relations, while for the least effective

group technical proficiency scores significantly exceeded the scores on the other two competency dimensions. The supervisors' scores for the three competency dimensions for the least effective teachers showed greater differentiation than was true for their scores for the most effective teacher.

The overall judgments of the supervisors and administrators showed a marked agreement. However, the level of agreement was not comparable across the competency dimensions nor was it comparable for the most and least effective teachers. The agreement was greatest for the dimension of teaching techniques. There was less agreement for the dimension of technical proficiency and the least agreement for the dimension of interpersonal relations. It was found that agreement was greater for the least effective teacher than for the most effective teacher.

## 2. Conclusions.

Through a relatively new approach this study has attempted to learn the role of three competency dimensions in supervisors' assessment of industrial arts teacher effectiveness. It was not the intent of this study to delineate very specific and narrow characteristics, but to provide three broad underlying generic dimensions that are commonly recognized as competency areas in the teaching process. The results seem to lead to the following conclusions.

1. Little has been done to explore the competency dimensions of industrial arts teaching as viewed by industrial arts supervisors.
2. The three stated competency dimensions, interpersonal relations, teaching techniques, and technical proficiency, do differentiate between the most effective and the least effective industrial arts teacher.
3. The least effective teacher has deficiencies in all three dimensions, but greater deficiencies in both interpersonal relations and teaching techniques.
4. The three dimensions do not equally differentiate between most effective and least effective industrial arts teachers.
5. Technical proficiency is not an adequate basis for considering a teacher effective in industrial arts.
6. The teaching techniques dimension to the greatest degree differentiates the most effective from the least effective teacher.
7. The relatively low scores for the least effective teacher on interpersonal relations and teaching techniques demonstrate that significant social and professional unpreparedness are recognized as major factors in teaching effectiveness.
8. Supervisors and administrators are influenced by high technical proficiency when indicating an effective teacher. On the other hand they are primarily influenced by interpersonal relations and teaching techniques when determining the less effective teacher.
9. This approach to understanding the basis on which the supervisor evaluates his teachers and the considerations upon which his judgments are founded does not necessarily exclude the possibility that other dimensions are relevant and important. However, both the data and logic behind the study support the assumption that the three dimensions studied are necessary, if not sufficient, for ratings of effectiveness.
10. Expectancies of supervisors and administrators must be considered in teacher evaluation. While they tend to agree, they do not show complete overlap.

11. Interpersonal relations, teaching techniques, and technical proficiency are factors which are considered when industrial arts supervisors evaluate their teachers.
12. The statistical data support the hypotheses and the theoretical perspective of the study.

### 3. Recommendations.

On the basis of the findings of this study it seems appropriate to make several recommendations.

Since very little research has focused on the problem of industrial arts supervisory evaluations, it is suggested that within the basic framework of evaluation, further exploration, using the broad dimensional approach, be undertaken. This should then yield additional information and insights into supervisors' considerations when teacher assessment is undertaken. This approach might also be explored in other subject-matter areas.

Another recommendation is that the device used in this investigation be reviewed and further work done to refine the items.

Any new study undertaken should include a full range of effectiveness, so as to provide data and possibly greater insights that are not affected by a priori selections by the scoring agent.

The recommendation being made by certain persons both within and outside of education that the role of teaching

techniques and methods be reduced received little support in this study. A serious mistake, at least with regard to industrial arts teaching, would be made in relaxing instruction in the teaching techniques area. Therefore, it is recommended that more attention be given to those courses which provide a vital understanding of the processes of learning and the methods of presenting industrial arts instructional material.

Exploration should be undertaken to seek ways of formally structuring into the teacher education curriculum programs which are intended to enhance positive interpersonal relations.

Finally, it is recommended that graduate level courses be developed for present and future supervisors of industrial arts. These courses should have as their prime purpose the presentation of the latest information concerning subjective and objective teacher evaluation. This is particularly vital at this time in view of consideration being given for a shift from the guaranteed yearly increment to merit salary increases. Therefore, objective evaluation must be on a firm and fair basis, easily understood by both the teacher and the evaluator.

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Discusses the difficulties encountered in the area of teacher effectiveness studies. Feels that much planning should precede any study in this area. Suggests two types of criteria: (1) ultimate - changes in the behavior of students, and (2) proximate - prediction and substitutes for the ultimate criteria.

Schank, Kenneth Lloyd, Industrial Arts Supervision: A Synthesis of Selected Supervisory Principles and Practices, unpublished doctoral dissertation, College Park, University of Maryland, 1965, vi-266 p.

Points up the shortage of research as it concerns the position of supervisor of industrial arts. Proposes a supervisory program for industrial arts which is composed of the following elements: teaching and the teacher, curriculum development, pupils, evaluation, in-service programs, recruitment, rooms-building, equipment and material,

finance and budget, public relations and safety. Value of this study is found in the penetrating discussion of each of the program elements. Concludes that the position of industrial arts supervisor is unique because industrial arts education is unique and therefore specific graduate programs should be developed for these supervisors.

Selvidge, Robert W., "Success Factors in Teaching", in The Industrial Education Magazine, Vol. 33, No. 12, June 1932, p. 305-306.

Hypothesizes that the personal qualities which are important to success in industrial teaching may be put into two groups. These groups are designated as General Personal Factors, desirable in any man, and Professional Factors, techniques and skills in teaching.

Solomon, Daniel, "Teacher Behavior Dimensions, Course Characteristics, and Student Evaluations of Teachers", in American Educational Research Journal, Vol. 3, No. 1, January 1966, p. 35-47.

Another attempt to identify significant categories of teacher behavior using a large sample. Replicates the findings of other studies with only slight differences which the author suggests may be attributable to the following: (1) certain kinds of behaviors may be associated with the particular course material; (2) teachers of a particular subject matter area may view successful teaching techniques similarly; and (3) teachers with like personality and behavior characteristics may choose the same teaching area.

Torrence, Andrew Pumphrey, "A Study of the Relationships of Certain Competencies to Success in Teaching Vocational Agriculture", in The Journal of Experimental Education, Vol. 25, No. 1, September 1956, p. 1-31.

Leans heavily on correlation of the technical and manipulative aspects of teaching vocational agriculture and the teacher's success. Also endeavors to relate the teacher's knowledge of professional information to his success. Finds that training institutions need to devote more time to the manipulative skills involved in teaching vocational agriculture.

Walker, F.L., "Judging Industrial Arts Teachers", in Industrial Arts and Vocational Education, Vol. 26, No. 3, March 1937, p. 20A, 22A, and 38A.

Provides a list of forty-five items classed as (1) general characteristics, (2) manipulative skills, and (3) teaching skills. Feels these should be used in judging the industrial arts teacher's competence.

BIBLIOGRAPHY

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Waudt, Edwin, "The Measurement of Teachers Attitude Toward Groups in the Schools", in The Journal of Educational Research, Vol. 46, No. 2, October 1952, p. 113-122.

Holds that teaching involves relationships with many groups of people in the school. Through the use of Likert-type scales, measured (1) the teachers' attitudes toward various school groups, (2) the interrelation of these attitudes, (3) the relationship of these attitudes to other factors, (4) the relationship of verbalized attitudes and a variety of overt behaviors, and (5) the development of measures of these attitudes in a disguised form. Trained observers were used.



State of California

Department of Corrections

San Francisco

APPENDIX 1

SUPERVISOR'S INVENTORY AND QUESTIONNAIRE FORM

Handwritten signature and text at the bottom of the page.

## APPENDIX 1



State of New Jersey  
DEPARTMENT OF EDUCATION  
225 WEST STATE STREET  
TRENTON 25

OCATIONAL DIVISION

EXPORT 2-2131 EXT. 8355

October 16, 1964

Dear Chairmen, Coordinators, and Supervisors of Industrial Arts:

There are a number of problems in the area of industrial arts supervision which have presented a challenge to good educational practice. One of the problems with which we are continually faced concerns the evaluation of the teachers under our supervision. If all the industrial arts supervisors in our State would share their thoughts on evaluative criteria, we could get a cross sectional view which should be very helpful in this function of our job.

Therefore, we are asking your cooperation in providing us with a substantial number of carefully thought-out statements dealing with three aspects of the ideal industrial arts teacher. These statements should describe the ideal teacher in terms of his: 1) relations with people (students, faculty members, supervisors, administrators, and parents); 2) technical proficiency in the art of teaching (procedures, methods, techniques, etc.); and 3) technical proficiency in subject matter (tool and equipment skills, craftsmanship, and problem solving as they all relate to materials and processes).

We should very much appreciate your filling out the enclosed blanks. These will give us the characteristics you feel an ideal industrial arts teacher should possess, as well as information concerning the general background of our district supervisors. All information will be held in strictest confidence.

All supervisors are asked to bring these completed forms to the registration desk at Oak Hills Manor at our fall supervisor's meeting, November 4, 1964. Please attach any presently used evaluating forms, whether locally designed or purchased. If it is impossible for you to attend this meeting, please mail the forms to our office.

Very truly yours,

A handwritten signature in cursive script that reads "Morton Margules".

Morton Margules  
State Supervisor of  
Industrial Arts Education

MM:ag  
Enclosures

Telephone extensions — EXport 2-2131

Form #1 Voc. Div. 1964

SUPERVISOR'S INVENTORY FORM

Number \_\_\_\_\_

Name \_\_\_\_\_ Age \_\_\_\_\_

District \_\_\_\_\_ District Population \_\_\_\_\_ County \_\_\_\_\_

Check or Fill In Those Items Which Apply

Type of District	Academic Training	Areas of Specialization
Urban ( )	No Degree ( )	Undergraduate
Suburban ( )	Bachelor's Degree ( )	_____
Regional ( )	Master's Equivalency ( )	_____
Rural ( )	Master's Degree ( )	_____
Industrial ( )	Sixth Year Level ( )	_____
Residential ( )	Doctor's Degree ( )	Graduate
Farm ( )	Other ( )	_____
Resort ( )		Master's
Military ( )		_____
		Sixth Year and/or Doctor's

Supervision of Each Teacher

Time Available	Kind and Number of Shops Supervised
Full Day ( )	Wood Shop _____ General Shop _____
Half Day ( )	Power (Auto) Shop _____ Metal Shop _____
Three Periods ( )	Graphic Arts Shop _____ Electric-Electronics Lab. _____
Two Periods ( )	Ceramics Shop _____
One Period ( )	Combination Shops (Name and Number) _____
Must Make Time ( )	

Number of visits each month \_\_\_\_\_ Average length of each visit \_\_\_\_\_  
 Number of teachers supervised \_\_\_\_\_ Number of individual schools \_\_\_\_\_

Years of Education Experience

	Teaching	Supervisory	Years	Title	Administrative
Elementary School	_____	_____	_____	_____	_____
Junior High School	_____	_____	_____	_____	_____
Senior High School	_____	_____	_____	_____	_____
College Level	_____	_____	_____	_____	_____
Others (specify)	_____	_____	_____	_____	_____

Industrial Experience

None ( ) \_\_\_\_\_ Number of Years Unskilled \_\_\_\_\_  
 Semi-Skilled Years \_\_\_\_\_ Job Title \_\_\_\_\_  
 Skilled Years \_\_\_\_\_ Job Title \_\_\_\_\_  
 Professional Years \_\_\_\_\_ Job Title \_\_\_\_\_

## Ideal Industrial Arts Teacher Characteristics

### Relations with People

Clearly define the specific behavior characteristics you feel an ideal industrial arts teacher should possess in dealing with other people. The stated characteristic should be an example of observable desired behavior.

If more space is needed, please append additional sheets.

Students

Faculty

Supervisors

Administrators

Parents

Others

Technical Proficiency (continued)

Skills related to Metal

Skills related to Electricity-Electronics

Technical Proficiency (continued)

Skills related to Graphic Arts

Skills related to Power Mechanics - Automotive

## Ideal Industrial Arts Teacher Characteristics

### Teaching Proficiency

Define the characteristics which you consider to be indicative of proficiency in the techniques of teaching as they apply to industrial arts education.

Procedures

Methods

Techniques

Other

## Ideal Industrial Arts Teacher Characteristics

### Technical Proficiency

The statements referring to technical proficiency should be indicative of those skills which you believe are essential to an ideal industrial arts teacher. This major heading "technical proficiency" has been divided so as to allow you to list specific characteristics for all sub-areas of industrial arts.

Skills related to Mechanical Drawing - Design

Skills related to Wood

Technical Proficiency (continued)

Skills related to Ceramics

Skills related to Plastics

Technical Proficiency (continued)

Skills related to Textiles

Other Skills

UNITED STATES DEPARTMENT OF THE ARMY  
HEADQUARTERS, WASHINGTON, D. C. 20315  
FORM NO. 101-101 (REV. 1-61)

This form is to be used by the supervisor to report the inventory of the  
unit. It should be filled out at the end of each month and submitted to the  
adjutant general's office.

**APPENDIX 2**

**REVISED SUPERVISOR'S INVENTORY FORM**

This form is to be used by the supervisor to report the inventory of the  
unit. It should be filled out at the end of each month and submitted to the  
adjutant general's office. The inventory should include all items of  
equipment, supplies, and other property of the unit. The inventory should  
be checked against the unit's inventory list and any discrepancies should  
be reported to the adjutant general's office. The inventory should be  
checked against the unit's inventory list and any discrepancies should  
be reported to the adjutant general's office. The inventory should be  
checked against the unit's inventory list and any discrepancies should  
be reported to the adjutant general's office.

Should you have any questions concerning this form, please contact  
the adjutant general's office.

## APPENDIX 2

STATE OF NEW JERSEY  
DEPARTMENT OF EDUCATION  
DIVISION OF VOCATIONAL EDUCATION  
TRENTON 08625

T-2857

TO: Industrial Arts Department Chairmen, Coordinators, and Supervisors.

FROM: Morton Margules - Director of Pilot and Demonstration Programs

DATE: January 23, 1967

RE: Industrial Arts Supervisor's Inventory

Two years ago the Division of Vocational Education asked for information concerning the backgrounds of local Industrial Arts Department Chairmen, Coordinators, and Supervisors. Due to the many changes which have been affected in the Division since that time, the data could not be tabulated.

Since you have been given certain supervisory duties in addition to any teaching you may be doing, we ask that you carefully complete the enclosed form and send it to this Division on or before February 10, 1967. Please supply data on every item that indicates your background and experience. The data provided will enable us to develop a profile of the Industrial Arts Supervisor in the State of New Jersey. Your Inventory Form is an important part of this study and will make the profile truly representative of our local supervisors. All information received will be held in the strictest confidence.

Should you have any questions concerning this form, please do not hesitate to communicate with me.

# APPENDIX 2

VD-FORM 25 (10-66)

STATE DEPARTMENT OF EDUCATION  
DIVISION OF VOCATIONAL EDUCATION  
TRENTON, NEW JERSEY

Check or fill  
in those items  
which apply

Number \_\_\_\_\_

## Industrial Arts

Date \_\_\_\_\_

### SUPERVISOR'S INVENTORY FORM

Name \_\_\_\_\_ Title \_\_\_\_\_ Age \_\_\_\_\_  
Last First Middle

I SCHOOL DISTRICT \_\_\_\_\_ District Population \_\_\_\_\_ County \_\_\_\_\_  
 Types of District 1.  Urban 2.  Suburban 3.  Regional 4.  Rural 5.  Industrial 6.  Residential 7.  Farm 8.  Resort 9.  Military

II PROFESSIONAL TRAINING

1. a.  No Degree      c.  Master's Equivalency      e.  Sixth Year Level      g.  Other \_\_\_\_\_  
 b.  Bachelor Degree      d.  Master's Degree      f.  Doctor's Degree

2. Areas of Specialization  
 a. Undergraduate (1) \_\_\_\_\_      b. Master's \_\_\_\_\_  
    (2) \_\_\_\_\_      c. Sixth Year \_\_\_\_\_  
    \_\_\_\_\_      d. Doctor's \_\_\_\_\_

3. Certification  
 a.  Permanent Industrial Arts      b.  Supervisory (specify) \_\_\_\_\_  
    \_\_\_\_\_      c.  Other (specify) \_\_\_\_\_

III PROFESSIONAL EXPERIENCE

1. In New Jersey \_\_\_\_\_ 2. Other States \_\_\_\_\_ 3. Total \_\_\_\_\_

	a. TEACHING (Total years)	b. SUPERVISION (Total years)	c. ADMINISTRATIVE (1) (Total years)      (2) (Title)
4. Elementary School (K-8)	_____	_____	_____
5. Junior High School (7-9)	_____	_____	_____
6. High School (9-12)	_____	_____	_____
7. College Level	_____	_____	_____
8. Others (specify) _____	_____	_____	_____

IV SUPERVISION

1. Supervisory and Administrative Time Available  
 a.  All Day      b.  Half Day      c.  Three Periods      d.  Two Periods      e.  One Period  
 f.  Other (specify) \_\_\_\_\_

2. Number of Industrial Arts Teachers Supervised	(a) Elementary (K-8) _____	(b) Junior High School (7-9) _____	(c) High School (9-12) _____
3. Number of Individual Schools Supervised	_____	_____	_____
4. Kind and number of Shops Supervised	_____	_____	_____
a. General	_____	_____	_____
b. Wood	_____	_____	_____
c. Metal	_____	_____	_____
d. Mechanical Drawing Room	_____	_____	_____
e. Power Mechanics (auto)	_____	_____	_____
f. Graphic Arts	_____	_____	_____
g. Electric-Electronics Lab	_____	_____	_____
h. Other (specify) _____	_____	_____	_____

5. Other Teachers Supervised

a. Number _____	b. Subject(s) _____	c. Grades _____
-----------------	---------------------	-----------------

6. Number of Visitations Per Year

Tenure Teachers	Non-tenure Teachers
7. Required <input type="checkbox"/> yes <input type="checkbox"/> no	7. Required <input type="checkbox"/> yes <input type="checkbox"/> no

8. Average Length of Each Visit \_\_\_\_\_

V TEACHING ASSIGNMENT

1. Industrial Arts _____	a. Course Title _____	b. Number of Periods Per Day _____
2. Industrial Occupations _____	_____	_____
3. Other (specify) _____	_____	_____

VI INDUSTRIAL EXPERIENCE

1. <input type="checkbox"/> None		
a. Total Years _____	b. Job Title _____	a. Total Years _____
2. Unskilled _____	_____	4. Skilled _____
3. Semi-skilled _____	_____	5. Professional _____

VII MILITARY EXPERIENCE

1. Occupational Speciality Title _____		
2. Active duty (years) _____	3. Reserve Duty (years) _____	4. Branch of Service _____
5. Service School Courses _____	_____	_____

NAME

Number

INDUSTRIAL ARTS TEACHER  
CHARACTERISTIC SCHEDULE

Page 10

The Industrial Arts Teacher is responsible for the instruction of students in the field of industrial arts. This includes the teaching of basic skills and concepts, as well as the supervision of student projects. The teacher is also responsible for the maintenance of the industrial arts shop and the safety of the students.

The Industrial Arts Teacher is also responsible for the supervision of student projects. This includes the selection of projects, the assignment of tasks, and the evaluation of student work. The teacher is also responsible for the maintenance of the industrial arts shop and the safety of the students.

APPENDIX 3

**SUPERVISORS' OF INDUSTRIAL ARTS TEACHER  
CHARACTERISTIC SCHEDULE**

The Supervisor of Industrial Arts Teachers is responsible for the supervision of the Industrial Arts Teachers in the school. This includes the selection of teachers, the assignment of tasks, and the evaluation of teacher work. The supervisor is also responsible for the maintenance of the industrial arts shop and the safety of the students.

The Supervisor of Industrial Arts Teachers is also responsible for the supervision of student projects. This includes the selection of projects, the assignment of tasks, and the evaluation of student work. The supervisor is also responsible for the maintenance of the industrial arts shop and the safety of the students.

This schedule is effective for the year 1964-65. It is subject to change without notice.

Walter J. ...  
Director of Education  
Department of Education  
100 ...  
...  
...

### APPENDIX 3

#### SUPERVISORS' OF INDUSTRIAL ARTS TEACHER CHARACTERISTIC SCHEDULE

##### Purpose:

This schedule is designed to investigate those behavioral characteristics which are used by Industrial Arts supervisors when evaluating a teacher's performance. The schedule consist of items which describe activities considered common to teaching Industrial Arts subjects. These items have been jury selected from among several hundred as those believed to have importance in industrial arts teaching.

Because of your long service as a supervisor of Industrial Arts and your close relationship to the Industrial Arts teachers on your staff, I am asking your cooperation in being a part of this study which seeks to learn more about the evaluation process used by our Industrial Arts supervisors. Should you be interested in taking part in this study, be assured all information given will be held in strictest confidence.

##### Directions:

Two sets of items are to be used. These sets have been numbered so that you may code the number to the name of the teacher being evaluated. Write your name and district on the lines provided. Only two teachers are to be evaluated. Carefully consider your entire Industrial Arts staff and use only the teacher you consider most effective and the teacher you consider least effective. Use only those teachers whom you have observed many times and for long periods. Fill in one schedule for one teacher at a time. Read each item carefully, think of the method of scoring and how it applies to this teacher. Then, check the desired line.

Obtain from the central office the rating given to this teacher by the Principal or Superintendent for the year 1966-67. Place this rating, in numerical value, in the space provided on the schedule. Please indicate the scoring value given to the rating system used in your district. For example: 4 is most effective, 1 is least effective or vice versa.

When you have completed both schedules, please place them in the envelope provided and return by November 6, 1967.

Mr. Morton Margules, Director, Comprehensive High School Branch  
and Pilot & Demonstration Programs  
Department of Education  
Division of Vocational Education  
225 West State Street  
Trenton, New Jersey 08625

SUPERVISORS' OF INDUSTRIAL ARTS TEACHER  
CHARACTERISTIC SCHEDULE

Supervisor \_\_\_\_\_ Code No. \_\_\_\_\_

School District \_\_\_\_\_

Teacher's Rating For 1966-67 Given by Principal or Superintendent \_\_\_\_\_

Scoring:

All items are to be scored on a numerical response scale of one to five. The method of scoring follows:

- Check "5" if the behavior represented is a major characteristic of this teacher.
- Check "4" if the behavior represented is to a large extent, but not entirely, a characteristic of this teacher.
- Check "3" if the behavior represented is a characteristic of this teacher to a limited extent.
- Check "2" if the behavior represented is seldom a characteristic of this teacher.
- Check "1" if the behavior represented is never a characteristic of this teacher.

Example:

Positive item

	1	2	3	4	5
The teacher is fair	_____	_____	_____	_____	_____X

A teacher who has always been shown to be fair in his dealings with others would have line "5" checked.

Negative item

The teacher is unfair	_____	_____	_____	_____	_____X
-----------------------	-------	-------	-------	-------	--------

A teacher who has always been shown to deal unfairly with others would have line "5" checked.

	1	2	3	4	5
1. His own workmanship lacks quality.	_____	_____	_____	_____	_____
2. Appears to be incapable of recognizing the needs of others.	_____	_____	_____	_____	_____
3. Teaching methods do not consider child growth and development patterns.	_____	_____	_____	_____	_____
4. Recognizes the good qualities in others.	_____	_____	_____	_____	_____
5. Makes active use of aspects of pupil growth as a guide in planning activities.	_____	_____	_____	_____	_____
6. Has respect for others and values their confidences.	_____	_____	_____	_____	_____
7. Cannot solve complex technical problems.	_____	_____	_____	_____	_____
8. Recognizes and looks for meaningful educational growth.	_____	_____	_____	_____	_____
9. Transfers the knowledge of one technical area for use in another technical area.	_____	_____	_____	_____	_____
10. Evidences a knowledge and/or understanding of the basic principles of learning.	_____	_____	_____	_____	_____
11. Selects the method or procedure deemed best for each job or operation on the equipment available and then plans steps accordingly.	_____	_____	_____	_____	_____
12. Instills confidence in students.	_____	_____	_____	_____	_____
13. Lacks the ingenuity and resourcefulness to provide a wide variety of experiences for his students.	_____	_____	_____	_____	_____
14. Cannot work as a member of the professional team.	_____	_____	_____	_____	_____
15. Selects and employs the correct tools, equipment, and instruments for efficient use in a specific situation.	_____	_____	_____	_____	_____

	1	2	3	4	5
16. Can be trusted to use personal information wisely.	_____	_____	_____	_____	_____
17. Plans and organizes programs with pupils relative to their needs.	_____	_____	_____	_____	_____
18. Arranges shop equipment and tools without regard for maximum safety and operational efficiency.	_____	_____	_____	_____	_____
19. Exhibits unique and innovative strategies to accomplish pupil learning.	_____	_____	_____	_____	_____
20. Makes critical decisions without deliberation.	_____	_____	_____	_____	_____
21. Knows and/or applies basic technical principles.	_____	_____	_____	_____	_____
22. Is unreliable.	_____	_____	_____	_____	_____
23. Provokes indifference in students.	_____	_____	_____	_____	_____
24. Adapts material to solve a technical problem.	_____	_____	_____	_____	_____
25. Appears to lack an understanding of the psychological and/or sociological implications of student-teacher relations.	_____	_____	_____	_____	_____
26. Is familiar with the latest tools and techniques of industry in order to relate shop experiences to current industrial practice.	_____	_____	_____	_____	_____
27. Does not permit expression of opinion.	_____	_____	_____	_____	_____
28. Is a ready listener to problems and suggestions.	_____	_____	_____	_____	_____
29. Does not appear to know how to use technical manuals and other specialized reference sources to supplement his own competency.	_____	_____	_____	_____	_____
30. Is professional in dealing with others.	_____	_____	_____	_____	_____
31. Aids students in developing good habits, attitudes, and interests.	_____	_____	_____	_____	_____
32. Shows favoritism.	_____	_____	_____	_____	_____

	1	2	3	4	5
33. Originates and carries out innovative ideas in the teaching process.	_____	_____	_____	_____	_____
34. Penetrates the core of a technical problem to analyze and point up all the important variables and basic elements in the problem.	_____	_____	_____	_____	_____
35. Has a cooperative and/or democratic attitude.	_____	_____	_____	_____	_____
36. Does not use creative and innovative approaches and procedures to solve technical problems.	_____	_____	_____	_____	_____
37. Cannot readily change plans to meet new situations.	_____	_____	_____	_____	_____
38. Does not care for equipment and tools so that they are always in good condition and available for use.	_____	_____	_____	_____	_____
39. Accepts students' viewpoints with an open mind.	_____	_____	_____	_____	_____
40. Evidences a knowledge of related technical subjects.	_____	_____	_____	_____	_____
41. Is turbulent and impulsive.	_____	_____	_____	_____	_____
42. Instructional environment created is not conducive to effective learning.	_____	_____	_____	_____	_____
43. Is impatient and intolerant of students' mistakes.	_____	_____	_____	_____	_____
44. Maintains low educational standards that are inconsistent.	_____	_____	_____	_____	_____
45. Understands the relationships and implications of technical knowledge on society.	_____	_____	_____	_____	_____
46. Teaches enthusiastically.	_____	_____	_____	_____	_____
47. Has a poor disposition.	_____	_____	_____	_____	_____
48. Appears to lack an understanding of good functional design.	_____	_____	_____	_____	_____

APPENDIX 4

ABSTRACT OF

A Comparison of Supervisors' Ratings of Most Effective  
and Least Effective Industrial Arts Teachers  
on Three Competency Dimensions

## APPENDIX 4

### ABSTRACT OF

#### A Comparison of Supervisors' Ratings of Most Effective and Least Effective Industrial Arts Teachers on Three Competency Dimensions<sup>1</sup>

The purpose of this study was to determine the relationship between industrial arts supervisors' judgments of teacher effectiveness and their judgments of teacher competency on the dimensions of interpersonal relations, teaching techniques, and technical proficiency. The specific hypotheses were: (1) when the three competency dimensions are considered cumulatively, teachers rated most effective will receive significantly higher overall ratings of competency than teachers rated least effective, and (2) all three competency dimensions will not prove equally significant in discriminating between most and least effective industrial arts teachers.

The sample population was limited to randomly selected industrial arts supervisors in the State of New Jersey.

A rating schedule was developed and used to obtain the supervisor's perceptions of his most and least effective teacher. The schedule contained sixteen behavioral items for

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<sup>1</sup> Morton Margules, doctoral thesis presented to the Faculty of Education of the University of Ottawa, Ontario, February 1968, xviii-79 p.

each of the competency dimensions. The data obtained were used to determine the relationship of the supervisors' judgments of effectiveness to the scores on each of the three dimensions. A previous rating given by an administrator was used to provide an additional criterion to the overall score obtained from the supervisors.

Analysis of variance and the Scheffe' S-method of mean comparisons were used to analyze the data concerning the relationships between effectiveness and the competency dimensions. Pearson product-moment correlations were calculated to examine the relationship between supervisors' scores and administrators' ratings. The following conclusions were drawn from the results:

1. Interpersonal relations, teaching techniques, and technical proficiency are factors which are considered when industrial arts supervisors evaluate their teachers.
2. The three stated competency dimensions taken cumulatively do differentiate between the most effective and least effective industrial arts teacher.
3. Overall, teachers are judged more competent in technical proficiency than in the other two dimensions.
4. The three dimensions do not equally discriminate between most and least effective industrial arts teachers.
5. The least effective teacher has deficiencies in all three dimensions but greater deficiencies in both interpersonal relations and teaching techniques.
6. The teaching techniques dimension to the greatest degree differentiates the most from the least effective teacher.

7. Supervisors and administrators show greatest agreement on the dimension of technical proficiency when rating an effective teacher. On the other hand, their agreement is greatest for teaching techniques when rating the less effective teacher.
8. The statistical data supported the hypotheses and the theoretical perspective of the study.

It was recommended that: (1) further exploration, using the broad dimensional approach, should be undertaken; (2) any new study undertaken should include teachers covering a full range of effectiveness; (3) greater emphasis should be placed upon teaching techniques in industrial arts education; and (4) graduate level programs concerned with teacher evaluation should be developed for present and future supervisors of industrial arts.