

DIFFERENCES IN QUALITY OF EDUCATION ASSOCIATED  
WITH VARIATIONS IN THE QUANTITY OF CERTAIN  
ELEMENTS IN AND SURROUNDING PUBLIC  
ELEMENTARY SCHOOLS

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## PREFACE

Differences exist in the quality of education and in the many elements in and surrounding the educational experiences of elementary school pupils. Difficulties are encountered in determining the criterion of quality and in developing the technique for measuring the quality according to that criterion. The determination of all of the elements in and surrounding the educational experiences of elementary school pupils is an endless task. Even after certain elements for study are selected, then difficulties arise in collecting and interpreting information about the differences in quality of education associated with qualitative variations in and surrounding educational experiences of elementary school pupils.

I am indebted to all the persons who through the course of human history have added to the reservoir of knowledge that has been so helpful in making predictions and in describing the desires of people. In addition, I am indebted to my family, Betty Morton Tidrow, Lisa Morton Tidrow, and Calvin Goddard Tidrow, who made adjustments in their lives, and to my many co-workers who, also, made adjustments in their lives. I am also indebted to the institutions and to the men who provided and developed those institutions in which I have studied and worked. Particularly, I am acknowledging my indebtedness to the men on my committee who provided the most direct help in many ways. Members of the committee are Dr. Helmer E. Sorenson, co-chairman, Dr. Elmer F. Ferneau, co-chairman, Dr. Roy E. Sommerfeld, and Mr. Eli C. Foster.

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## CHAPTER I

### INTRODUCTION

"When is a school a good school?" and "What makes a school a good school?" are two questions which intrigued the writer's imagination and gave direction to the current study. These two questions stemmed from the writer's interest in the responsibility of educational leadership in providing a better education for boys and girls.

Differences seemed to exist in elementary schools. Differences seemed to appear in both the quality of education and the quantity of certain elements in and surrounding the elementary schools. If these differences were associated, then a study of these differences might provide a key for educational leadership in improving the quality of education. Would a study reveal any association between differences in the quality of education and the quantity of elements in and surrounding the elementary schools?

#### Statement of the Problem

Authorities have recognized a number of different elements in and surrounding the educational experiences of children in the elementary schools. The current study attempted to go beyond the point of identifying these elements. It sought to find the differences in the quality of education associated with variations in the quantity of certain elements in the elementary schools of one American city. The specific

problem of investigation was: "Are there differences in the quality of education associated with variations in certain specific elements in or surrounding educational experiences of elementary school pupils?"

### Definitions

The quality of education in elementary schools is closely related to the educational outcomes. Educational outcomes are closely associated with the rate of occurrence of good and outstanding educational experiences in the life of each pupil. The rate of occurrence of good and outstanding educational experiences is dependent upon the rate of occurrence of good and outstanding teaching practices occurring in a school. Hence, educational outcomes, good and outstanding educational experience, and the rate of occurrence of good and outstanding teaching practices were terms used to reflect the quality of education. The quality of education used in the present study has been described in Chapter III.

The term "quantitative variations in the elements" was used to mean the differences in the number, amount, score, or the size of certain characteristics or factors such as the years of age, years of experience, amount of salary of the school's principal and teachers, the intelligence quotient, number of free lunches, number of changes in enrollment for the school's pupils, the size of the school site, the distance of the schools from the service center, and the number of library books. The elements have been discussed and listed in Chapter II.

### The Purpose of the Study

The purpose of the current study was to provide evidence of the difference in the quality of education associated with quantitative variations in the elements in or surrounding school experiences of elementary

school children. In addition, the writer intended that this evidence be presented in such a way that it would be helpful to educators and other persons interested in making more rapid adjustments in providing a better quality of education in elementary schools.

Three questions were inherent in the problem. They were:

1. Is there a significant difference in the variations of the quantity of each element?
2. What is the direction of the difference?
3. What might the difference with its direction mean?

#### Need for the Study

Justification of--not merely the assumption of--the need for the study was desirable. Justification was based on grounds that the study analyzes information that has not been analyzed previously, and that there was some social necessity for the additional information.

Authorities have identified some of the many different factors related to the quality of education. Brueckner described factors which interfere with optimum growth.<sup>1</sup> Ross summarized the areas of research dealing with adaptability.<sup>2</sup> Yet, there seemed to be gaps appearing in the information regarding the quantitative elements in and surrounding the educational experiences of elementary school children.

After reviewing the literature concerning adaptability, Ross recognized gaps remaining in the information and the social necessity

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<sup>1</sup>Leo J. Brueckner, "Diagnosis in Teaching," Encyclopedia of Educational Research (New York, 1950), p. 315.

<sup>2</sup>Donald H. Ross et al., Administration for Adaptability (New York, 1951), Vols. I, II, III and Supplement, pp. 1-828.

for additional study: "Six areas of research and application of the results of existing research pertinent to administration of schools for adaptability cry out for attention."<sup>3</sup>

Sanford and Trump stated that factors related to teaching success are not definitely known:

A valid and reliable criterion of teaching success has not been found, the factors conditioning success in teaching are not definitely known, and a satisfactory technique of investigation for applying the criterion and the factors has not been formulated.<sup>4</sup>

In writing about the supervisory program, Barr made the following statement:

We need to determine not only the general effectiveness of the program, but the effectiveness of important components, such as teaching personnel, the curriculum, the sociophysical setting for learning, and other matters limiting and facilitating pupil growth.<sup>5</sup>

It seemed reasonable that the variations in the quality of education and quantitative elements in the elementary schools of one American city were similar to other American cities. If this universality was not a reasonable assumption, then there was even greater reason for adding to the reservoir of information about quantitative elements associated with qualitative outcomes in education in specific school systems.

The White House Conference on Education held in November, 1955, recognized the desire of the people as well as the social necessity for improving the quality of education in the public schools of the United States. The impact of the quality of education upon twenty

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<sup>3</sup>Ibid., Vol. III, p. 350.

<sup>4</sup>Charles W. Sanford and J. Lloyd Trump, "Teacher Education - IV. Preservice Selection," Encyclopedia of Educational Research (New York, 1950), p. 1394.

<sup>5</sup>A. S. Barr, "Supervision," Encyclopedia of Educational Research (New York, 1950), p. 1373.

million youngsters in the public elementary schools of the United States cannot be minimized.

The justification of the need for this study rested upon two bases. First, there was a gap in the information regarding the quantitative elements in and surrounding the education experiences associated with the quality of education. Second, there was some social necessity to improve the quality of education in elementary schools.

#### The Procedure

The problem involved the following steps. First, three levels of quality of education were identified and certain elementary schools in one American city were placed in one of three group categories. Next, information regarding certain elements which appeared in or surrounding the schools was recorded. Then, certain specific elements of the two groups of schools were compared to determine whether or not the differences were chance differences.

In comparing the schools, hypotheses were stated about the elements in four major areas. The specific statements of the hypotheses are shown below:

1. Elements in the background (age, salary, and experience) of the school's principal are significantly related to the quality of education in that elementary school.
2. Elements in the background (age, salary, marital status, experience, degree, certificate, visits to pupils' homes, and supervisor visits) of the elementary school's teachers are significantly related to the quality of education in that elementary school.

3. Elements in the background (economic status, intelligence quotient, and mobility) of the pupils in certain schools are significantly related to the quality of education in those elementary schools.
4. Elements in the physical setting of an elementary school (acres in site, distance from service center, temporary classrooms per teacher, library books per pupil, average class size, membership of school, and P. T. A. membership) are significantly related to the quality of education in that elementary school.

#### Overview of the Remainder of the Study

The procedure, a quality of education, the quantitative elements, and a summary and implications of this study have been discussed in the following chapters. In Chapter II, the procedure has been presented. The procedure involved the selection of the population, the selection of the elements, the determination of a quality of education, the classification of schools, and a description of the statistical methods. The quality of education used in the current study has been described in Chapter III. The data regarding the quantitative elements have been presented and analyzed in Chapter IV. The function of the last chapter is to summarize the process and findings and suggest additional implications.

## CHAPTER II

### THE PROCEDURE

The value of any study is dependent not only upon the need for certain information, but, also, the procedure used in obtaining and analyzing the information. In this chapter, the procedure used to arrive at certain conclusions has been described. Briefly, the procedure involved the selection of the population, the selection of elements, the determination of a quality of education, the classification of schools, and the description of statistical methods for analyzing quantitative variations in light of qualitative differences at the extremes.

#### The Population

The elementary schools of one American city were the population of the current study. There were forty-seven elementary schools in the system. These schools were organized from kindergarten through grade six. Four of these schools less than one year old and three separate schools were withdrawn from the list. Hence, only forty schools were in the sample.

#### The Elements

The question "What makes a school a good school?" intrigued the writer's imagination and gave direction to the study. An investigation of professional literature yielded several elements which appeared to influence the quality of education in elementary schools. Professional

associates suggested some. Experiences of the writer indicated others. The pursuit, itself, developed insights about more. Finally, about sixty elements were listed. Information was sought regarding the validity and availability of the quantitative data. In several instances, elements were discarded because there was little, if any, valid information available and the time allotted for the study did not permit the acquisition of additional data. Substantial quantitative figures which seemed to possess face validity were available for twenty-six of the sixty elements. A decision was then made to study the elements which seemed to have been present in or surrounding the elementary schools. Finally, the following elements were studied:

I. Personnel factors

A. Principal

1. Age
2. Salary
3. Total experience
4. Teaching and administrative experience in the system
5. Teaching and administrative experience not in the system

B. Teacher

1. Age
2. Salary
3. Total teaching experience
4. Experience in the system
5. Education
6. Certificate
7. Marital status
8. Teachers' visits to pupils' homes per teacher
9. Supervisors' visits to the schools per teacher

C. Pupils

1. Free lunches per child
2. Intelligence quotient (third grade)
3. Mobility per pupil
4. Per cent attendance



## II. Physical setting factors

- A. Acres in site
- B. Distance from the service center
- C. Temporary classrooms per teacher
- D. Library books per pupil
- E. Average class size
- F. Membership (kindergarten through grade six)
- G. P. T. A. membership
- H. P. T. A. membership per pupil

Information about the quantitative elements surrounding the teacher-learning situation of the elementary schools was recorded from the reports of the departments and agencies responsible for the making of the routine reports. The quantitative variations in the elements in the two groups have been shown and discussed in Chapter IV.

### Differences in Quality

Differences in the quality of education in the present study were determined by supervisors' judgments regarding the rate of occurrence of good and outstanding teaching practices. The results of scores on certain objective tests were used to help describe the quality of educational outcomes.

The use of human judgments as the basis for determining a quality of education seemed desirable. In the first place, the base of supervisors' judgments seemed much broader than any combination of objective tests available, and the quality of education at any one given time is discernible in the rate of occurrence of good and outstanding teaching practices. In the second place, supervisors' judgments were likely to have been based upon some of the objective test results. Finally, the judgments of the supervisors might have been reflective of the action of educational leadership.

### The Procedure for Classifying Schools

Elementary supervisors in the system were asked to participate in judging the rate of frequency of good and outstanding teaching practices in each of the schools in the sample. Every elementary supervisor who had an area of responsibility in the elementary schools was asked to meet with the writer to participate in the study. Eight of the supervisors and the writer met at a specified time and place. An instruction sheet<sup>1</sup> with forty slips of paper, each containing the name of one elementary school, was given to every supervisor. The slips of paper were arranged in alphabetical order according to school name. The entire instruction sheet was read aloud while the rest of the group followed the reader's place on the page.

Discussion was called for. Only one question was recorded. "What is meant by frequency--the rate or the actual number of occurrences?" An explanation was made that a school should be placed in a group according to the number of good and outstanding teaching practices per classroom. Each supervisor then made judgments in his particular area of responsibility about the forty schools.

When the supervisors returned the slips containing the names of the schools which they had grouped, all slips in groups A, B, and C were assigned values of 3, 2, and 1, respectively. The twelve schools with the highest scores were selected. The twelve schools with the lowest scores were selected. However, one supervisor's judgment was weighted so that one of four schools which had the same score could be selected as the twelfth school. The judgment of the supervisor who had a large

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<sup>1</sup>Appendix A, Memorandum to All Elementary Supervisors.

responsibility in the elementary schools was weighted by adding his judgments to the score of the four schools in question.

### Statistical Methods

Statistical methods were applied in two areas of this study. Certain tests of significance were made regarding the quality of education and variations in the quantities of the elements. In both situations, the statistical difference between the mean and the statistical difference between proportions were used to show the degree of chance to be taken in accepting or rejecting a null hypothesis about differences appearing in the two groups of schools. A level of significance of .05 was used to reject a null hypothesis.

### Summary

The procedure of the current study involved the selection of the population, the selection of elements, the determination of differences in the quality of education, the classification of schools, and a description of statistical methods for analyzing variations in quantity in light of differences in quality of education at the extremes.

## CHAPTER III

### A QUALITY OF EDUCATION

The determination of the quality of education has been a subject of debate. There has been disagreement about the goals and there has been some question about the proper technique for measuring quality. Since debate and disagreement have occurred about the quality of education and techniques for measuring it, the quality and the techniques used for determining that quality have been described in this chapter. Four criteria were used as the bases of a quality of education. Supervisors' judgments determined one of three quality groups into which each school was placed. Objective test data have been shown to better describe the quality of education present.

#### Bases of a Quality

Differences in the quality of education in each elementary school were determined by supervisors' judgments of the rate of frequency of good and outstanding teaching practices, particularly in each supervisor's area of responsibility. The focal point of the supervisors' judgments was directed at the four major areas of good and outstanding teaching practices listed below:

1. The teaching of basic skills
  - a. Teaching of basic skills in life-like situations
  - b. Variety of basic skills taught

2. The teaching of areas of knowledge
  - a. Teaching facts in relation to their meaning and usefulness
  - b. Breadth of knowledge areas taught, including variety of resources of knowledge
3. Discovery and development of special aptitudes of individuals through tests and follow-up activities
4. Development of gross behavior patterns such as citizenship, character and thinking<sup>1</sup>

#### The Results of Classifying Schools

An inspection of Table I shows that in the group of schools selected by the supervisors as having the highest rate of occurrence of good and outstanding teaching practices (schools I through XII) only 2/96 of the judgments placed a school in the lower frequency group. Similarly, only 7/96 of the judgments regarding the lower frequency group (schools XXIX through XL) had a high frequency rating.

A null hypothesis was made to the effect that the differences in the average scores of each school in the two groups were no greater than differences which could be expected to arise by chance fluctuations. The hypothesis was tested by the statistical differences between the means technique. Since the critical ratio shown in Table II was 4.13, the null hypothesis was rejected because a difference as great or greater could be expected only 1 time in 10,000.

#### Two Tests of Reasonableness

Two tests of reasonableness were applied in scoring and ranking schools in each group. To test the reasonableness of the supervisors' judgments, the writer, using an observer's check list, observed four schools in each group ranked 1, 4, 7, and 10.

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<sup>1</sup>Appendix A, Memorandum to All Elementary Supervisors.

TABLE I

SCORED JUDGMENTS OF SUPERVISORS ABOUT A DIFFERENT SEGMENT  
OF TEACHING PRACTICES IN ELEMENTARY SCHOOLS

| School  | Supervisor |   |   |   |   |   |   |   | Total | Mean |
|---------|------------|---|---|---|---|---|---|---|-------|------|
|         | S          | T | U | V | W | X | Y | Z |       |      |
| I       | 3          | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 24    | 3.00 |
| II      | 2          | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 22    | 2.75 |
| III     | 2          | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 22    | 2.75 |
| IV      | 3          | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 21    | 2.62 |
| V       | 3          | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 21    | 2.62 |
| VI      | 3          | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 21    | 2.62 |
| VII     | 3          | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 20    | 2.50 |
| VIII    | 1          | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 20    | 2.50 |
| IX      | 3          | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 19    | 2.37 |
| X       | 2          | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 18    | 2.25 |
| XI      | 3          | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 18    | 2.25 |
| XII     | 2          | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 18    | 2.25 |
| XXIX    | 2          | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 13    | 1.62 |
| XXX     | 1          | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 12    | 1.50 |
| XXXI    | 2          | 1 | 1 | 3 | 1 | 1 | 1 | 2 | 12    | 1.50 |
| XXXII   | 1          | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 12    | 1.50 |
| XXXIII  | 1          | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 12    | 1.50 |
| XXXIV   | 1          | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 12    | 1.50 |
| XXXV    | 1          | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 11    | 1.37 |
| XXXVI   | 2          | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 11    | 1.37 |
| XXXVII  | 1          | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 11    | 1.37 |
| XXXVIII | 1          | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 11    | 1.37 |
| XXXIX   | 2          | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 10    | 1.25 |
| XL      | 1          | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 9     | 1.12 |

TABLE II

COMPARISON OF THE SUPERVISORS' JUDGMENT SCORES (MEAN)  
BETWEEN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Mean | SD   | SD <sub>n</sub> | SE <sub>d</sub> |
|-----------------|------|------|-----------------|-----------------|
| Most            | 2.32 | .73  | .22             | .22             |
| Least           | 1.41 | .13  | .04             |                 |
| Critical Ratio  |      | 4.13 | P Level         | .0001           |

An observer's check list, The Growing Edge,<sup>2</sup> was adapted<sup>3</sup> and used in scoring the eight schools at one grade level. Two correlations were then calculated by the rank difference method between the observer's rank score and the two other judgments. The first correlation was calculated between the combined judgments of the supervisors and the observer's score. The second correlation was calculated between the judgment of a supervisor most closely associated with the level used in The Growing Edge and the observer's rank score.

The correlation between the original supervisors' judgments and the observer's ranking of the eight schools was .58. The correlation between one supervisor's judgment of the eight schools at a particular level and the observer's rank score was .75.

In the first instance the correlation was not very great. Even if it were great, it would not necessarily prove or disprove anything because the judgments were aimed at all levels and departments while the observer's score was aimed at only one level and a few departments.

In the second correlation of .75, the correlation attempted to check the validity of a particular supervisor's judgment about a particular level. However, the observer's check list was not limited to a specific area while the supervisor's judgment was made concerning the broadest area for which he was qualified to judge.

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<sup>2</sup>Paul R. Mort, William S. Vincent, and Clarence A. Newell, The Growing Edge: An Instrument for Measuring the Adaptability of School Systems (New York, 1946).

<sup>3</sup>Appendix B, Observer's Score Sheet Adapted from The Growing Edge.

Three Additional Measures of Quality

Three additional measures of the quality of education have not been intended for validating criteria, but rather they have been shown to throw some light on the differences in particular kinds of quality. The three measures are handwriting, reading, and expected reading achievement. Comparisons were made between the two groups of schools with different qualities by using the statistical difference between the mean or the statistical difference between proportions.

Differences between the two groups of schools in the three measures of achievement occur to a greater degree than could be expected to arise by chance. The direction of the difference shows that the group of schools with the most frequently occurring good and outstanding teaching practices have the highest achievement. Table III reveals that a greater percentage of pupils received sixth grade handwriting certificates in the

TABLE III  
PERCENTAGE OF SIXTH GRADE PUPILS RECEIVING  
HANDWRITING CERTIFICATES

| Frequency Group     | Number | Percentage      | Total |
|---------------------|--------|-----------------|-------|
| Most                | 964    | 67.0            | 1,439 |
| Least               | 376    | 46.8            | 804   |
| Total               | 1,340  | 59.7            | 2,243 |
| Critical Ratio 9.40 |        | P Level .000001 |       |

group of schools classified as most frequently. Table IV shows the schools differed significantly in second grade reading achievement and the direction was in favor of the most frequently group. Evidence has been



TABLE IV  
MEAN SECOND GRADE CHICAGO READING TEST SCORES

| Frequency Group | Mean | SD   | SD <sub>m</sub> | SE <sub>d</sub> |
|-----------------|------|------|-----------------|-----------------|
| Most            | 2.76 | .187 | .056            | .093            |
| Least           | 2.49 | .247 | .074            |                 |
| Critical Ratio  |      | 2.90 | P Level         | .01             |

provided in Tables V, VI, and VII that the pupils in the most frequently group of schools achieved at or above expectancy in fourth, fifth, and sixth grade reading more often than pupils in the other group.

TABLE V  
PERCENTAGES OF FOURTH GRADE PUPILS READING AT OR ABOVE EXPECTANCY

| Frequency Group | Number | Percentage | Total   |         |
|-----------------|--------|------------|---------|---------|
| Most            | 868    | 74.3       | 1,168   |         |
| Least           | 422    | 60.9       | 693     |         |
| Total           | 1,290  | 69.3       | 1,861   |         |
| Critical Ratio  |        | 6.06       | P Level | .000001 |

TABLE VI  
PERCENTAGES OF FIFTH GRADE PUPILS READING AT OR ABOVE EXPECTANCY

| Frequency Group | Number | Percentage | Total   |       |
|-----------------|--------|------------|---------|-------|
| Most            | 883    | 86.4       | 1,022   |       |
| Least           | 476    | 78.6       | 606     |       |
| Total           | 1,359  | 83.5       | 1,628   |       |
| Critical Ratio  |        | 4.14       | P Level | .0001 |

TABLE VII

## PERCENTAGES OF SIXTH GRADE PUPILS READING AT OR ABOVE EXPECTANCY

| Frequency Group     | Number | Percentage     | Total |
|---------------------|--------|----------------|-------|
| Most                | 916    | 84.3           | 1,087 |
| Least               | 468    | 75.1           | 623   |
| Total               | 1,384  | 80.9           | 1,710 |
| Critical Ratio 4.65 |        | P Level .00001 |       |

In all instances, the schools with the most frequently occurring good and outstanding teaching practices scored significantly higher in handwriting, reading, and expected reading achievement. However, the following questions about the quality of education in the present study still exist:

1. Is a general quality of education composed of many specific qualities or is there such a thing as a general quality of education?
2. Which comes first, the acquisition of certain skills by the pupils or teaching practices which are considered good and outstanding?
3. Is there a significant relationship between teaching practices considered good and outstanding in the areas of reading and handwriting and all other areas?
4. Is there a significant relationship between handwriting, reading, and expected reading achievement and achievement in other areas?

### Summary

The basis and the method for determining different qualities of education used in this study were described. In addition, information about certain types of achievement was discussed.

Supervisors' judgments were used to categorize each elementary school in one American city into one of three groups of schools having different rates of occurrence of good and outstanding teaching practices. Correlations were made by the rank difference method of four schools in each group. The rank correlation between an observer's check list at one grade level and the supervisors' pooled judgments was .58. The rank correlation between the observer's check list at one grade level and one supervisor's ranking at the same grade level for the eight schools was .75.

Objective test data were analyzed to show some particular kinds of differences in the quality of education. The group of schools judged to have the most frequently occurring good and outstanding teaching practices and the schools judged to have the least frequently occurring good and outstanding teaching practices were compared on three objective test results. Statistical differences at the .001 level occurred in pupil achievement in handwriting and expected achievement in reading. A statistical difference at the .01 level occurred in reading achievement. In all three situations the scores favored the schools judged as having the most frequently occurring good and outstanding teaching practices.

The differences in quality of education of the two schools seemed to be sufficiently discernible and partially descriptive. Nevertheless, there seemed to be several questions concerning the quality of education. The questions centered around the four points listed below:

1. What are the relationships between specific types of quality and a general quality of education?
2. Are teaching practices considered good and outstanding a result of high achievement or is high achievement a result of teaching practices considered good and outstanding?
3. What is the relationship between particular achievements and other achievements?
4. Should a criterion of good and outstanding teaching practices be concerned with the motivation and growth phases as well as the achievement phase?

## CHAPTER IV

### THE QUANTITATIVE ELEMENTS

There were a number of different elements existing in the life span of all the elementary schools. Elements appeared in the schools in different quantities. Since this was not merely a study to identify elements but rather a study of the differences in quality associated with variations in quantities of elements, it seemed appropriate to use null hypotheses and a level of significance of .05 as a basis for rejecting or accepting an hypothesis. The following paragraphs show and interpret the data regarding each hypothesis made in Chapter I. In order to test each hypothesis, a null hypothesis was made about each element. However, the hypotheses have been stated positively here.

#### Basis for Interpreting Analysis

The extent of the analysis used in the present study does not permit conclusions to be formed regarding whether or not an element is causal, supporting a causal element, or symptomatic. The analysis does not allow conclusions to be drawn about the upper or lower limits of the quantities of some of the elements. The statistical treatment does permit accepting or rejecting an hypothesis when as great a difference in quantity could be expected to appear by chance alone only one time in one hundred (.01 level) and five times in one hundred (.05 level). In the current

study differences occurring by chance more than five times in one hundred have been considered too great to reject a null hypothesis.

### Hypothesis I

#### Statement of the Hypothesis

Elements in the background (age, salary, and experience) of the school's principal are significantly related to the quality of education in that elementary school.

The elements in the background of the school principal (Table VIII) are not significantly related to the quality of education. However, the element having the highest critical ratio is the age of the principal (-1.68 CR). The principals tended to be younger in age in the schools

TABLE VIII<sup>1</sup>

THE CRITICAL RATIO OF ELEMENTS SURROUNDING THE BACKGROUND  
OF THE SCHOOL PRINCIPALS BETWEEN TWO  
GROUPS OF SCHOOLS

| Element                                              | CR    | P Level |
|------------------------------------------------------|-------|---------|
| 1. Age                                               | -1.68 | .20     |
| 2. Salary                                            | 1.23  | .30     |
| 3. Total experience (teaching and<br>administration) | 0.73  | .50     |
| 4. Experience in the system                          | 0.43  | .70     |
| 5. Experience not in the system                      | -1.12 | .30     |

having the higher quality of education. Neither the total experience (.73 CR) nor experience as principals and teachers in the system (.43 CR) was very significant. Salary (1.23 CR) and experience not in the system

<sup>1</sup>Appendix C, Table XIII.

(-1.12 CR) had the next largest critical ratio of the elements analyzed. Since a lower age and a higher salary have the highest critical ratios, and part of the salary base was the number of years that a principal had been in the system, there was some evidence (but not conclusive evidence) to indicate that the principals of the schools with a higher quality of education tended to be younger and more experienced as principals in the system.

Although the current study did not supply data regarding the nature of the particular schools in which the principal received his training, it was entirely possible that the lower quality schools were training schools for principals in many instances. It was also possible that successful principals were assigned to high prestige schools.

## Hypothesis II

### Statement of the Hypothesis

Elements in the background (age, salary, experience, degree, certification, marital status, visits to pupils' homes, and supervisor visits) of the elementary schools' teachers are significantly related to the quality of education in that elementary school.

The second hypothesis was accepted after a null hypothesis was rejected. Elements in the background of teachers (Table IX) appeared significantly related to the quality of education. The largest critical ratios found in the background of teachers were visits by the teacher to the homes of pupils per teacher (6.23 CR), salary above \$4,199 (5.46 CR), and 0 - 8 years experience in the system (-5.23 CR). A greater number of teachers with 27 years or more of total experience (3.20 CR), 24 years

TABLE IX<sup>2</sup>

THE CRITICAL RATIO OF ELEMENTS SURROUNDING THE BACKGROUND  
OF THE TEACHERS BETWEEN TWO GROUPS OF SCHOOLS

| Element                                                   | CR    | P Level |
|-----------------------------------------------------------|-------|---------|
| 1. Age                                                    |       |         |
| 39 years of age and below                                 | -1.58 | .20     |
| 40 - 49                                                   | -1.25 | .30     |
| 50 and above                                              | 2.84  | .01     |
| 2. Salary                                                 |       |         |
| Below \$4,200                                             | -5.46 | .000001 |
| Below \$3,500                                             | -3.89 | .001    |
| Above \$4,199                                             | 5.46  | .000001 |
| Above \$4,899                                             | 3.63  | .001    |
| 3. Total Experience                                       |       |         |
| 27 or more years                                          | 3.20  | .01     |
| 18 - 26                                                   | .64   | .50     |
| 9 - 17                                                    | -1.04 | .30     |
| 0 - 8                                                     | -2.56 | .05     |
| 4. Experience in system                                   |       |         |
| 24 or more years                                          | 3.30  | .001    |
| 8 - 23                                                    | 3.13  | .01     |
| 0 - 7                                                     | -5.23 | .000001 |
| 5. Education                                              |       |         |
| Masters degree                                            | 3.87  | .001    |
| 6. Certification                                          |       |         |
| Standard                                                  | 0     | 1.00    |
| 7. Marital status of teachers                             |       |         |
| Married                                                   | -2.28 | .05     |
| 8. Visits by the teachers to pupils'<br>homes per teacher | 6.23  | .000001 |
| 9. Supervisors' visits to the<br>teachers per teacher     | 2.13  | .05     |

<sup>2</sup>Appendix C, Tables XIV, XV, XVI, XVII, XVIII, XIX, XX, XXI, and XXII.



or more of experience in the system (3.30 CR), 8 - 23 years of experience in the system (3.13 CR), masters' degrees (3.87 CR), and 50 years of age or more (2.84 CR) were teaching in the schools which had the greatest frequency of good and outstanding teaching practices. All of the elements just mentioned had differences beyond the .01 level. Single marital status (2.28 CR) and the number of supervisor visits per teacher (2.13 CR) were significant beyond the .05 level.

The type of certificate did not seem to be important (0). However, the number of teachers with masters' degrees was significant at the .001 level. The reason that the type of certificate showed a low critical ratio might have been the nature of the gradual change in certification laws from life certificates to standard certificates.

The statement that teachers above 49 years of age are better teachers than teachers below 50 years of age would not be justifiable on the basis of the evidence presented. In a similar fashion, statements regarding teachers with particular salaries, total experiences, and experiences in the system would not be justifiable either. The proper balance of age, salary, and experience might be the key to the success of a school staff.

### Hypothesis III

#### Statement of the Hypothesis

Elements in the background (economic status, intelligence quotient, mobility, and per cent attendance) of the pupils are significantly related to the quality of education in elementary schools.

The hypothesis concerning the background of the pupils (Table X) was accepted after a null hypothesis was rejected. Four of the elements had differences which were significant at the .0001 level. The

TABLE X<sup>3</sup>

THE CRITICAL RATIO OF THE ELEMENTS SURROUNDING THE PUPILS  
BETWEEN TWO GROUPS OF SCHOOLS

| Element                                            | CR     | P Level |
|----------------------------------------------------|--------|---------|
| 1. Free lunches per child                          | -52.1  | .000001 |
| 2. Kuhlmann-Anderson third grade intelligence test | 4.00   | .0001   |
| 3. Mobility per pupil*                             | - 5.83 | .000001 |
| 4. Per cent attendance*                            | 1.64   | .20     |

\* PXQ was equal to 50 times 50 rather than (P) times (1 - P)

number of free lunches per child, an indicator of economic level, had the highest critical ratio (-52.1). A measure of mobility had a critical ratio of -5.83. The negative critical ratio means the schools which had the least frequently occurring good and outstanding teaching practices had the greatest numbers of free lunches and mobile students. The schools with the most frequently occurring good and outstanding teaching practices had pupils with significantly higher I. Q. scores (4.00 CR).

#### Hypothesis IV

##### Statement of the Hypothesis

Elements in the physical setting of an elementary school (acres in site, distance from service center, temporary classrooms per teacher, library books per pupil, teacher per pupil, membership of school, and P. T. A. membership) are significantly related to the quality of education in elementary schools.

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<sup>3</sup>Appendix C, Tables XXIII, XXIV, XXV, and XXVI.

Some of the elements in the physical setting (Table XI) were significantly related to the quality of education in elementary schools. The number of library books per child (9.79 CR), temporary classrooms (-6.79 CR), the distance from the education service center (-5.15 CR), membership (3.36 CR), and P. T. A. membership (3.44 CR) were the elements most significantly related to the quality of education. A level of significance of .001 occurred for the five elements just mentioned. Average class size (1.96 CR) and acres in the site space (.34 CR) do not

TABLE XI<sup>4</sup>

THE CRITICAL RATIO OF THE ELEMENTS SURROUNDING THE PHYSICAL SETTING  
BETWEEN TWO GROUPS OF SCHOOLS

| Element                                         | CR    | P Level |
|-------------------------------------------------|-------|---------|
| 1. Acres in site                                | .34   | .80     |
| 2. Distance from service center                 | -5.15 | .000001 |
| 3. Temporary classrooms per teacher             | -6.79 | .000001 |
| 4. Library books per pupil                      | 9.79  | .000001 |
| 5. Average class size                           | 1.96  | .20     |
| 6. Membership kindergarten through<br>grade six | 3.36  | .001    |
| 7. P. T. A. membership                          | 3.44  | .001    |

show a large enough critical ratio to warrant accepting these elements as significant.

Elements with Significant Differences

The most significant differences between the two groups of schools having different rates of frequency of good and outstanding teaching

<sup>4</sup>Appendix C, Tables XXVII, XXVIII, XXIX, XXX, XXXI, XXXII, and XXXIII.

practices (Table XII) were the number of free lunches per child (-52.1 CR), library books per pupil (9.79 CR), temporary classrooms per teacher (-6.79 CR), number of teacher visits to pupils' homes per teacher (6.23 CR), mobility per pupil (-5.83 CR), salary of teachers below \$4200 (-5.46 CR), teachers with 0 - 7 years of experience in the system (-5.23 CR), miles from the education service center (-5.15 CR), intelligence quotient (4.00 CR), teachers with salaries below \$3500 (-3.89 CR), teachers with masters' degrees (3.87 CR), teachers with salaries above \$4899 (3.63 CR), P. T. A. membership (3.44 CR), school membership kindergarten through grade six (3.36 CR), and number of teachers with 24 years or more of experience in the system (3.30 CR). All of these areas with critical ratios of 3.30 or larger indicate a level of significance of at least .001. In addition, three elements in the background of the teachers were significant at the .01 level and three were significant at the .05 level. A total of twenty-one elements were significant at the .05 level.

#### An Interpretation

The elements with the greatest significant differences between the two groups of schools with different rates of occurrence of good and outstanding teaching practices have been shown in Table XII. The differences shown in that table were accepted as true differences at the .001 level. Some of the elements might be causal, supporting a causal element, or symptomatic. Some of the elements could be controlled or balanced in various degrees by management. In some cases the element might be controllable and influence the quality of education, controllable and support an influential element, controllable and symptomatic but not influential,

TABLE XII

ELEMENTS WITH THE CRITICAL RATIO, P LEVEL, AND PER CENT  
OR MEAN OF SCHOOLS WITH DIFFERENT RATES OF  
FREQUENCY OF GOOD AND OUTSTANDING  
TEACHING PRACTICES

| Element                                               | CR     | P Level | School Frequency Group |        |
|-------------------------------------------------------|--------|---------|------------------------|--------|
|                                                       |        |         | Most                   | Least  |
| Free lunches per child                                | -52.1  | .000001 | 7.4%                   | 38.7%  |
| Pupil per library book                                | - 9.79 | .000001 | 30.6%                  | 34.8%  |
| Temporary classrooms per teacher                      | - 6.79 | .000001 | 12.6%                  | 40.7%  |
| Number of teacher visits to pupils' home per teacher  | 6.23   | .000001 | 44.0%                  | 67.0%  |
| Mobility per pupil                                    | - 5.83 | .000001 | 7.14%                  | 11.56% |
| Salary of teachers below \$4200                       | - 5.46 | .000001 | 54.4%                  | 28.1%  |
| Experience in the system 0 - 7 years                  | - 5.23 | .000001 | 51.0%                  | 75.8%  |
| Distance from the education service center (miles)    | - 5.15 | .000001 | 3.47M                  | 5.17M  |
| I. Q. (Kuhlmann-Anderson)                             | 4.00   | .0001   | 102.6M                 | 98.2M  |
| Teachers with salaries below \$3500                   | - 3.89 | .0001   | 8.0%                   | 20.9%  |
| Teachers with masters' degrees                        | 3.87   | .0001   | 37.1%                  | 19.0%  |
| Teachers with salaries above \$4899                   | 3.63   | .001    | 16.5%                  | 5.1%   |
| P.T.A. membership                                     | 3.44   | .001    | 892M                   | 568M   |
| Membership, kindergarten through grade six            | 3.36   | .001    | 891M                   | 579M   |
| Experience of teachers in the system 24 years or more | 3.30   | .001    | 24.5%                  | 11.8%  |

or not controllable and either causal, supporting a causal element, or merely symptomatic. In any case, a change in one element might lead to different relationships between the elements and the quality of education.

The number of free lunches per child is controllable and seems to be symptomatic of elements which are causal or causal supporting. The number of free lunches may be reduced in the schools with a low quality of education, but it seems that the arbitrary reduction alone would not

improve the quality of education. The quality of education might be improved if the socio-economic culture of the pupils of the school were improved. The socio-economic culture might not be controllable by management, but it might influence the pupils who might be a causal element in the quality of education.

The number of temporary classrooms are controllable, but might be more symptomatic than causal because this element might be indicative of the newness, the instability, and the socio-economic setting of the school. In considering another budgetary item, the number of library books per child are controllable, but this element might be more causal than symptomatic.

Teachers' salaries are controllable to a degree and might support a causal element rather than being a causal element. Teachers' salaries might not directly affect the instructional program but higher teachers' salaries might permit obtaining, maintaining, and retaining better teachers. Better teachers might influence the instructional program favorably.

The assignment of the number of teachers with different years of experience in the system can be manipulated. Experience in the system may be a causal element or an element supporting a causal element. There could be an impact upon the teachers if an assignment were manipulated without consideration of the teacher's feelings. In turn, teachers would interact with other elements which might be causal, causal supporting or symptomatic. The result of the interaction of the elements might cause a time, place, quantity, or quality difference in any and all of the elements.

### To Be Interpreted

The writer was puzzled by some questions which arose during the course of the present study. Assumptions have been used to draw attention to the questions.

If library books were a causal element in the quality of education and if the total number of library books showed a much higher critical ratio than the number of library books per child which showed a high critical ratio, then would the important consideration in the quality of education be the total number of library books or the number of library books per child? Would it be possible to develop a formula from these two critical ratios which would indicate the optimum number of books for a school library?

Similar points could be made about the total expenditures and expenditures per pupil or the total P. T. A. membership and the P. T. A. membership per child. Might the number of library books, the expenditures, and the number of P. T. A. members be indicative of optimal sizes of schools?

### Implications

One hypothesis was rejected. Three were accepted. Of the factors studied, the elements in the background of the principal were not significantly related to the quality of education. Elements in the background of the teachers and pupils and elements in the physical setting were significantly related to the quality of education. Although the hypotheses about the four major areas were rejected or accepted, the various elements which make up the areas are also important. Hence, the following questions are indicative of unsolved problems:

1. How can the causal, causal supporting, or symptomatic elements be identified?
2. How important is each element in the various areas?
3. To what extent can educational leadership use the information in this study for making more rapid adjustments?
4. Will raising or lowering the quantity of any or all the significant elements improve the quality of education? Will the raising of teachers' salaries result in educational improvement?
5. Will the arbitrary adjustment by administration of the elements which were significant in the present study result in the improvement of achievement of all students?

#### Summary

Certain elements were significantly related to the quality of education determined in this study. Other elements were not significantly related.

The elements in the areas of teacher background, pupil background, and in the physical setting were significant. Elements in the principal's background were not statistically significant. Eight elements were statistically significant at the .000001 level; three additional elements were statistically significant at the .0001 level; and four more elements were statistically significant at the .001 level. A total number of fifteen elements were significant at the .001 level. A total of twenty-one elements were significant at the .05 level.

In addition, several unsolved questions seemed important. These questions group around the following areas:



1. What will be the result of administratively adjusting the elements to coincide with the statistical significance?
2. What elements are causal, causal supporting, or symptomatic to the quality of education?
3. To what extent can the elements in the study be used to judge the quality of education?

## CHAPTER V

### SUMMARY

Differences exist. A key for educational leadership in improving the quality of public elementary education is a study of the differences in the qualities of education associated with variations in the quantity of each element in or surrounding education experiences of elementary school children.

Differences in the quality of education in each elementary school were determined by supervisors' judgments of the rate of occurrence of good and outstanding teaching practices in the areas for which each supervisor was responsible. Each elementary school was placed in one of three categories. Since differences are most easily discernible at the extremes, the top and bottom groups were used for statistical comparison. Objective test data were analyzed to show some particular kinds of differences in the quality of education. Statistical differences at the .001 level occurred in pupil achievement in handwriting, expected achievement in reading, and at the .01 level in reading achievement. The direction of the differences favored the schools with the highest rate of occurrence of good and outstanding teaching practices. Although differences in the quality of education did occur, there seemed to be the following unanswered questions concerning the quality of education:

1. What are the relationships between specific types of quality and a general quality of education?

2. Are teaching practices considered good and outstanding a result of high achievement or is high achievement a result of teaching practices considered good and outstanding?
3. What is the relationship between particular achievements and other achievements?
4. Should a criterion of good and outstanding teaching practices be concerned with the motivation and growth phases as well as the achievement phase?

Certain elements were significantly related to the quality of education determined in this study. Elements in the background of the teachers and pupils and the physical setting were significantly related to the quality of education. Fifteen elements were significant at the .001 level, and twenty-one elements were significant at the .05 level. The critical ratios of the elements in the background of the principal were not great enough to accept as being significant. The following questions seemed to be important:

1. What will be the result of administratively adjusting the elements to coincide with the statistical significance?
2. What elements are causal, causal supporting, or symptomatic?
3. To what extent can the elements in the study be used to judge the quality of education?

#### Additional Implications

Some implications were suggested in reference to the quality of education and in reference to the quantitative elements. Additional implications appear when the quality of education and the quantity of the

elements are analyzed together. The following questions are indicative of important implications:

1. Is the goodness of a teaching practice based upon a standard of achievement, the background and growth of the pupil, or a combination of the two?
2. Are the same teaching practices equally suited to pupils with different achievements?
3. What type of teaching practices should receive more emphasis with low achievers? With high achievers?
4. Do children in a specific economic group have problems unique to them and by which the teacher can help them make a more rapid adjustment?
5. To what extent are differences in certain types of achievement more a matter of pupil background than of teaching practices?
6. To what extent are differences in certain types of achievement more a matter of teaching practices than pupil background?
7. Do the intelligence quotients and the expected achievement scores in reading consider enough of the background of pupils?

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## APPENDICES

To: All Elementary School Supervisors

From: Joe Tidrow

In trying to determine some of the factors associated with good and outstanding practices in the elementary schools, I shall appreciate your help in locating degrees of successful practices in the elementary schools. I should like to ask you to use your judgment in grouping elementary schools into three groups of about equal numbers according to the following groupings:

Group A: The elementary schools in which you have reason to believe that good and outstanding instructional practices occur very frequently. That is, the schools which have kept abreast of progress and promoted it.

Group B: The elementary schools in which you have reason to believe that good and outstanding practices occur, but not as frequently as in Group A. That is, the schools which have been only fairly successful in keeping abreast of progress and promoting it.

Group C: The elementary schools in which you have reason to believe that good and outstanding practices occur with the least frequency and which have been the least successful in keeping abreast of progress or in promoting it.

In other words, group the schools into three groups of about equal numbers according to the degree to which each school has been able to adjust its instructional practices to meet the needs of pupils in that school, particularly in the area for which you are responsible.

It is suggested that the focal point of your judgment should be placed upon practices which are particularly organized around the four major areas listed below:

1. The teaching of the basic skills
  - a. Teaching of basic skills in life-like situations
  - b. Variety of basic skills taught
2. The teaching of areas of knowledge
  - a. Teaching facts in relation to their meaning and usefulness
  - b. Breadth of knowledge areas taught, including variety of resources of knowledge
3. Discovery and development of special aptitudes of individuals through tests and follow-up activities
4. Development of gross behavior patterns such as citizenship, character and thinking



For your convenience I have written the name of each school on a separate slip of paper for easy grouping. I should appreciate it very much if I could have this information by Thursday evening, April 7.

Thank you very much, and of course the information about each school will be confidential.

The four major areas were adapted from The Growing Edge.<sup>1</sup>

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<sup>1</sup>Paul R. Mort, William S. Vincent, and Clarence A. Newell, The Growing Edge: An Instrument for Measuring the Adaptability of School Systems (New York, 1946), p. ii.

CAUTION: ANY SINGLE PRACTICE OBSERVED MAY BE USED ONLY ONCE AS AN EXAMPLE

ELEMENTARY FORM<sup>1</sup> (Adapted)

I. BASIC SKILLS

A. Life-like Situations

Example:

- ( ) 1. Writing
- ( ) 2. Reading
- ( ) 3. Arithmetic
- ( ) 4. Speech
- ( ) 5. Teacher

B. Variety

Example:

- ( ) 1. Reading
  - a
  - b
  - c
  - d
  - e
  - f
  - g. Additional Example:

- ( ) 2. Arithmetic

- a
- b
- c
- d
- e

f. Additional Example:

- ( ) 3. Writing

- a
- b
- c
- d
- e

f. Additional Example:

- ( ) 4. Speech

- a
- b
- c
- d
- e
- f

g. Additional Example:

II. AREAS OF KNOWLEDGE (Pages 5-8 in Test Booklet)

B. Breadth of Knowledge

Example:

- ( ) 1. Printed materials

- a
- b
- c
- d
- e
- f

g. Additional Example:

- ( ) 3. Variety of experiences

- a
- b
- c
- d
- e

f. Additional Example:

<sup>1</sup>Paul R. Mort, William S. Vincent, and Clarence A. Newell, The Growing Edge: An Instrument for Measuring the Adaptability of School Systems (New York, 1946).

TABLE XIII

COMPARISON OF THE BACKGROUND OF THE SCHOOL PRINCIPAL  
IN THE TWO GROUPS OF SCHOOLS

| Characteristic<br>of Principals | Mean  |       | S.D. |      | SE <sub>m</sub> |      | SE <sub>d</sub> | CR    | P<br>Level |
|---------------------------------|-------|-------|------|------|-----------------|------|-----------------|-------|------------|
|                                 | MF*   | LF*   | MF*  | LF*  | MF*             | LF*  |                 |       |            |
| 1. Age                          | 48.09 | 52.25 | 6.00 | 5.65 | 1.81            | 1.70 | 2.48            | -1.68 | .20        |
| 2. Salary                       | 5,750 | 5,419 | 646  | 612  | 195             | 185  | 268             | 1.23  | .30        |
| 3. Total experience             | 23.83 | 26.17 | 7.01 | 8.04 | 2.11            | 2.42 |                 | .73   | .50        |
| 4. Experience in system         | 14.75 | 13.25 | 7.6  | 8.63 | 2.29            | 2.60 | 3.47            | .43   | .70        |
| 5. Experience not in<br>system  | 9.08  | 12.92 | 4.35 | 7.40 | 2.23            | 2.59 | 3.42            | -1.12 | .30        |

\*MF has been used to mean the group of schools in which good and outstanding teaching practices occurred most frequently.

\*LF has been used to mean the group of schools in which good and outstanding teaching practices occurred least frequently.

TABLE XIV

## COMPARISON OF THE AGES OF TEACHERS IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Age      |      |         |      |              |      | Total |
|-----------------|----------|------|---------|------|--------------|------|-------|
|                 | Below 40 |      | 40 - 49 |      | 50 and above |      |       |
|                 | No.      | %    | No.     | %    | No.          | %    |       |
| Most            | 71       | 27.2 | 90      | 34.5 | 100          | 38.3 | 261   |
| Least           | 61       | 34.3 | 72      | 40.4 | 45           | 25.3 | 178   |
| Total           | 132      | 30.1 | 162     | 36.9 | 145          | 33.0 | 439   |
| Critical Ratio  | -1.58    |      | -1.25   |      | 2.84         |      |       |
| P Level         | .20      |      | .30     |      | .01          |      |       |

TABLE XV

## COMPARISON OF THE SALARY OF TEACHERS IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Salary       |      |              |      |              |      | Total |
|-----------------|--------------|------|--------------|------|--------------|------|-------|
|                 | Below \$3500 |      | Above \$4199 |      | Above \$4899 |      |       |
|                 | No.          | %    | No.          | %    | No.          | %    |       |
| Most            | 21           | 8.0  | 142          | 54.4 | 43           | 16.5 | 261   |
| Least           | 37           | 20.8 | 50           | 28.1 | 9            | 5.1  | 178   |
| Total           | 58           | 13.2 | 192          | 43.7 | 52           | 11.8 | 439   |
| Critical Ratio  | -3.89        |      | 5.46         |      | 3.63         |      |       |
| P Level         | .0001        |      | .000001      |      | .001         |      |       |

TABLE XVI

COMPARISON OF THE TOTAL YEARS OF EXPERIENCE OF TEACHERS  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Years |      |        |      |         |      |            |      | Total |
|-----------------|-------|------|--------|------|---------|------|------------|------|-------|
|                 | 0 - 8 |      | 9 - 17 |      | 18 - 26 |      | 27 or more |      |       |
|                 | No.   | %    | No.    | %    | No.     | %    | No.        | %    |       |
| Most            | 73    | 28.0 | 54     | 20.7 | 55      | 21.1 | 79         | 30.3 | 261   |
| Least           | 70    | 39.6 | 44     | 24.9 | 33      | 18.6 | 30         | 16.9 | 177   |
| Total           | 143   | 32.6 | 98     | 22.4 | 88      | 20.1 | 109        | 24.9 | 438   |
| Critical Ratio  | -2.56 |      | -1.04  |      | 0.64    |      | 3.20       |      |       |
| P Level         | .05   |      | .30    |      | .50     |      | .01        |      |       |

TABLE XVII

COMPARISON BETWEEN TWO GROUPS OF SCHOOLS IN THE NUMBER OF YEARS  
OF EXPERIENCE WITHIN THE SYSTEM

| Frequency Group | Years   |      |        |      |            |      | Total |
|-----------------|---------|------|--------|------|------------|------|-------|
|                 | 0 - 7   |      | 8 - 23 |      | 24 or more |      |       |
|                 | No.     | %    | No.    | %    | No.        | %    |       |
| Most            | 133     | 51.0 | 64     | 24.5 | 64         | 24.5 | 261   |
| Least           | 135     | 75.8 | 22     | 12.4 | 21         | 11.8 | 178   |
| Total           | 268     | 61.0 | 86     | 19.6 | 85         | 19.4 | 439   |
| Critical Ratio  | -5.23   |      | 3.13   |      | 3.30       |      |       |
| P Level         | .000001 |      | .01    |      | .001       |      |       |

TABLE XVIII

COMPARISON OF THE NUMBER OF TEACHERS WITH MASTERS DEGREE  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Masters Degree |         | Total |
|-----------------|----------------|---------|-------|
|                 | No.            | %       |       |
| Most            | 91             | 37.1    | 245   |
| Least           | 30             | 19.0    | 158   |
| Total           | 121            | 30.0    | 403   |
| Critical Ratio  | 3.87           | P Level | .0001 |

TABLE XIX

COMPARISON OF THE NUMBER OF TEACHERS WITH STANDARD CERTIFICATES

| Frequency Group | Standard Certificate |         | Total |
|-----------------|----------------------|---------|-------|
|                 | No.                  | %       |       |
| Most            | 36                   | 14.6    | 247   |
| Least           | 23                   | 14.6    | 158   |
| Total           | 59                   | 14.6    | 405   |
| Critical Ratio  | 0                    | P Level | 1.00  |

TABLE XX

COMPARISON OF THE NUMBER OF MARRIED TEACHERS  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Married |       | Total       |
|-----------------|---------|-------|-------------|
|                 | No.     | %     |             |
| Most            | 161     | 65.2  | 247         |
| Least           | 120     | 75.9  | 158         |
| Total           | 281     | 69.5  | 405         |
| Critical Ratio  |         | -2.23 | P Level .05 |

TABLE XXI

COMPARISON OF THE NUMBER OF TEACHER VISITS TO PUPILS' HOMES  
PER TEACHER IN THE TWO GROUPS OF SCHOOLS (INVERSE)

| Frequency Group | Teacher |       | Total           |
|-----------------|---------|-------|-----------------|
|                 | No.     | %     |                 |
| Most            | 261     | 44.0  | 593             |
| Least           | 177     | 67.0  | 264             |
| Total           | 438     | 51.1  | 857             |
| Critical Ratio  |         | -6.23 | P Level .000001 |

TABLE XXII

COMPARISON OF THE SUPERVISOR VISITS PER TEACHER  
IN THE TWO GROUPS OF SCHOOLS (INVERSE)

| Frequency Group | Teacher |       | Supervisor Visits |
|-----------------|---------|-------|-------------------|
|                 | No.     | %     |                   |
| Most            | 261     | 12.2  | 2147              |
| Least           | 178     | 14.8  | 1199              |
| Total           | 439     | 13.1  | 3346              |
| Critical Ratio  |         | -2.13 | P Level .05       |

TABLE XXIII

COMPARISON OF THE NUMBER OF FREE LUNCHES IN ONE MONTH  
PER PUPIL IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Free Lunches |       | Pupils          |
|-----------------|--------------|-------|-----------------|
|                 | No.          | %     |                 |
| Most            | 787          | 7.4   | 10,694          |
| Least           | 2,687        | 38.7  | 6,948           |
| Total           | 3,474        | 19.7  | 17,642          |
| Critical Ratio  |              | -52.1 | P Level .000001 |

TABLE XXIV

COMPARISON OF SCHOOL KUHLMANN-ANDERSON I. Q. SCORE  
IN THIRD GRADE (MEAN)

| Frequency Score | Mean  | S.D. | SE <sub>m</sub> | SE <sub>d</sub> |
|-----------------|-------|------|-----------------|-----------------|
| Most            | 102.6 | 2.5  | .75             | 1.1             |
| Least           | 98.2  | 2.6  | .78             |                 |
| Critical Ratio  |       | 4.0  | P Level .0001   |                 |

TABLE XXV

COMPARISON OF THE NUMBER OF CHANGES PER PUPIL (MOBILITY)  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Changes |        | Pupils          |
|-----------------|---------|--------|-----------------|
|                 | No.     | %      |                 |
| Most            | 764     | 7.14   | 10,694          |
| Least           | 803     | 11.56  | 6,948           |
| Total           | 1,567   | 8.82   | 17,642          |
| Critical Ratio  |         | -5.83* | P Level .000001 |

\*Means PQ equals 50 times 50 rather than 8.82 times 91.18.

TABLE XXVI  
COMPARISON OF THE PER CENT OF ATTENDANCE IN THE  
TWO GROUPS OF SCHOOLS

| Frequency Group | Daily Attendance | Per Cent | Daily Membership |
|-----------------|------------------|----------|------------------|
| Most            | 8,522            | 94.6     | 9,005            |
| Least           | 5,527            | 93.5     | 5,914            |
| Total           | 14,049           | 94.2     | 14,919           |
| Critical Ratio  |                  | 1.64*    | P Level .20      |

\*Means PQ equals 50 times 50 rather than 94.2 times 5.8.

TABLE XXVII  
COMPARISON OF THE NUMBER OF ACRES IN SITE SPACE  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Mean | S.D. | SE <sub>m</sub> | SE <sub>d</sub> |
|-----------------|------|------|-----------------|-----------------|
| Most            | 7.11 | 4.47 | 1.35            | 2.06            |
| Least           | 6.41 | 5.12 | 1.54            |                 |
| Critical Ratio  |      | .34  | P Level .80     |                 |

TABLE XXVIII  
COMPARISON OF THE NUMBER OF MILES FROM SERVICE CENTER  
IN TWO GROUPS OF SCHOOLS

| Frequency Group | Mean | S.D.  | SE <sub>m</sub> | SE <sub>d</sub> |
|-----------------|------|-------|-----------------|-----------------|
| Most            | 3.47 | .80   | .24             | .33             |
| Least           | 5.17 | .77   | .23             |                 |
| Critical Ratio  |      | -5.15 | P Level .000001 |                 |



TABLE XXIX

COMPARISON BETWEEN THE TWO GROUPS OF SCHOOLS IN THE NUMBER  
OF TEMPORARY CLASSROOMS PER TOTAL CLASSROOMS USED  
(1 PER TEACHER)

| Frequency Group | Temporary Rooms | Per Cent | Classrooms Used |
|-----------------|-----------------|----------|-----------------|
| Most            | 33              | 12.6     | 261             |
| Least           | 72              | 40.7     | 177             |
| Total           | 105             | 24.0     | 438             |
| Critical Ratio  |                 | -6.79    | P Level .000001 |

TABLE XXX

COMPARISON BETWEEN THE TWO GROUPS OF SCHOOLS IN THE NUMBER  
OF LIBRARY BOOKS PER PUPIL (INVERSE)

| Frequency Group | Pupils | Per Cent | Library Books   |
|-----------------|--------|----------|-----------------|
| Most            | 8,522  | 30.6     | 27,870          |
| Least           | 5,527  | 34.8     | 15,866          |
| Total           | 14,049 | 32.1     | 43,736          |
| Critical Ratio  |        | -9.79    | P Level .000001 |

TABLE XXXI

COMPARISON OF THE AVERAGE CLASS SIZE IN THE  
TWO GROUPS OF SCHOOLS

| Frequency Group | Mean  | S.D. | SE <sub>m</sub> | SE <sub>d</sub> |
|-----------------|-------|------|-----------------|-----------------|
| Most            | 38.26 | 1.43 | .431            |                 |
| Least           | 36.77 | 2.08 | .627            | .761            |
| Critical Ratio  |       | 1.96 | P Level .20     |                 |

TABLE XXXII

COMPARISON OF MEMBERSHIP KINDERGARTEN THROUGH GRADE SIX  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Mean | S.D. | SE <sub>m</sub> | SE <sub>d</sub> |
|-----------------|------|------|-----------------|-----------------|
| Most            | 891  | 2.23 | 67.2            | 93.6            |
| Least           | 579  | 2.16 | 65.1            |                 |
| Critical Ratio  |      | 3.36 | P Level         | .001            |

TABLE XXXIII

COMPARISON OF PARENT TEACHER ASSOCIATION MEMBERSHIP  
IN THE TWO GROUPS OF SCHOOLS

| Frequency Group | Mean | S.D. | SE <sub>m</sub> | SE <sub>d</sub> |
|-----------------|------|------|-----------------|-----------------|
| Most            | 892  | 2.35 | 68.0            | 94.0            |
| Least           | 568  | 2.15 | 64.9            |                 |
| Critical Ratio  |      | 3.44 | P Level         | .001            |

TABLE XXXIV

COMPARISON OF PARENT TEACHER ASSOCIATION MEMBERSHIP  
PER PUPIL MEMBERSHIP IN THE  
TWO GROUPS OF SCHOOLS

| Frequency Group | Pupil Membership |        | P. T. A. Membership |
|-----------------|------------------|--------|---------------------|
|                 | No.              | %      |                     |
| Most            | 10,694           | 100.09 | 10,704              |
| Least           | 6,948            | 101.88 | 6,820               |
| Total           | 17,642           | 100.67 | 17,524              |

## VITA

Joe Wayne Tidrow

Candidate for the Degree of

Doctor of Education

**Thesis:** DIFFERENCES IN QUALITY OF EDUCATION ASSOCIATED WITH VARIATIONS IN THE QUANTITY OF CERTAIN ELEMENTS IN AND SURROUNDING PUBLIC ELEMENTARY SCHOOLS

**Major Field:** Education

**Biographical:**

**Personal data:** Born in Bristow, Oklahoma, December 25, 1921, the son of Robert E. and Zelma Wolfe Tidrow.

**Education:** Attended public schools in Kendrick, Oklahoma; graduated from Kendrick High School in 1938; received the Bachelor of Science degree from Central State College, Edmond, Oklahoma, in August, 1947; received the Master of Science degree from the Oklahoma Agricultural and Mechanical College in May, 1954; completed the requirements for the Doctor of Education degree in May, 1957.

**Professional experience:** Entered the Army of the United States in 1940; discharged as a First Lieutenant in 1944; accepted the position of teacher and principal in the Kendrick Public School for the school year, 1947-48; accepted the position of teacher and principal in Carney Public School for the school year 1949-50; accepted the position of teacher in the Drumright High School for the school years of 1950-51 and 1951-52; accepted the position of teacher in the Oak Ridge Public School, Louisiana, for the school year 1952-53; accepted a Kellogg Foundation Scholarship to work with the Oklahoma Cooperative Program in Educational Administration as a research assistant while doing graduate study at Oklahoma Agricultural and Mechanical College in 1953-54; accepted an internship in educational administration and position of curriculum assistant with the Tulsa Public Schools for the school year 1954-55; accepted position of curriculum assistant in the Tulsa Public Schools for the school year 1955-56; accepted a position as research assistant, the Committee for the White House Conference on Education, Subcommittee on How Can We Obtain a Continuing Public Interest in Education, July, 1955; and accepted the position of Director of Curricular Services, Andrews, Texas, on July 1, 1956.