AN ANALYSIS OF SELECTED COST-QUALITY FACTORS IN EDUCATION AS RELATED TO SELECTED SCHOOL DISTRICTS IN MICHIGAN

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by

Norman P. Weinheimer

AN ABSTRACT
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Submitted to
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ABSTRACT

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by Norman P. Weinheimer

PURPOSE OF STUDY

The major purpose of this study was to compare high and low expenditure K-12 school districts with selected quality-related factors which had been used in previous studies or generally assumed to have a direct or indirect effect on the quality of education in public schools.

DELIMITATION OF THE STUDY

The study was limited in scope and was confined to six selected K-12 school districts found in Oakland, Macomb, and Wayne Counties of the State of Michigan. These counties represented seventy-nine school districts and almost one-half of the student population (824,112) in the state. The three highest expenditure per pupil school districts and three lowest expenditure per pupil

school districts fulfilling comparable community and school characteristics were chosen.

Thirty-one of the more promising quality-related factors for education were used.

PROCEDURE

1. The basic data for the study were derived from the annual statistical reports to the Michigan Department of Public Instruction for 1962-1963, answers to a questionnaire returned to the writer from three hundred four teachers, the United States census report of 1960, and the 1962-63 reports filed with the North Central Association of Colleges and Secondary Schools.

2. The statistical method deemed appropriate for examining the differences of the selected factors among the six selected school districts varied according to the data.

The chi-square (or X^2) method of analysis was used for the data related to teacher and community characteristics.

The T-test was used to compare the high and low expenditure per pupil districts.

The Mann-Whitney U test and the Kolomorov-Smirnov two-sample test were used to compare per pupil cost factors.

3. All chi-square, T-test, and the Mann-Whitney U test scores were assumed to have a significant difference if they were in the .05 level of significance.

RESULTS AND CONCLUSIONS

The following general conclusions were reached:

1. This study of selected Michigan schools agrees only in part with the earlier studies which had located possible cost-quality related education factors.

2. A school district's level of support to education does not always assure that all of the presently accepted quality-related factors in education will be attained.

3. The factors of quality in education need to be more refined for better identification.

From an analysis of the results of the present

study, the following several more specific conclusions resulted:

1. The factors pertaining to personnel including such items as length of teaching experience, level of training, areas of teaching competence and salaries paid show a positive sensitivity to level of expenditure for education in the selected Michigan schools studied. This compared favorably with previous studies.

2. The class size criteria and level of support which were used extensively in previous studies were found to be measures with considerable sensitivity in the Michigan schools studied.

3. Although previous studies pertaining to the staff indicated that the amount of domestic and foreign travel, literary and professional interest, and the origin of the staff were positively related to quality and the expenditure level, there were no significant differences between the high and low expenditure Michigan districts studied.

4. The study of the community characteristics of income level, education level, school age children not in school, mobility of population, and percentage of

native - foreign born population when compared with the level of support for education showed a notable reversal from previous studies.

5. The budgetary areas of dollar expenditure, for the most part, supported the previously identified patterns in earlier studies. The trend was that, as the dollar costs are increased in the high expenditure districts, the percents of the budgeting item, as compared with the total budget, did not necessarily increase proportionately.

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CHAPTER I

INTRODUCTION

Need For The Study

Statements such as "School Districts are spending more in 1962-63 to educate a single child than ever before in their history . . . how much to educational betterment?"[1] have become commonplace.

Over the past few years the public has often been reminded that adequate finances must accompany demands for better education. But, as West[2] has said, it is becoming more and more difficult to sustain interest in the school "emergency" of ill-equipped classrooms and underpaid teachers. It appears that school authorities need to have a more clearly developed concept of the communities' environmental expectations as well as the quality of the educational offering of their schools' programs.

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[1]The National Cost of Education Index 1962-1963, School Management, Vol. 7, No. 1, January 1963, p. 98.

[2]Allen M. West. "Paying for Schools is Everybody's Business." Research Bulletin 38, p. 4. Washington: NEA, December 1960, p. 109.

In the face of recent resistance on the part of the purchaser of education, namely the taxpayer, as noted by an increasing number of newspaper stories indicating failure of extra-millage elections for additional school monies, the old cliche that "more money means better education" may have to be proven in more detail and to the greater satisfaction of the taxpayer. Research conducted by the National Education Association indicates that "The achievement of minimum standards of quality in public education will cost $720 per pupil for current expense by 1970--at present we are spending less than $400 per pupil."[1]

Educators are constantly searching for something called "quality" in school programs. With the complexity of expectations the role the schools are called upon to play in a dynamic society, there seems to be considerable agreement among lay persons and professionals that there is no one kind of educational program which is the panacea of all programs. Since ours is a changing society, there also is considerable agreement that no school program can or should be viewed as a constant but rather a changing phenomena.

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[1] NEA Research Bulletin, A Minimum Standard of Quality Education, Vol. 40, No. 4, December 1962, p. 99.

Since the days of the first launching of an outer space probe by a foreign power, there has been much concern regarding the adequacy and effectiveness of American education.

There are great numbers of people who are asking: "Are we getting our monies' worth?"; "Is the educational program a quality program?"; "Is there room for improvement?".

Because of the very nature of the educational function as a public enterprise in the United States, it is a very complex undertaking. Due to this complexity, some have accepted this as a rationale to provide little effort to scientifically improve education, basing decisions solely upon opinion. There are others who believe education to be too complex to permit measurement or too subjective to have the consideration of quality to be of any practical value.

There appears to be some truth in all the views. Over the past fifty years there have been many persons who have attempted scientifically to develop concepts of educational quality. It also appears that at this point in the scientific analysis of the education function, the perfect workable concept of educational quality cannot be defined in one simple effort or by one simple formula.

In Michigan, as in other states, there is much concern

over the equality of educational opportunity available to all the children of the state. Yet there are differential levels of support for education in the many school districts which, on the surface, would appear to place limitations on the educational opportunities afforded youngsters of those school districts. There are also many instances of utterances on public record which have directly claimed, or implied that districts with low expenditures per pupil are able to provide as good or better educational programs as the high expenditure per pupil districts. Since there has been little or no scientific research pertaining directly to the validity of statements such as these as they apply to Michigan, the writer cannot refute nor accept them as fact.

In essence, this brings us to search for facets of possible quality as related to cost factors in education.

Although this study will be limited to selected school districts in Michigan, it may be of such a nature as to set the pattern for like studies in other school districts having similar interests.

Because of the scope and varied expectations of public education, the complexity, subjectivity, and variety of educational quality factors, there is little opportunity for one study such as this to identify all the factors which may

or may not have an observable effect on the quality of education. It is hoped that this study may advance some small part of the search.

Obvious limitations must be set as to the parts of the total educational function studied, the geographical universe used in the research, and the period of time for which data are gathered.

Statement of the Problem

On the basis of an exhaustive search of the available research and allied literature, the investigator found that there had been much effort expended on behalf of researchers and recognized authorities to locate possible quality-related factors for education, yet no study had been made which compared some of these assumed factors of quality to Michigan school systems, especially in districts of high and low levels of financial support. More specifically, this study seeks to make a statistical comparison of selected quantitative characteristics related to quality in selected school districts of historically consistent differential expenditures per pupil.

Definition of Terms

There are many terms used in education which through

common usage have several meanings and interpretations, some of which may be peculiar to a locale, a county, or a state. In order to clarify pertinent terms for the reader and limit their interpretation to this study, the following definitions are presented.

Public Schools: Public schools refer to the Michigan public elementary and secondary schools in school districts maintaining grades kindergarten through twelfth financed by local, state, and federal monies under the direction of a locally-elected board of education.

School Districts: A school district is a quasi-municipal corporation created by the state legislature for the purpose of operating public schools. The boundaries of school districts are not necessarily co-terminus with other governmental unit boundaries.

Board of education or school board: A group of seven or more persons elected for a specified term of office, usually four years, by the qualified electors of a school district. The board of education is delegated by the state legislature and state statute the responsibility of operating the educational program in the school district.

Public school finance system: The total revenue and disbursement system utilized by the local district to support

its kindergarten through twelfth grade educational program.

State aid or school support: The distribution of state monies by state agencies for the support of public schools.

Financial ability: The state equalized valuation of a school district (SEV) expressed in dollars divided by the total resident membership.

Resident membership: Those students attending school in the district in which they reside.

Non-resident membership: Those students attending public school in districts other than those in which they reside. In some areas of Michigan this practice prevails when the local school district does not offer a high school program. The potential high school student must then attend a high school in a neighboring district on a tuition basis.

Financial expenditure: The per-pupil expenditure for the operation of the schools, excluding monies spent for debt retirement funds, building and site funds; and capital outlay, revolving funds, and transportation costs disbursed from the general fund.

State equalized valuation: The final appraisal of the worth of the real and personal property in the school district for tax purposes as determined by the State Tax

Commission.

Administrator, school administrator, or superintendent of schools: Chief executive officer in a school district elected by a board of education to carry out the policies and provide leadership for the educational function of the school district.

Quality: This is discussed at length elsewhere. Simply, it means the degree of excellence achieved by a specific variable on a specific scale.

Class size or pupil-teacher ratio: Generally, this is the total membership of a district divided by the number of certified employees of the district. The two terms are used interchangeably in related literature but often refer to different data.[1]

Staffing adequacy: Measures the same factor as class size, usually expressed in literature as number of teacher certified employees per 1000 pupils. In most research the pupil count is weighted into staffing units.

Staffing units: This is the formula for weighting

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[1]William S. Vincent, Bernard H. McKenna, and Austin D. Swanson. "The Question of Class Size." IAR Research Bulletin, I, 1, October 1960, pp. 1-4.

membership to determine staff adequacy. Secondary membership is multiplied by 1.3.[1]

Procedures

The following are the main points and steps of the procedures of this study.

Data: Most of the basic data of this study are derived from the annual reports for the 1961-62 school year as submitted to the Michigan Department of Public Instruction. Other pertinent information not available by present known reporting practices has been obtained by personal interview or by means of questionnaires submitted directly to school districts and the personnel involved.

Review of Literature: Following wide reading in the field of educational administration and school finance, pertaining to quality factors in education, the basic problem was determined and then refined in the study design. Although there has literally been thousands of pages written about quality education, the presentation of the review of the literature was confined to those areas which appeared to be most pertinent in developing the thesis of this study. In other words, the writer found there was an abundance of

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[1]Maurice A. Lehman. "The Fortunes of Educational Support." IAR Research Bulletin, Vol. 2, No. 3, Teachers College, Columbia University, April 1962, pp. 507.

material written about "quality in education," but usually of so generalized a nature that there was a limited approach to specific measurements of quality.

Selection of the school districts: This study will concern itself with six school districts of different per-pupil expenditure levels. It was the major purpose of this study to make a statistical comparison of possible selected quantitative characteristics usually related to quality in school districts having a history of high or low per-pupil expenditure. An extensive study of the differential expenditure per pupil as found in Michigan school districts was made. Since the known variable is difference in expenditure per pupil, great care was taken to assure consistency within acceptable limits, relative to enrollments, growth trends, location, level of income of constituents, ethnic background, and kinds and amounts of community services and facilities available. A more comprehensive development of the criteria used is given in Chapter III.

Selection of financial and educational factors related to quality: After considerable reading, and several consultations with finance experts and professors of educational administration and school finance at Michigan State University, a rather comprehensive list of criteria

pertaining to financial factors and educational factors was developed. These have been refined and are also submitted in later chapters.

Analysis: The purpose of this thesis was to make a statistical comparison of certain selected quantitative characteristics which appeared to be related to quality. Due to the great variety of factors involved, it is with apology that the writer asks the reader to forego an explanation until Chapter 3 where much time is spent in developing and justifying the procedures used. However, it will suffice to say that in addition to those criteria suggested by consultants at Michigan State University, some of the criteria which showed greatest promise as a measure of quality in previous studies were also used in this study.

Delimitation of Study

This study is delimited in the following ways:

1. Because the universe of approximately 532 twelve-grade school districts in Michigan with many known differences would make a comprehensive study in depth impractical, this study was limited to six selected Michigan school districts which may or may not reflect any great number of similar characteristics to be found in the other districts not studied.

2. This study treats only selected financial and educational factors; thus it is intended to be comprehensive only as it relates to these selected factors.

3. Some of the statistical information is based on what is happening at a given point on the continuum of time. In a dynamic society such as ours, projections of current statistics and findings today may or may not be relevant in the future. School programs are continually changing from year to year; there is diversity among districts, and varying influences found among different communities tend to cloud an objective analysis of any one facet affecting quality. Research should be objective to meet its definition, while the term "educational quality" carries a subjective connotation. Further, it is quite obvious to educators, as the committee on Tax Education and School Finance has stated, that "except for knowledge and skills, instruments for measuring the outcomes of education are either nonexistent or are far from refined."[1]

Organization of the Study

This study is organized into five chapters. Chapter II presents a review of the literature relating to this study.

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[1]Committee on Tax Education and School Finance, "The Problem of Cost-Quality Relationship in Public Education." (Washington: National Education Association, 1956) p. 8.

The chapter alludes to some of the basic concepts developed by other researchers which appear to have a measurable bearing on quality education. For the most part, the survey of related material will be limited to the aspect of quality education.

Chapter III deals with the questionnaires, procedures, and methods used to develop the statistics and the study design.

Chapter IV presents and interprets the data.

Chapter V provides the summary and conclusions of this study. Certain implications as they relate to previous studies and future studies are also mentioned. The writer has also taken the liberty to express some subjective impressions of his own.

Summary

The presentation, as a whole, reflects an attempt on the part of the writer to submit some of the facets which might be conducive to the future improvement of the educational function of the public schools. Objective and unbiased examination of the many facets of education and finance must be pursued in order that goals and ideals of education may be achieved. Though there have been a number

of studies in this direction, the answers are not all in. Consequently, the present study attempts to contribute a little more knowledge on the subject.

CHAPTER II

REVIEW OF LITERATURE

Delimiting the References

A description of all the studies pertaining to expenditure and quality education would be tiring to the reader, as well as unnecessary to the understanding of the concepts developed and used herein to pursue this study. Over 350 references were investigated; many reviewed previous research, others were of such limitation that possible implication in other situations was nearly impossible while still others dealt with considered opinion of the "experts." And finally, tnere was a great amount of material written which used education and cost-quality factors in broad general terms, picturing educational quality as being too complex and subjective to warrant the task, judging it hopeless for an objective analysis.

As stated previously, books, periodicals, and pamphlets discussed here have been purposely limited to those relevant to the present study. For the most part, only those studies that indicate a significant scientific contribution and

appear to be directly related to the factors of quality and cost as they pertain to this study will be reviewed. Often a reference mentioned will have reviewed several studies to synthesize data on a specific aspect of a school program. In these cases, only the findings will be noted.

In those areas where acceptable standards of reference or procedure pertaining to an identification or evaluation of certain facets of this study have not previously been scientifically determined, only those standards of references and procedures which have been carefully established by recognized, responsible educational agencies and institutions will be used. A partial list includes Michigan State University, Michigan Education Association, Metropolitan Detroit Bureau of School Studies, Michigan Department of Public Instruction, North Central Association of Colleges and Secondary Schools, the University of the State of New York, Institute of Administrative Research of Columbia University, and the National Education Association.

Early Studies of Cost-Quality Factors

In order that the reader may better understand the origin and development of the great body of information and statistics currently available on cost-quality factors of education, a brief historical overview is given.

One of the first scientific inquiries into the inter-

relationship of expenditure level and quality of schools was reported in 1920 by Leonard P. Ayres.[1] He ranked each state according to expenditure level for education between the years 1896 and 1920. He reported a high positive correlation between the rank of the state on expenditure level and the percentage of school age children in school, percentage of high school age children attending high school, average length of school year, average length of school day, and the percentage of average daily attendance is of membership.

Although George W. Frasier[2] in 1922 was interested in determining the merit of fiscal financial dependence or independence of school districts in cities that have coterminus school district and municipal boundaries, the thesis of his study compared six factors that he believed to be "necessary corollaries of efficient education,"[3] namely:

"1. The percent of sixteen and seventeen year old children in school.

2. The per cent of elementary classes having less than forty students.

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[1]Leonard P. Ayres. An Index Number for State School Systems (New York: Russell Sage Foundation, 1920), p. 54.

[2]George W. Frasier. The Control of City School Finances, (Milwaukee: Bruce Publishing Company, 1922), pp. 21-85.

[3]Ibid., p. 84.

3. The per cent of children who have sixty square feet or more playground space.
4. The per cent of teachers who have six or more years training above 8th grade.
5. The per cent of children enrolled who attend school all day in adequate buildings.
6. The per cent of increased cost of living from 1913-14 to 1919-20 that was met by increased salaries for elementary women teachers."

According to his conclusions, a fiscally independent school system had a better chance to achieve success than one in which the finances are in the hands of the city government. However, the importance of Frasier's findings for this study is not the conclusions he drew but rather the assumptions he made in drawing his conclusions. He assumed that greater expenditure per pupil proved greater school efficiency and a better chance to achieve success by assuming that the six factors were measures of success. Both assumptions, although greatly refined, are still used as some of the basic elements of study for cost-quality factors.

Paul R. Mort, who was later to become one of the outstanding authorities on cost quality education, as early as

1924[1] defined a foundation program under a state and local cost-sharing plan which developed the concept of adaptability for quality in education. His concept of "adaptability,"* which he defined "as one definition of quality"[2] and its measurement became one of the major items of Dr. Mort's lifetime work, as evidenced by the more than twenty articles under his own authorship, his contributing articles to other studies and reports, and his influence on the Metropolitan School Study Council of Teachers College, Columbia University.

Another authority in the area of school finance, John K. Norton, studied state expenditure patterns for education. He found that states with higher expenditures per pupil had higher teachers' salaries, better trained teachers, more adequate school buildings, more instructional resources, more school time and fewer dropouts.[3]

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*Adaptability also was defined as "the capacity of an institution to take on better practices and discard outmoded ones.

[1]Paul R. Mort. Measurement of Educational Need (New York: Bureau of Publications, Teachers College, Columbia University, 1924), p. 254.

[2]Donald H. Ross. Administration for Adaptability (New York: Metropolitan School Study Council, Teachers College, Columbia University, 1958), p. 24.

[2]John K. Norton. The Ability of the States to Support Education (Washington: National Education Association, 1926), pp. 1-136.

In 1933, two significant studies appeared in print, one by Orrin Powell,[1] the other by Paul Mort.[2] Powell's study sampled one-teacher schools in New York State. Using standardized achievement tests and factoring out mental ability, he found that high expenditure schools fifth grade students scored 1½ years ahead of their peers in the low expenditure schools. The greatest measurable difference was noted in the areas of spelling, arithmetic, history, and civics. At the same time, a New Jersey Governor's Commission under the directorship of Mort was conducting a similar study in selected New Jersey schools of high, medium, and low expenditure levels per pupil. This study found that as the level of support increased, the staff quality, administrative and supervisory services, school buildings, instructional techniques, variety of course offerings and provisions for special services were increased.

In 1934, Mort reported on another similarly structured

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[1]Orrin E. Powell. Educational Returns at Varying Expenditure Levels (New York: Teachers College, Columbia University, 1933).

[2]Paul R. Mort (Director). Reconstruction of the System of Public Support in the State of New Jersey, Report of the Governor's School Survey Commission, II, (Trenton: The Commission, 1933) pp. 26-28.

sample of schools in Maine.[1] He found a positive correlation between school plant adequacy, teachers' instructional practices and techniques, scope of school program, extent of student health services available, and level of support.

Two hundred forty-nine Kentucky schools were analyzed by Thomas Ferrell,[2] who used six quality-related items to gain a composite score for each school district. He found a .92 correlation between staff qualifications, holding power of pupils, staff adequacy, length of school term, and level of support for county schools, and .77 for graded schools.

In 1938, Grace and Moe,[3] in a sample study of forty-three schools in New York, refined the cost-quality relationships by compensating for the factor of variable population density. They also found in their study that

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[1]Paul R. Mort, "The Financing of the Public Schools of Maine," Report of a Survey of State and Local Support of Public Schools (Augusta, Maine: School Finance Commission, 1934), pp. 64-97.

[2]Thomas Ferrell. "Relation Between Current Expenditures and Certain Measures of Educational Efficiency in Kentucky County and Graded School Systems," George Peabody College for Teachers, Contributions to Education #216 (Richmond, Kentucky: The Author, Eastern State Teachers College, 1937), pp. 1-114.

[3]A. G. Grace and G. A. Moe. State Aid and School Costs, Report of the Regents Inquiry (New York: McGraw-Hill Book Company, 1938), pp. 327-29.

"no low-expenditure districts achieved superior educational results."[1]

In the same year, Mort and Cornell also reported on a study of educational cost and quality, based on thirty-six Pennsylvania communities[2] which was later incorporated with another Pennsylvania sample consisting of three hundred forty-four communities. The primary concern of these studies was to determine the relationship of educational cost and the ease with which a school system takes on new practices and techniques; hence the concept of adaptability. He found a critical point of expenditure per pupil above which figure "one could expect to find new educational ideas being evolved and tried out. This was deemed the critical point of educational invention."[3]

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[1]A. G. Grace and G. A. Moe. State Aid and School Costs, Report of the Regents Inquiry (New York: McGraw-Hill Book Company, 1938), p. 329.

[2]Paul R. Mort and Francis G. Cornell. American Schools in Transition (The Pennsylvania Study), (New York: Bureau of Publications, Teachers College, Columbia University, 1941) pp. 167-195.

[3]Donald H. Ross, Administration for Adaptability (New York: Metropolitan School Study Council, Teachers College, Columbia University, 1958), p. 368.

At the same time, Grimm[1] studied educational opportunities in relation to their cost in twenty-four elementary-school districts in Illinois. He found that high expenditure schools offered more and better physical and health education, more extra-curricular activities, smaller classes, more opportunities in music, more books and better libraries, better trained teachers, more specialists, and better buildings. On tests of achievement, the high-expenditure schools generally exceeded the middle and low-expenditure schools.

Implications of Later Cost-Quality Studies of Education

As noted in the first chapter, during the years to come, greater demands will be made of education which will undoubtedly reflect the need for greater expenditure for it. One of the factors will be increased enrollments due to increased population and increased number of years of pupil attendance in school, while another will result from a greater demand for more services from the schools.

William D. Firman, consultant for the University of

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[1] Lester R. Grimm. Our Children's Opportunities in Relation to School Costs (Springfield, Illinois: Illinois Education Association, Department of Research and Statistics, 1938), pp. 1-46.

the State of New York, in reporting for the Quality Measurement Project has said that "one of the major problems in school-quality research is that of discovering community-accepted definitions of quality."[1] He further states that some people are satisfied with a school that "doesn't cost too much,"; others want a school which gives a great deal of attention to social and emotional as well as intellectual development; while still others are satisfied when the schools' activities are limited to the basic skills or academic training for college, or technical training for a vocation.[2] He uses three educational student-centered criteria for school-quality measurement, namely: (1) Basic Skills: Dominant public opinion seems to continue in the belief that the development of basic skills, the "3 R's" must be a primary objective of public school education. (2) Individualization: Schools should offer to each student the opportunity to develop his own unique abilities and talents. (3) Functional Skills: Schools have a responsibility for the development of certain types of rather complex skills such as library

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[1] William D. Firman, et al. Procedures in School Quality Evaluation, Mimeographed First Draft, 1961, p. 1.

[2] Ibid. p. 67.

research, problem solving, communication, development of personal and social value systems, and citizenship.

The preliminary results of the study[1] (1) indicate a relationship exists between academic gain and the socio-economic background of the community. (2) There is a strong relationship between expenditure level and the adaptability criterion. (3) Certain acquired staff characteristics are closely related to the quality criterion. (4) Community characteristics both past and present have significant effects upon quality. Yet the still unanswered questions posed by Firman are these:[2] "Why are some schools better than others? Does money make a difference? How do better-trained teachers improve school quality? How do length of the school day and teaching method effect results? Which of the quality-affecting variables are controllable?" It is imperative that the quest for cost-quality factors must be pushed forward.

If it is possible to identify and measure factors of quality which affect educational output, it may be possible to control them to assure the taxpayer greater educational efficiency.

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[1] Ibid. p. 67.
[2] Firman, et al, ibid. p. 67.

The problems mentioned above were not new. The need for a further identification of the facets of quality as a guide for expenditure for education appeared to be quite apparent when the best-financed schools twenty-two years ago (1939-40) expended six times as much per classroom unit as those districts at the other end of the expenditure scale.[1] Ten years later (1949-50), the highest two per cent of the nation's schools spent over $8,120 per classroom while the lowest two per cent fell below $1,470.[2] It appears there may be a variance in the kind of educational programs offered in schools of such varying expenditure.

Another factor of quality may be dependent upon environment or the cultural level of the community. Mort in his earlier studies recognized the need for greater depth research in this area when he commented:

" . . . adaptability is conditioned by factors in the environment which at any given time must be thought of as more or less permanent because of the inability of the

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[1]J. K. Norton, Eugene S. Lawler. Unfinished Business in American Education (Washington: American Council on Education, 1946), p. 34.

[2]Clayton D. Hutchins and Albert R. Munse. Expenditures for Education at the Mid-Century (Washington: Cool Printing Office, 1953).

educational system itself to modify them."[1]

Mort also indicated a need for further research on the factors of population density, average age of adults in the community as well as their racial backgrounds, attitudes toward self-government, and rate of population growth of the community. Although, in 1941, he found the most important single factor of adaptability (quality) was current expense per weighted membership unit,[2] only two other variables of the sixty-seven used approached financial support in significance: proportion of business and professional workers in the community indicated a high positive correlation to the adaptability of schools (.59) and cultural level of the community, a correlation of .59. However, the correlation between quality and the cultural level factor dropped to .22 when tax leeway and district size were removed as influences.[3] He concludes

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[1]Paul R. Mort and Francis G. Cornell. Adaptability of Public School Systems (New York: Bureau of Publications, Teachers College, Columbia University, 1938), X-XI.

[2]Paul R. Mort and Francis G. Cornell. American Schools in Transition (New York: Bureau of Publications, Teachers College, Columbia University, 1941).

[3]"Instrument to Determine Cultural Level" as developed by: William A. McCall and John P. Herring. McCall Educational Background Questionnaire (New York: Laidlaw Brothers, 1936).

that, "it would seem that the cultural level is an accidental concomitant of size, while, on the other hand, tax leeway and cultural level are probably causally interrelated."[1]

Mort also found that larger school districts offered many more services with slightly higher tax rates.[2] Expenditures correlated .536 with percentage of the community having above eighth grade education. Adaptability correlated .511 with proportion of college graduates in district.[3] The program score correlated .59 with the percentage of labor force that was involved in white collar jobs.[4] An interesting sidelight in the Pennsylvania report showed that there was no significant correlation between staff turnover and quality.[5] The average preparation of staff correlated .376 with the adaptability criterion.[6]

Ross, in analyzing further the Pennsylvania data,

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[1]Mort and Cornell. American Schools in Transition, p. 89.

[2]Ibid., pp. 134-135.

[3]Ibid., pp. 93-94.

[4]Ibid., pp. 99-100.

[5]Ibid., pp. 89.

[6]Ibid., pp. 163.

found that adaptability was closely tied to the tax-leeway factor.[1]

Districts that had greater tax leeway (and tax base) paid higher salaries and employed better qualified personnel. The tax leeway formula used by Mort[2] and developed by Knott[3] projected the actual tax rate on assessed valuation to a hypothetical tax rate on true property valuation which was compared with an arbitrarily established maximum. In this manner the margin for improvement of support still left untapped was measured.

Ross also found size of district and population density strongly affected quality measures. There was a negative correlation for those districts under 50 pupils in high school or in cities over 100,000 population, but between these points he felt the Mort-Cornell data supported largeness.[4]

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[1]Donald H. Ross. Administration for Adaptability (New York: Metropolitan School Study Council, Teachers College, Columbia University, 1958), p. 351.

[2]Ibid., pp. 152-66.

[3]Widnell D. Knott. "The Influence of Tax-Leeway on Educational Adaptability" (New York: Bureau of Publications, Teachers College, Columbia University, 1939), pp. 65-66.

[4]Ibid., pp. 182-88.

Hicks found a high positive relationship between quality and the schools' use of community resources.[1] He also analyzed the obstacles to communication in large cities.

Newell studied class size in New York City area schools. He found evidence that money spent for a combination of well-qualified staff and small-class size was more important than spending money for small class size only.[2] However, Goodlad found no significant correlation between class size and pupil achievement when he made a comprehensive review of the related literature.[3]

The work of Pertsch supported Newell in his findings that good teachers and smaller classes tend to assure better understanding of the needs of the students.[4]

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[1]Alvin W. Hicks. A Plan to Accelerate the Process of Adaptation in a New York City School Community (New York: Ed.D. Project, Teachers College, Columbia University, 1942), pp. 74-75.

[2]Clarence A. Newell. Class Size and Educational Adaptability (New York: Bureau of Publications, Teachers College, Columbia University, 1943).

[3]John I. Goodlad. "Room to Live and Learn: Class Size and Room Space as Factors in the Learning-Teaching Process." Childhood Education, 30, (1954) pp. 355-61.

[4]Frederick Pertsch. "Some Effects of Class Size on The Educational Program in New York City Elementary Schools." The Advancing Front of Education, Eighth Yearbook (New York: New York Society for the Experimental Study of Education, 1943).

Strayer sampled West Virginia districts. His findings supported previous studies. He also found that the 138 large elementary districts studied showed that guidance related items were sensitive to the three expenditure levels of high, medium, and low.[1]

Buley[2] in his study of staff characteristics of a district and their relationships to other quality related factors made some very significant contributions pertinent to this study. He found that the percentage of staff with five or more years of training correlated .58 in elementary and .39 in the secondary schools. He opined that high school teachers should continue their education every two years, elementary teachers every four years.[3] He found a significant relationship between twenty-four to forty semester hours of education courses and quality at the elementary levels, with a negative relationship when the total amount of educational courses exceeded forty-one

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[1]George D. Strayer. A Report of a Survey of Public Education in the State of West Virginia (Charlestown, West Virginia, Legislative Interim Committee, 1945).

[2]Hilton C. Buley. "Personnel Characteristics and Staff Patterns Associated with the Quality of Education." (New York: Ed.D. Project, Teachers College, Columbia University, 1947) p. 13.

[3]Ibid., pp. 18-22.

hours, while a positive relationship was found to exist only when the high school staff exceeded forty semester hours of professional courses.

Teacher participation in college athletics bears a negative relationship with presumed quality of school staff.[1] There was a positive relationship to quality when a high percentage of staff was employed from outstate sources.[2]

His study showed that staff stability was one of the greatest assets to quality when two-thirds of personnel had eight years or more tenure in the system. Other quality-related items showed a high percentage of staff who had recently traveled 1200 miles or more; the number of staff who had 300 volumes in their own professional libraries and who read professional magazines regularly.[3]

Boyer concluded from his study that an adequate, competitive salary schedule was necessary for quality education.[4]

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[1] Ibid., pp. 27-30.

[2] Ibid., p. 13

[3] Ibid., pp. 48-61.

[4] E. Gilbert Boyer. "Trends in Staff Characteristics" (New York: Ed.D. Project, Teachers College, Columbia University, 1954), pp. 38-39.

The most comprehensive studies of other pertinent facets of staff adequacy were pursued by McKenna and Ross.[1] They used the total numerical staff adequacy instead of the traditional pupil-teacher ratio. They believe that the researchers cannot mix elementary and secondary class size statistics safely.

Ross, in his Administration for Adaptability,[2] lists nineteen findings of class size research. Those which appear pertinent to this study are herein included:

1. Size of system is no predictor of size of elementary school classes, but size of system in the smaller schools does directly predict size of high school classes and number of subject offerings in the smaller schools.
4. The correlation between average class size and a measure of general numerical staff adequacy, such as pupil staff ratio, is .60.
5. Evidence would indicate that a general measure of numerical staff adequacy is a better predictor of school quality than average class size.

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[1]Donald H. Ross and Bernard McKenna. Class Size: The Multi-Million Dollar Question (New York: Metropolitan School Study Council, 1955).

[2]Ross. Administration for Adaptability. pp. 495-496.

7. Almost every system or community has some kind of written or tacit understanding of class size policy . . . written class size policies that state the maximum permitted in one class are more stringently observed than those that specify a median or average figure.

11. Small classes tend to have more variety in instructional methods used than do large classes.

16. Non-classroom personnel are at least as important as classroom teachers.

Later Studies Pertaining to Expenditure Level

A review of the more current literature is now presented. The three limiting factors of presentation shall be: (1) Does the literature accept, modify, or reject previous concepts developed? (2) Does it provide more insight or refinement to previous conclusions and findings? (3) Does it make a significant contribution to the thesis of this study?

The Committee on Tax Education and School Finance

of the National Education Association has this to say about illiteracy and holding power of schools.[1]

1.* The per cent of the population twenty-five years of age and older with at least four years of high school in 1950 was 38.0 for the twelve top-expenditure states, and was 24.1 for the twelve bottom states in expenditure, a ratio of 1.6 to 1.

2. The per cent of the population with a high-school education is doubtless related to the "holding power" of the schools. In the twelve top expenditure states, the number of high-school graduates in 1955-56 as a per cent of eighth-grade enrollment in 1951-52 was 72.7; the per cent was 53.1 for the twelve bottom states in expenditures; a ratio of 1.4 to 1 in favor of the high-expenditure states.

3. The per cent of the population twenty-five years of age and older with four or more years of college in 1950, in the top twelve states in school expenditures,

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[1]Arvid J. Burke, Chairman, et al. Does Better Education Cost More? (Washington: Committee on Tax Education and School Finance, National Education Association, 1959), pp. 35-36.

*In order to more easily enumerate the issues, the topic numbers are the writer's and are not those of the original authors.

was 7.1 compared with 4.8 in the bottom twelve states in expenditure; a ratio of 1.4 to 1 in favor of the high-expenditure states.

4. In 1950 the per cent of the population twenty-five years of age and older with less than five years of schooling, which may be rated as functional illiteracy, was 8.2 in the high-expenditure states and 20.3 in the twelve low-expenditure states; a ratio of 1 to 2.5.

In Bowyer's study,[1] he found that school support had definitely begun to affect economic progress of the community within ten or twelve years after the date of the school expenditures and had continued this positive influence for several years thereafter. He concluded that after about twenty years, the influence of school support upon economic progress begins to wane or perhaps becomes submerged by the influence and effects of more recent school support.

Furno was interested in the effect of high and low expenditure over a period of years. He found that over a

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[1]Vernon Bowyer. Measuring the Economic Value of Education to the States, Improving Educational Research, 1948 Official Report (Washington D.C.: American Education Research Association, National Education Association), p.178.

twenty-five year period the cost-quality relationship was cumulative. Continued high-expenditure level over a period of years has "powerful influence upon the type and quality of education the children will receive in a school district for the subsequent decade."[1]

"If the expenditure level is high, chances are good that superior teachers will be employed and retained for a number of years. On the other hand, if the expenditure level is low, the chances of employing and retaining superior qualified teachers are diminished."[2]

Burke in pursuing the thesis of the level of expenditure over a period of years says, "Apparently, drastic increases or decreases in level of expenditure in particular years are less influential in advancing quality than a long range program of school support which is discriminating as to items and adequate in amount. One ingredient in developing quality schools is

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[1]O. Frederick Furno. The Projection of School Quality From Expenditure Level. Unpublished doctor's thesis (New York: Teachers College, Columbia University (1956), pp. 47-48.

[2]Ibid., p. 48.

an intelligent long range policy for their adequate financial support."[1]

Bloom and Statler[2] of the University of Chicago in 1957 reported an extensive study concerned with the factors associated with educational achievement as measured by Tests of General Educational Development in English composition, the social studies, the natural sciences, literature, and mathematics. Bloom[3] compared the results of tests given by Professor F. F. Lindquest of the State University of Iowa, to 35,330 seniors in 814 high schools in forty-eight states in 1943, and to 38,773 seniors in 834 high schools in forty-eight states in 1955. He lists the following major conclusions:

a. The difference among the states on the tests of General Educational Development are as great in 1955 as they were in 1943. Although they had the

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[1]Arvid J. Burke, et al. Does Better Education Cost More? (Washington: Committee on Tax Education and School Finance, National Education Association, 1959), p. 33.

[2]Benjamin S. Bloom and Charles R. Statler. "Changes in the States on the Tests of General Educational Development from 1943 to 1955." School Review 65, Summer 1957, pp. 204-21.

[3]Benjamin S. Bloom. "The 1955 Normative Study of the Tests of the General Education Development." School Review 64, March 1956, pp. 110-24.

same amount of formal education, the high school seniors in the low expenditure states are at a great disadvantage when contrasted with the seniors in the high expenditure states.

b. The differences among the states on the GED tests were highly related to differences among the states in financial support for education and in level of formal education in the adult population. The relationships which were clearly present in the 1955 study, were also evident in the 1943 study.

c. High school seniors from the great majority of states had improved on the GED tests from 1943 to 1955. Although the amount of improvement varied from state to state, Bloom working with Statler found that the relative shifts in the ranks of the states on the GED tests were related to the relative increases both in financial support for education and in level of education among adult population.[1]

They also concluded that the level of educational "outcome" of the public schools as measured by the GED tests, is related to the level of "input" of financial

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[1]Benjamin S. Bloom and Charles R. Statler, op cit. p. 220.

support for education and the value placed upon education as reflected by the educational status of the adult population.[1]

Although not pertinent to this study by perhaps interesting to the reader, Bloom and Statler also found that the performance of the high school seniors was consistently higher on the tests in 1955 than in 1943.

Only one study was found by the writer which reported little relationship between pupil achievement as measured by tests and per-pupil expenditure. This was the study made in Connecticut in 1956 that made this conclusion:

> "The finding that more dollars, per se, do not necessarily provide better education, may after further thought, be very profitable to those coping with school problems. There are other factors than just more dollars needed and more study is necessary to isolate these controlling factors and determine the wisest expenditure of money."[2]

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[1] Ibid., pp. 220-21.

[2] Connecticut Citizens for the Public Schools Committee on Financing Education, A Study of Factors Related to Academic Achievement in the Public Schools, Hartford, Connecticut Citizens for the Public Schools (120 Gillett Street) June, 1957, p. 7.

Although it is very dangerous to editorialize on the findings of another person's study, it appears that perhaps the Connecticut group's greatest concern was that too much confidence was placed on the "amounts" of money which are spent for education and not enough on "where" and "why" it is spent.

At any rate, this writer found no other known study which claimed so little relationship between per-pupil expenditures and pupil achievement on standard tests.

In 1938, Grace and Moe[1] found some school districts of high costs with inferior results, especially in rural areas. This study revealed considerable correspondence between cost and quality when the factor of sparsity of population was eliminated. However, it was found that no low-cost district got observable superior educational returns, and that high educational efficiency is not achieved without high expenditure.

The Commission on the Legal Structure of Rhode Island

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[1] A. G. Grace and G. A. Moe. State Aid and School Costs, Report of the Regents Inquiry (New York: McGraw-Hill Book Company, 1938), pp. 324-29.

Public Education[1] in 1941 studied the educational returns for money spent in Rhode Island using the Mort-Cornell "Guide for Self Appraisal of School Systems." The Commission found the high expenditure per pupil districts had larger numbers of improved teaching practices, more attention given to individual guidance, and a greater use of the community resources as an educational setting. In concluding, the commission stated that "whatever the other conditions may be, they are not sufficiently strong to offset the lifting effect of expenditure."

The NEA Committee on Tax Education and School Finance concludes with these statements:

"Apparently, the most important of these is that the high-expenditure districts have the money with which to employ more and better-prepared teachers. This conclusion is based on the fact that there is a closer relationship between expenditure level and amount of preparation of teaching staff than between expenditure level and any other

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[1]Commission on the Legal Structure of Rhode Island Public Education, School for our Children--Report of a Survey of the Structure and Operation of the Rhode Island Public School System, Vol. I (Providence, Rhode Island, 1941), pp. 58-98.

single measure of school quality."[1]

In the Regents of the University of New York Quality Measurement Project studying quality and costs in New York State school systems, Samuel M. Goodman reported that the percentage of teachers on the staff who had five or more years of training correlated with pupils' achievement .36 which was the highest correlation of the factors measured in that project.[2]

Other studies have been concerned with relationships between quality and level of expenditures for certain small expense items in school budgets.

Brickell[3] studied small expenditure items in the budgets of thirty-one communities. His findings suggest that "small expenditures" had in aggregate a considerable relationship to quality and that good schools do not spend

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[1]Arvid J. Burke, Chairman. Does Better Education Cost More? (Washington, D.C.: Committee on Tax Education and School Finance, National Education Association, 1959) p. 28.

[2]Samuel M. Goodman, Director. The Assessment of School Quality. (Research Offices, the University of the State of New York, The State Education Department, Albany, New York, March 1959) pp. 45-46.

[3]Henry M. Brickell. An Analysis of Certain Non-Instructional Staff Expenditures. (Doctor's Thesis, New York: Teachers College, Columbia University, 1958) p. 41.

more money on everything. He found quality of teaching is improved by expenditure for supplies and equipment, but it is still further improved by providing personnel who help the teacher to make effective instructional use of these teaching aids.

Bothwell conducted a study in seventy-one school systems representing all sections of the United States to deal with the gains in quality education derived from increasing some small expense items in school budgets. He found that over-emphasis in any one area of spending is bad. High quality is advanced when all items of expenditure are carefully discriminated and kept in careful balance. He further reported that as districts raised current expenditure outlay per pupil, they didn't continue to expend more and more money into textbooks, paper, stencils, roll books, chalks, and basic materials. Instead they began spending more for such items as audio-visual materials, physical education and health supplies, professional staff travel, public relations activities, science supplies and similar materials.[1]

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[1]Bruce K. Bothwell. Creative Expenditures for Quality Education (New York: Associated Public School Systems, 525 West 120th Street, 1958) p. 8.

In 1949, a study of fifty high-expenditure school systems in the metropolitan area of New York City by Lorne Woollett[1] and a group of trained observers was made to determine if there was a point of diminishing returns in educational expenditure. At the time of the study, at all of the expenditure levels, there was no measurable tapering off of educational returns as expenditure levels increased. As Burke has stated,[2] "The ultimate, or point of diminishing returns, in educational quality has apparently not been reached in even the highest-expenditure school districts." They also state that, "it is important to take account of certain small items of expenditures, as well as those of larger amount, if a community would achieve maximum expenditure effect on school quality. The effect of an intelligent long-range program of adequate financial support in a school system is cumulative and therefore especially powerful in its effect on quality. Also, low expenditure, if continued, will greatly reduce quality."

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[1] Lorne H. Woollett. The Cost-Quality Relationship on the Growing Edge. Metropolitan School Study Council Research Studies, No. 4 (New York: Teachers College, Columbia University, 1949), p. 65.

[2] Arvid J. Burke, op. cit., p. 37.

Goodman, in his "Assessment of Quality" conducted for the New York Department of Education, collected descriptive data on school and community factors.[1] He found definite positive relationships between expenditure level of the district and achievement of pupils at all grade levels measured. The socio-economic character of the community correlated .50 with expenditure.[2] He observed that districts with desire and capacity to have good educational programs usually have higher quality scores than the objective data would tend to indicate, while rural systems tended not to achieve expectancy whether expectancy was predicted from socio-economic index alone, I.Q. alone, or a socio-economic index and I.Q. combined. Pupil achievement compared with staff preparation showed a correlation of .36 in high expenditure schools; .07 in the average expenditure, and -.18 in the low group which seemed to indicate that increased resources for educational training of teachers may benefit those systems of higher socio-economic status more than for lower socio-

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[1]Samuel M. Goodman, Director. The Assessment of School Quality. Report No. 1 of the Quality Measurement Project (Albany 1, New York: The State Education Department, March 1959), p. 1-25

[2]Ibid., pp. 27.

economic status, while money spent for lower socio-economic groups could be used elsewhere.[1] Other findings showed a correlation of .85 for level of staff preparation and support level.[2] Expenditure was .46 with the number of special service personnel per 1000 students.[3]

A recent survey[4] conducted on class size found that adequate salaries and reasonable class loads must go together to gain higher quality. Of the two factors, higher salaries is the greater determinant.

Simpson[5] in studying quality factors in Michigan schools found that cost or expenditure per pupil was the single most important influence on educational quality. He concluded that the most important measure of expenditure level was net instructional expenses per pupil, .91,

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[1] Ibid., pp. 26.

[2] Samuel M. Goodman, Director. The Assessment of School Quality. Report No. 1 of the Quality Measurement Project (Albany 1, New York: The State Education Department, March 1959), pp. 1-25.

[3] Ibid., p. 34.

[4] William S. Vincent, Bernard H. McKenna, and Austin D. Swanson. "The Question of Class Size." IAR Research Bulletin 1 (October 1960), pp. 1-4.

[5] Robert J. Simpson. Selected Relationships Among Reported Expenditures and Programs in Metropolitan School Districts (Detroit: Unpublished Thesis, Ed.D., Wayne State University, 1961), pp. 188.

followed by the cost variables of per-pupil expenditures for teachers' salaries, .89, per pupil disbursements for net operation of school program, .87, maintenance and operating expenses per pupil, .79, per pupil expenditures for small items in the operational budget, .73.[1]

He also found that the dropout rate is a good quality indicator. Percentage of graduates continuing their education was a poor measure of quality.[2]

Administrative tenure of superintendent of schools and the high school principal have little significant correlation with quality and expenditure per pupil.[3]

Swanson[4] used the Associated Public School Systems time scale[5] to analyze the relationship between population and quality over the whole spectrum of district census populations from 1000 to 1 million.

His analysis showed a strong positive relationship up to 28,000 population. This relationship diminishes

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[1] Ibid., pp. 188-189.

[2] Ibid., p. 194.

[3] Ibid., p. 195

[4] Austin D. Swanson. "Relations Between Community Size and School Quality." IAR Research Bulletin, Vol. 2, No. 1 (October 1961), p. 1.

[5] See IAR Research Bulletin, Vol. 1, No. 2, for description of Time Scale.

until at 67,000 population, further increase in population is not likely to reflect an increase in school quality. In reviewing previous literature he indicated there was agreement among researchers that the chief detriment to quality was small enrollments in the high schools. His conclusion is

"Three decades of Institute research indicate that the most favorable conditions for achieving good school quality exist in communities from 20,000 to 50,000 in population. Below and above this range, special arrangements are necessary in order to achieve the best possible quality in education."[1]

McKenna[2] in his latest analysis of professional staff characteristics and quality concludes that research over the past twenty-five years has identified seven sound predictors, namely, (1) origin of staff (2) foreign travel (3) domestic travel (4) literary interests (5) amount of training (6) breadth of training (7) and professional interests. Promising factors are (1) age

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[1] Ibid., p. 3.

[2] Bernard McKenna. "Characteristics of Quality in Professional Staff." IAR Research Bulletin, Vol. 2, No. 1 (New York: Teachers College, Columbia University, October 1961), p. 8.

(2) sex (3) recency of training (4) training for administration (5) practice teaching (6) length of experience (7) experience in other school systems (8) professional participation (9) home visitation (10) parent-teacher conferences (11) and use of community resource people.

In the final analysis, in reviewing the literature and studies regarding quality presented here, it should be recognized that much work still must be done to develop adequate criteria to determine what quality is and how it can be measured. Vincent[1] in his latest article, "Criteria of Quality," which reviews past studies and current studies underway, alludes to the fact that, to date, an acceptable battery of quality measures has not been devised. It is his hope that eventually such a battery, analogous to the battery of tests by which a pupil is profiled, will be forthcoming.

Summary of Related Literature

To assure an orderly approach and for clarification of direction of this study, a categorical summary of the review of related literature is herewith presented. The

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[1]William S. Vincent. "Criteria of Quality." IAR Research Bulletin, Vol. 2, No. 3 (New York: Teachers College, Columbia University, April 1962), pp. 1-4.

general categories that appear to have an impact on this study and quality education as evidenced by the studies presented are:

(1) Level of support - Although it is common knowledge that levels of support vary from district to district, past research has proven that there is a great variance in the expenditures per pupil for education among school districts of the same size and different sizes, similar and different locations.

(2) Socio-economic community factors - Although these factors will be explored in greater detail in Chapter III, it is important to note from the studies presented that factors of size, community expectancy, cultural, economic, educational, and ethnic background, do have a recognizable impact on educational quality.

(3) Staff characteristics - Previous studies indicated that the most significant staff characteristics pointing to a quality program include: (a) origin of staff, (b) foreign travel, (c) domestic travel, (d) literary interests, (e) amount of training,

(f) breadth of training, and (g) professional interests.

(4) Recipient student - Quality in education is aimed at the student. How well he partakes, how well he assimilates, how successful his present and future needs are met, indicates the degree of experience and quality of the educational program. Those devices recognized in previous studies as possible measurements which appear to be indicative of possible quality criterion were (a) class size (b) pupil teacher ratio (c) availability of specialized services (d) achievement test results (e) dropout rates (f) availability of guidance and other extra school services.

(5) School plant adequacy - Studies seem to indicate adequate facilities with ample equipment and supplies tend to provide an atmosphere for quality education but do not assure that such is the case. An electorate willing to give adequate support after the initial investment of new buildings as well as a properly oriented staff and community to take the necessary advantage of the new facilities are both important factors.

CHAPTER III

PLANNING AND CONDUCTING THE STUDY

Determining the School Districts to be Studied

One of the important concerns of this investigation was to ascertain possible relationships that may or may not exist between facets of commonly accepted factors usually associated with quality in education and the level of support for education in selected school communities.

At the time of this study, Michigan had 532 high school districts with extremely varying enrollments. Preliminary investigation indicated that there was a very high concentration of school population in the south-eastern part of the State, namely, Oakland, Macomb, and Wayne Counties, which accounted for 824,112 students of the total state school population of 1,794,045. (Detroit with an enrollment of 291,988 was excluded for purposes of study at this point because of its size.)*

*All 1962-63 student enrollment and school district data for this part of the study was obtained from the Michigan Department of Public Instruction.

A preliminary investigation of the variance of level of financial support for education in the 532 school districts in the state indicated that the three counties of Oakland, Macomb, and Wayne had 79 high school districts representing the 824,112 children. These three counties also had school districts in all quartiles of level of support as established by Rhee.[1] It was also found that certain school districts in the three counties were among the very lowest and highest level of support when studied on a statewide basis.[2] These three counties also formed the complex for a highly urbanized, metropolitan community with one of the nation's larger cities, Detroit, as the central city. The other cities in the three county area formed the nucleus for metropolitan Detroit. This criterion of being metropolitan, in addition to others which will be developed later in this chapter, formed the basis for limiting this study to selected school districts of the three counties of Oakland, Macomb, and Wayne.

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[1]Jeung Rhee. "An Analysis of Selected Aspects of Public School Finance Systems in Michigan" (unpublished doctoral dissertation, Michigan State University, 1961).

[2]Statistical Report published by Stanley Hecker, Michigan Education Association, 1960-1961.

At the outset, the level of support was one of the major considerations for determining those school districts which would be utilized in this study. It was also determined that an analysis of certain other observable or statistical differences in size and community characteristics would be made prior to the final choice of the districts. After consultation with authorities in educational research on school finance at Michigan State University,[1] it was agreed that the three districts with the highest expenditure per pupil and the three with lowest expenditure per pupil would be used.

Preliminary Community and School District Determination

THE SCHOOL DISTRICT

An analysis of several previous studies revealed many variables could be found in the schools and communities of the three counties. In order to eliminate as many of these as possible among the school districts studied, an attempt was made to locate those districts with similar community characteristics.

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[1] Dr. Stanley Hecker, Dr. Fred Vescolani, Dr. Wilbur Brookover, Staff, College of Education, Michigan State University, East Lansing, Michigan.

The City of Detroit and its environs make up the major complex of approximately seventy cities in the metropolitan suburbia which includes the area encompassed by Wayne, Oakland, and Macomb counties. In most instances a visitor passing through the area would have difficulty knowing where the boundary of one city stopped and another started except for identifying city signs on the streets where civil boundaries change. By limiting the geographical area to school districts found in these three counties, the scope of this study showed a potential of ninety-three school districts including those offering less than a K-12 program.

Thaden, in his study, described a community school district as "a K-12 district in which less than 10 per cent of the pupils in grades 9 through 12 are non-resident . . . "[1] Since Thaden's study dealt primarily with Michigan schools and Michigan communities, it appeared that most of his criteria pertaining to school districts and communities would be acceptable to

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[1] J. F. Thaden. Equalizing Educational Opportunity Through Community School Districts. Michigan State University, Agricultural Experiment Station, Department of Sociology and Anthropology, Bulletin No. 410 (East Lansing, Michigan, January 1957), p. 7.

establish the community concept for this study. However, it must be noted that certain other criteria as established by other accepted authorities were included to assure proper delineation of the school districts to be studied. Being more specific, in the procedures used in selecting the school districts for this study, the following screening criteria were established.

THE SCHOOLS

To negate as much as possible the influence of rapid change or fluctuation of practices within school districts as alluded to by Bowyer,[1] they had to fulfill all of the following criteria for five or more years.

1. The educational offering in the school district included grades kindergarten through twelfth (Thaden).

2. Fewer than ten per cent of pupils in grades nine through twelve were non-resident students (Thaden).

3. Secondary school was accredited by the North Central Association of Colleges and Secondary Schools and the Michigan Secondary School-College Agreement program.

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[1] Vernon Bowyer. Measuring the Economic Value of Education in the States. p. 178.

4. There was a graduating class of 100 or more students.[1]

5. There was only one high school in the district.

6. District was located in Oakland, Macomb or Wayne County.

Preliminary research was conducted to determine the characteristics of the ninety-three school districts found in the three counties of Oakland, Macomb, and Wayne. Those districts that did not satisfy all of the criteria listed above were eliminated.

Information pertaining to the five-year offering of a (1) complete kindergarten through high school educational program in the district, (2) fewer than ten per cent non-resident students in grades nine through twelve was taken from the official records as submitted by boards of education to the State Department of Public Instruction. Data regarding North Central and University of Michigan accreditation and size of graduating classes over the past five years were taken from the

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[1]James B. Conant. The American High School Today. (New York: McGraw-Hill Book Company, 1957) p. 38 and Appendix G, pp. 132-3.

University of Michigan Services Bureau Bulletin, "Michigan Accredited Schools," which is published each year. To ascertain the number of high schools in each district, a survey was conducted by contacting the county board of education offices for each of the three counties.

The results of these studies showed forty-two school districts satisfied all the above six preliminary screening criteria.

Since this study concerned itself with the different levels of support and commonly accepted factors usually associated with quality, a further evaluation of the districts had to be made to determine the level of support each district expended for the education of its pupils.

However, a recent report[1] had already established the level of support of all the school districts in the State of Michigan. From this 1961 study which also established quartile limits for level of support as these limits applied to all of the districts in the state, it

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[1]Jeung Rhee - unpublished thesis, "An Analysis of Selected Aspects of Public School Finance Systems in Michigan." Michigan State University, 1961.

was found by preliminary investigation that some of the forty-two districts fell within each quartile level of support with a large number falling among both the very highest expenditure level and the very lowest expenditure level of support in the state.

It must be mentioned here also that during the time the expenditure level per pupil was being established, there was considerable consultation with the chairman and other members of the advisory committee as well as other authorities in educational administration and research design regarding the method of final selection of the sample districts to be studied. Since the preliminary investigation pertaining to level of support had shown a normal distribution for the forty-two districts among the four previous established quartiles, it was decided to use a limited group of the very highest and very lowest expenditure districts for this study. It was hoped that by using the extremes, the highest and lowest, the measurable differences between the two groups of districts would be more pronounced and easily identified.

It had also been established[1] that prolonged periods of time with high or low level of support reflected greater impact upon the level of the quality of the educational program than when level of supports are inconsistent, vacillating from high to low and vice versa, year after year. For this reason, a historical study of each of the forty-two school district expenditure patterns for the past five years was made.

To determine the expenditure level per pupil, commonly accepted practices as established by the Michigan Education Association and the Metropolitan Detroit Bureau of School Studies were used; namely, using total operating monies less transportation, auxiliary services, and capital outlay items which were divided by the number of students in school on the fourth Friday after Labor Day, the determining date used by the Department of Public Instruction for official statistical computations. Where computations had previously been made by these agencies, they were used in the compilation. However, there were several school districts

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[1]Arvid J. Burke, et al. "Does Better Education Cost More?" Committee on Tax Education and School Finance (Washington: National Education Association, 1959), p. 35.

which were not affiliated with the above agencies; consequently, there were no statistics available for these districts. Further, at the outset of this study the 1961-62 statistics had not been completely compiled by these agencies. Where such information was not available, the writer compiled the statistics from the Annual Report of the Board of Education of each school district as submitted to the Department of Public Instruction. Procedures as outlined above were used in order that there would be assurance of consistency in the statistics computed. In this manner, the computed statistics could be used in conjunction with those obtained from the Michigan Education Association and the Metropolitan Detroit Bureau of School Studies.

In the interest of eliminating those districts that would not be potential candidates for study due to the previously established level-of-support criteria, the following procedure was used: The forty-two school districts were listed according to rank, one through forty-two, the highest expenditure per pupil being number one and the lowest expenditure per pupil being forty-two, for the school year 1961-62. From this list were taken the top ten expenditure districts and bottom

ten, making a total of twenty districts.

The expenditure per pupil for the past five years for each of the ten top expenditure as well as the ten bottom expenditure districts was tabulated. It should be noted that the districts did not rank in the same order each year of the tabulation. Yet, no school district changes its total ranking more than two points over the five-year period. This indicated a consistent level of support. In order that a ranking could be established which reflected the total five-year expenditure of each district, the ranking of from 1 to 10 was made for each year of the highest ten expenditure-districts each year, starting with highest expenditure district as one and progressively down the list to rank of ten for the lowest expenditure district of the high-expenditure districts. An additive accumulation was made of the rankings of each of the ten districts for the five years. The lowest sum-total, in this manner, became, historically, the highest expenditure district over the five-year period. In this manner, the three highest-expenditure districts could be established. In like manner, in inverse order the rankings of the low-expenditure school districts were

determined and the three lowest-expenditure districts were established.

An interesting sidelight of these studies indicates that in 1961-62 the lowest expenditure per pupil of the districts studied was $279.28, while the district with the highest expenditure per pupil was $599.33, or 2.1+ times as much as the lowest expenditures.

THE COMMUNITY

Thaden[1] established five basic services necessary to establish a community in addition to being a center for trade. The first criteria are his; the remainder are those of the writer or taken from other sources. These were minimum requirements to establish the basic community.

Concurrently with the study of the forty-two school districts as defined earlier, their community services were evaluated by means of the following criteria to assure that the school district was an integral part of the community in which it served. The

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[1] Thaden, op. cit., p. 41.

community (and school district) were to have:

1. A bank
2. A daily or weekly newspaper
3. A movie
4. A medical doctor
5. A dentist
6. Forty or more businesses
7. An observable population center which forms a part of a major political subdivision.
8. A portion not commonly referred to as a "resort" or "harvest labor" community.

An analysis of the community characteristics showed that the forty-two communities also fulfilled these criteria. The data collected for this portion of the study were from personal observation and information available from local chambers of commerce or other comparable sources. When a district satisfied the eight minimal community requirements, no further analysis was made to denote the exact number found in each category.

From these data and previous delimiting criteria, the three highest expenditure-per-pupil districts and the three lowest expenditure-per-pupil districts were established.

Due to the confidential nature of many of the future statistics to be interpreted in this study, and since it would not enhance the purpose of this study to publicly identify the school districts chosen, hereafter the districts shall be identified A, B, C, starting with the highest ranking district as A, and X, Y, Z as the lowest ranking districts, Z being the lowest.

Other Determinant Factors of Social and Economic Characteristics of Selected Districts

Concurrently with the preceding criteria, care was taken to comply with community-size criteria. Ross[1] and Swanson[2] found a strong positive relationship between quality and community sizes, the greatest relationship being in cities of lower population limits of 15,000 and upper limits varying from 67,000 to 100,000. After consultation with the advisory committee for this study, the decision was made to eliminate school districts having populations of under 15,000 and over 70,000 persons.

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[1]Donald H. Ross. Administration for Adaptability (New York: Metropolitan School Study Council, 1958), pp. 182-88.

[2]Austin D. Swanson. "Relations Between Community Size and School Quality" (IAR Research Bulletin, Vol. 2, No. 1, October 1961) p. 1.

It must be understood that most school districts in this area of study, namely, the Metropolitan Detroit area, are comparatively large and have city and school district coterminous boundaries except for small segments of the boundaries in a few of the districts and cities.

Thaden in his writings,[1] as well as in consultation with him, agreed that the small discrepancies between the boundaries of cities and school districts in this study were inconsequential.

By keeping the size of the school districts within these limits, there was indication from previous studies that other differences might be more easily observed and identified. Thus, a hoped-for possible elimination of differences caused by school district size; or inversely, as noted in previous studies, a heretofore variable could be partially controlled by design.

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[1] J. F. Thaden. Equalizing Educational Opportunity Through Community School Districts. Michigan State University Agricultural Experiment Station, Department of Sociology and Anthropology, Bulletin No. 410 (East Lansing, Michigan, January 1957), pp. 1-41.

Using the United States Census figures of 1960[1] as the authority, it was determined that 23 school districts (of the forty-two defined previously) in the Metropolitan area met the population requirements as did the three highest and three lowest-expenditure districts heretofore established.

Herewith is presented census figures of the six districts:[2]

High School District	Expenditure	Low School District	Expenditure
A	38063	X	53933
B	18147	Y	38017
C	17328	Z	50195

Defining the Criteria to be Measured and Conducting the Research

Most of the criteria used in this study were taken from those previous studies which had shown significant relationship between expenditures and possible measures of quality.

The major hypothesis was to determine whether such

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[1]United States Department of Commerce, Bureau of Census. "United States Census of Population: 1960 Michigan." Final Report PC.(1) 24C, United States Government Printing Office, Washington, D. C., 1962.

[2]Ibid., pp. 24-222 to 24-292

measurable criteria were significant in an evaluation of the selected districts with the highest per capita costs as compared with the districts of lowest per capita cost.

There have been many general statements,[1,2] as mentioned in Chapter II, indicating that the level of expenditure per pupil for education is the best "one" indication for quality. The fact still remains that the facets of possible quality within the framework of what education buys have not been clearly defined.

As described in Chapter II, there are many hundreds of criteria on cost-quality which have been studied by students who are searching for a possible means to identify quality factors related to per-pupil expenditure. For the purpose of this study, one of the major interests was in the area of the staff and what the teachers brought with them to the classroom. Several studies[3] had previously pointed to this area as holding great promise. Previous studies had also indicated that certain criteria of staff characteristics showed greater promise than others. Previous studies had also indicated communities

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[1]Bloom and Statler, op cit., pp. 220-21.

[2]Arvid Burke, op cit., p. 33.

[3]Bernard McKenna, op cit., p. 8.

with varying sociological and economical characteristics had a measurable impact on the expectation of education, level of support, hence the level of possible quality being very closely related to these community characteristics.[1]

In addition to these criteria, other promising measurable criteria were included.

One of these criteria was the age of school buildings. Previous research indicated that the age of buildings had little or no significant relationship to level of support and quality. Yet it was thought at the outset of this study that this criteria might have value in this study. However, a brief overview of the facilities of the districts found in this report showed that the age of the schools in the majority of the districts varied from one year to seventy with no discernable pattern which would indicate any level of significance. Consequently, this was not pursued.

To simplify and assure an orderly approach to this

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[1]Samuel M. Goodman, Director. "The Assessment of School Quality." Report No. 1 of Quality Measurement Project (Albany 1, New York: State Education Department, March 1959), pp. 1-27.

study, the criteria were broken down into four areas. The first included those relating to the teacher, the second, to the student, and the third, to the community. The fourth area includes an analysis of the budgets of the school districts under study.

I. THE TEACHER

Previous studies that had divided the staff into K-6 grade teachers and 7-12 grade teachers indicated that there were significant staff characteristics which point to quality programs and high expenditure levels. Some of these were measured according to the following criteria:

1. Teachers' years of experience.
2. Teachers who had previous teaching experience prior to present employment.
3. Teachers with over fifteen years of experience.
4. Date of master's degree.
5. Date of bachelor's degree.
6. Age of teaching staff.

7. Teachers who had previously lived:* out-of-state, outstate, or in the metropolitan area.

8. Teachers who had traveled 500, 1000, or 2500 miles or had traveled in a foreign country in the last three years.

9. Teachers who had taken four or more trips of 500, 1000, or as much as 2500 miles.

10. Number of non-professional books owned by teacher.

11. Number of non-professional books purchased by teachers in last three years.

12. Number of non-professional books read by teachers in last three years.

13. Number of non-professional magazines subscribed to by teacher.

14. Number of professional books purchased by teacher in last three years.

15. Number of professional magazines currently subscribed to by teacher.

16. Areas of study teacher is certified to teach.

17. Median salary of total staff.

*"Out-of-state" is self-explanatory; "outstate" is to mean the total state of Michigan excluding Wayne, Oakland, and Macomb Counties.

A teacher-characteristics questionnaire* was developed to provide data for the above criteria. Although a preliminary sampling of ten teachers was used to determine the adequacy of the wording and intent of the instrument, there were data from two questions which later proved of no use.[1]

In this part of the study dealing with the results of the questionnaire, no attempt was made to keep teachers separated by school, only by level of support, i.e., high-expenditure districts and low-expenditure districts.

Upon consultation with staff members of the Bureau of Research and Publications at Michigan State

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*A copy of the questionnaire used may be found in the Appendix.

[1]The data from question #14 [Number of credits in education courses,_____semester hours or_____term hours (estimate).] was not definitive since a large number of teachers indicated over 100 hours in "education courses" which seemed to be a highly improbable answer. Question #16 [I have attended ____ different professional conferences of half-day or more. Total days of conference_____.] because of a clerical error, the time limitation of "last three years" had been omitted, making this question ambiguous. Previous studies had shown a relationship to quality and recency of professional conferences and further training.

University, it was agreed that a sampling of approximately 250 teachers in the high-expenditure school districts and a similar amount in the low-expenditure ones should be made. Since there were more teachers in the low-expenditure school districts than the high, the technique to choose the teachers who would assure similar numbers of statistics for analysis was as follows: A list of the staffs of each district was obtained from each school district superintendent's office. These lists were broken down into two alphabetical groups--kindergarten through sixth grade, and seventh grade through twelfth. In the high-expenditure district, teachers were chosen by starting with the first teacher and then every third teacher thereafter; teachers of the low group were chosen by starting with the first and checking every fifth teacher thereafter. Then to those teachers chosen for the study a letter of transmittal, the "teacher characteristics questionnaire," and a self-addressed envelope were sent. There were 244 letters sent to teachers of high-expenditure districts and 257 letters sent to low-expenditure ones, making a total of 501 letters.

It should also be noted that prior to the mailing, a personal explanation of the purpose of the study as well as the content of the letters was given to each of the six superintendents whose teachers were to receive the questionnaire.

Due to the size of the original mailing, no plans were made to send follow-up letters to those persons failing to answer the first mailing.

Returns came from 151 teachers of the high-expenditure districts and 153 teachers of low-expenditure districts for a total of 304 or a 60.7 per cent return. There were three letters returned from low-expenditure districts unopened because of wrong address.

II. THE STUDENT

The second concern was to establish criteria of a subjective, measurable nature that would give a possible indication of what was happening to the pupils who attended these schools. The criteria used in this part of the study were these:

1. The pupil-teacher ratio in the elementary grades.

2. The pupil-teacher ratio in the high school.

3. Availability of guidance and counseling in the high school (pupil-counselors).

4. Number of library books and facilities per high school pupil.

(Most of the above data for the high school were available from the original reports filed by the respective schools with the North Central Association of Colleges and Secondary Schools.

All of the other data were obtained from the business offices of the school districts studied.)

III. THE COMMUNITY

As was mentioned earlier, the committee on Tax Education and School Finance[1] and Goodman[2] indicated that the level of income was an observable, positive determinant for the level of support the schools received in a community. Since these two studies also found that the education level of the adult population of a community was a positive determinant of the kind of support the schools of a community received, it appeared

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[1]Arvid J. Burke, op cit., pp. 35-36.

[2]Samuel M. Goodman, Director, op cit., pp. 1-27.

necessary to include this aspect in studying these selected districts. Other factors which showed promise are also listed.

1. Level of family income.

2. Education level, male and female population.

3. Proportion of 14-17 year olds still in school.

4. Mobility of population.

5. Proportion of native and foreign born.

IV. ANALYSIS OF SCHOOL BUDGETS

From the reports of Bothwell[1] it was found that quality was generally improved when all items of instructional expenditures in the budget were advanced, and that over-emphasis in any one area of spending was "bad." He[2] concurred with Brickell,[3] Teresa[4] and Furno[5] who found

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[1]Bruce K. Bothwell, op cit., p. 8.

[2]Donald H. Ross, op cit., p. 397.

[3]Henry M. Brickell, op cit., p. 41.

[4]Anthony J. Teresa. "An Analysis of the Effect of Various Specific Items in School Accounts," (New York: Unpublished Ed.D. project, Teachers College, Columbia University, 1955) pp. 35-38.

[5]O. F. Furno. "The Projection of School Quality From Expenditure Level." (New York: Unpublished Ed.D. Project, Teachers College, Columbia University, 1956)

school districts have a definable central tendency on expenditures by major and minor accounting categories, but considerable individual variation among school districts exists, not only in total amounts but in amounts and proportions for individual categories.

The fourth area of study was to analyze the budgets of the six schools to determine actual and proportional difference in expenditure level patterns.

Summary

In this chapter, the general methods used in the study have been presented, including the procedures for choosing the school districts and the criteria to be used in the evaluation. A description of the sources, steps, methods, and sampling techniques was given. All the criteria established above have been preliminary to the next step which deals with the actual tabulation and statistical analysis of the study. The results of these data have been collected, computated, and appear in Chapter IV.

CHAPTER IV

ANALYSIS OF SELECTED CRITERIA

In this chapter selected criteria are analyzed. The first section deals with possible measurable differences between staffs of districts having high and low expenditure per pupil. The reader is reminded that those teachers from the low expenditure districts were treated as one group and the teachers from the high expenditure schools as another. For the purpose of this study, no attempt was made to identify the teachers by specific districts. It should also be noted that not all questions were answered by all recipients: hence there are varying totals.

For purposes of analysis of statistics obtained in this first portion, the chi-square (or X^2) method of analysis was used. For a more thorough explanation of this technique the reader is referred to Helen M. Walker and Joseph Lev's[1] book, Statistical Inference. It will

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[1]Helen M. Walker, Joseph Lev. Statistical Inference (New York: Henry Holt & Company, 1953), pp. 81-108.

suffice to explain here that chi-square is the computation of a statistic which measures the discrepancy between observed and hypothetical expectancy frequencies (and to study the sampling distribution of that statistic).

The level of significance of all statistical computations in this study was set at .95; those above this level were considered to be significantly different and are so noted.

The second part of the data analysis deals with possible measurable differences between selected staff-pupil relationships and pupil-selected portions of physical plant relationships. Since these statistics appear to violate assumptions of binomial populations (P or P^2) which is fundamental to chi square, it is impossible (not acceptable) to analyze the above using X^2. However, the data is analyzable through the use of a T-test comparing high and low expenditure districts. With samples this small there exists some theoretical problems which need to be considered only if T statistic is near the border line of significance. In such cases we must accept or reject with reservation.

The third part deals with selected community characteristics of the school districts studied. In this section, the chi-square method of analysis was used.

The fourth part deals with the per-pupil cost factors. Since by inspection the data are not normally distributed, a parametric T test is not appropriate. For this data the Mann-Whitney[1] U test appears to be best suited. The Mann-Whitney U test was chosen because this study employs two independent samples, uses small samples, and uses measurements which are at most in our ordinal scale. The Kolmogorov-Smirnov two-sample test was also used which gave the identical results.[2]

1. THE STAFF

This part of the chapter is devoted to objective measurements of the teaching staffs of the selected group of school districts. McKenna, in summarizing his

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[1]Sidney Siegel. Nonparametric Statistics (New York: McGraw-Hill, 1956), pp. 116-136.

[2]Helen M. Walker and Joseph Lev. Statistical Inference (New York: Henry Holt and Company, 1953), pp. 426, 440, 443.

own studies and nine other previous studies, had stated that "it is now possible to describe a high calibre teaching staff by using groups of objective measures that have been found to bear high relationships to several criteria of school quality."[1] Most of the "objective measures" used by McKenna and others to describe the staff have been incorporated as "measures" in this study. However, some of the data will be treated statistically in a different manner. As was stated previously, the purpose for which the data on staff characteristics will be used herein is to determine possible significant differences between staffs of high and low expenditure school districts. A few of the questionnaires were not completely filled out; hence the varying data in a few of the categories.

The following pages then identify and analyze the data.

A. LENGTH OF EXPERIENCE OF TEACHING STAFF

The first criterion used was the total years of teaching experience the teacher had at the time of the

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[1]Bernard McKenna. Characteristics of Quality in the Professional Staff, IAR Research Bulletin, Institute of Administrative Research (New York: Teachers College, Columbia University, Vol.2, No.1, October 1961), p. 4.

survey. As was done in previous studies, the teachers were placed into two groups, the first group being those who taught in kindergarten through sixth grade and the other in grades seven through twelve. This same grouping was used for all subsequent criteria unless otherwise noted.

(1) Years of Teaching Experience of K-6 Teachers

Years of Experience	High*	Low*
1-4½	12 (18.87)**	26 (19.13)**
5-9½	21 (21.36)	22 (21.64)
10-14½	12 (8.44)	5 (8.56)
15+	29 (25.33)	22 (25.67)
	74	75

X^2 = 9.0189
X^2.05 = 7.815

There was a significant difference at the .05 level. High expenditure districts employed K-6 teachers having longer teaching experience. Since this suggested further analysis of the data, they were collapsed into two experience levels, less than five years and five years or more.

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*Here and in future tabulations, High shall mean High Expenditure Districts and Low shall mean Low Expenditure Districts.

**Here and in future data, the expected theoretical frequency is included.

(1) (continued) Collapsing the above data

Experience	High	Low
Less than 5 years	12 (18.87)	26 (19.13)
5 or more years	62 (55.13)	49 (55.87)

$X^2_2 = 6.6692$
$X^2.05 = 3.84$

There was a significant difference at the .05 level noted when years of experience was broken into groupings of "less than 5" and "5 or more years." By inspection it was observed that the High expenditure districts had the greater number of K-6 teachers with five or more years of experience.

(2) Years of Teaching Experience of 7-12 Teachers

Years of Experience	High	Low
1-4½	17 (26.83)	37 (27.17)
5-9½	14 (17.88)	22 (18.12)
10-14½	16 (11.92)	8 (12.08)
15+	30 (20.37)	8 (20.63)
	77	78

$X^2 = 20.6531$
$X^2.05 = 7.815$

There was a significant difference at the .05 level between the high and low expenditure districts when measured in terms of teaching experience of the 7-12 grade staff. By inspection, there were more 7-12 grade teachers in the high expenditure districts with more years of experience than was expected.

Further study of the data was done by using "less than five years of experience" and "five or more years."

(2) (continued) Collapsing the above data

Experience	High	Low
Less than 5 years	17 (26.83)	37 (27.17)
5 or more years	60 (50.17)	41 (50.83)
	77	78

$X^2_2 = 10.9850$

$X^2.05 = 3.84$

This, too, showed a significant difference at the .05 level between the groups with the high expenditure districts having a greater number of teachers with five or more years of experience.

Further analysis of these data was done by collapsing and categorizing the experience data into groupings of "less than 15" and "15 or more years of experience."

(2) (continued)

Experience	High	Low
Less than 15 years	47 (56.63)	67 (57.37)
15 or more years	30 (20.37)	11 (20.63)
	77	78

$X^2_2 = 12.3019$

$X^2.05 = 3.84$

This, too, showed significant difference at the .05 level with fewer teachers than expected in the high

expenditure districts having less than fifteen years' experience and more teachers than expected having fifteen or more years' experience.

B. TEACHING EXPERIENCE PRIOR TO PRESENT EMPLOYMENT

Previous studies had indicated that high expenditure districts usually employed teachers with previous teaching experience, while low expenditure districts were the training ground for the inexperienced teacher. An analysis was made of this criterion.

(3) Teachers with previous experience vs. No previous experience - K-6

	High	Low
Experience	50 (47.18)	45 (47.82)
No Experience	24 (26.92)	30 (27.18)
	75	75

$X^2_2 = .9239$
$X^2.05 = 3.84$

There appeared to be no significant difference at the .05 level between the high and low expenditure schools when comparing the number of elementary teachers who did or did not have previous experience.

(4) Teachers with Previous Experience - grades 7-12

	High	Low
Experience	48 (41.73)	36 (42.27)
No Experience	29 (35.27)	42 (35.73)
	77	78

X^2 = 4.0870
$X^2.05$ = 3.84

There was a significant difference at the .05 level when comparing the number of secondary teachers who did or did not have previous teaching experience, with the high expenditure districts having more teachers with previous experience, and less teachers with no previous experience than expected.

C. LEVEL OF EDUCATION OF PROFESSIONAL STAFF

There had been numerous studies indicating a positive relationship existed between the level of education of teachers, the expenditure level, and quality. Mort and Cornell[1] very adequately sum up the major conclusions of most of the studies referred to earlier in this study when they say:

> "It must be emphasized that the level of training of teachers is the only personnel factor, with the exception of the question of outside experience, great enough in its relationship with

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[1]Paul R. Mort and Francis G. Cornell. American Schools in Transition (The Pennsylvania Study) (New York: Bureau of Publications, Teachers College, Columbia University, 1941), p. 277.

> adaptability (quality)* and finance resources to offer statistically, to a considerable degree, an explanation for that part of the relationship of adaptability (quality)* to finance groupings which might not be attributable to chance."

So that data might be obtained of the level of training of the staffs of the six school districts, the teachers were divided into three groups. The first included all those teachers who had fewer than thirty semester hours beyond a bachelor's degree. (It should be noted here that of all of the elementary and secondary teachers of districts studied only one elementary teacher did not have a bachelor's degree, and that in the low-expenditure group.

"Master's degree" was the second group which included teachers with a master's degree but with fewer than thirty semester hours beyond it.

The third group included those teachers who had more than thirty semester hours beyond the master's degree designated as "Master's plus 30."

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*Adaptability and quality are used synonymously by Mort. He defines and uses the terms interchangeably. The word "quality" was inserted by this writer to better orient the reader who may not be familiar with Mort's definition of adaptability as was previously presented in Chapter I.

(1) Elementary Teachers' Education Level (K-6 grades staff)

	High	Low
Bachelor's degree	35 (46.19)	58 (46.81)
Master's degree	31 (23.34)	16 (23.66)
Master's plus 30	8 (4.47)	1 (4.53)
	74	75

X^2 = 15.913
$X^2.05$ = 5.99

There was a significant difference at the .05 level in the level of training between the elementary staffs of the high and low-expenditure districts. The data showed that there were more elementary teachers with advanced training in the high-expenditure districts and fewer than expected with a bachelor's degree only. The reverse was true in the low-expenditure districts.

(1) (continued) Collapsing the above data

	High	Low
Bachelor's degree	35 (46.19)	58 (46.81)
Master's and above	39 (27.81)	17 (28.19)
	74	75

X^2 = 11.383
$X^2.05$ = (1df) = 3.84

There was a significant difference at the .05 level in the level of training of the elementary staffs of the high and low-expenditure districts. A positive relationship existed between the level of support and the level of training of the elementary staff with the

high-expenditure district having more elementary teachers than expected with advanced training and fewer with bachelor's training only. The low-expenditure districts had more teachers than expected with bachelor's training and fewer with master's degrees or above.

Arithmetical computation reveals that in high-expenditure districts the ratio of elementary teachers holding a bachelor's degree to those with a master's degree or above is .9 to 1. In the low-expenditure districts the ratio was 3.4 to 1.

(2) Secondary Teachers' Education Level (Grades 7-12 staff) (High - 1 MA for each 9 BA; Low - 1 MA for each 3.4 BA)

	High	Low
Bachelor's degree	24 (35.77)	48 (26.23)
Master's degree	40 (33.78)	28 (34.22)
Master's plus 30	13 (7.45)	2 (7.55)
	77	78

X^2 = 18.183
$X^2.05$ = (2df) = 5.99

There was a significant difference at the .05 level in the level of training of the secondary staffs of the high and low-expenditure districts. A positive relationship existed between the high expenditure districts and the amount of advanced training the

secondary staff had. The reverse was true for the low expenditure districts. By inspection there were more secondary teachers in the high expenditure districts with advanced training and fewer with a bachelor's degree only than expected with the reverse being true in the low-expenditure districts.

(2) (continued) Collapsing the above data

	High	Low
Bachelor's degree	24 (35.77)	48 (36.23)
Master's and above	52 (41.23)	30 (41.77)
	77	78

X^2 = 18.243
$X^2.05$ = (1df) = 3.84

There was a significant difference at the .05 level in the level of training of the secondary staffs of the high and low-expenditure districts. A positive relationship existed between the level of support and the level of training of the secondary staff, with the high-expenditure districts having more secondary teachers with advanced training and fewer with only a bachelor's training than expected. The low-expenditure districts had more secondary teachers with only a bachelor's training and fewer than expected with a master's degree or above. By inspection and arithmetical computation, in the high-expenditure district the ratio of

bachelor's degree secondary teachers to those with master's degree or above was .45 to 1. In the low-expenditure district the ratio of bachelor's degree secondary teachers to those holding master's degrees or above was 1.6 to 1.

D. RECENCY OF RECEIVING BACHELOR'S DEGREE

(1) K-6 Staff

	High	Low
Bachelor's degree before 1952	36 (31.60)	29 (33.40)
Bachelor's degree 1952-1957	22 (18.96)	17 (20.04)
Bachelor's degree 1958-1963	12 (19.44)	28 (20.56)
	70	74

X^2 = 7.6803
$X^2.05$ = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts with the high-expenditure district K-6 grade staff having a larger number of elementary teachers with bachelor's degrees for a longer period of time than expected and vice versa for the low-expenditure districts.

(1) (continued) Collapsing the above data

	High	Low
Bachelor's degree before 1952	36 (31.59)	29 (33.41)
Bachelor's degree 1952-1963	34 (38.41)	45 (40.59)
	70	74

X_2^2 = 2.1831
X^2.05 = 3.84

There was no significant difference at the .05 level between the high and low-expenditure districts K-6 grade staff when comparing the number of teachers who had received their bachelor's degrees on or before 1952 and after 1952.

(1) (continued) Collapsing original data to (a) prior to 1958 and (b) 1958 and since

	High	Low
Bachelor's degree prior to 1958	58 (50.55)	46 (53.45)
Bachelor's degree 1958 and since	12 (19.45)	28 (20.55)
	70	74

X_2^2 = 7.6906
X^2.05 = 3.84

There was a significant difference at the .05 level between the high and low-expenditure districts with the high-expenditure districts having fewer K-6 teachers who received their bachelor's degrees within the last six years.

(2) Grades 7-12 Staff

	High	Low
Bachelor's degree before 1952	46 (34.00)	22 (34.00)
Bachelor's degree 1952-1957	14 (15.50)	17 (15.50)
Bachelor's degree 1958-1963	15 (25.50)	36 (25.50)
	75	75

X_2^2 = 17.4076
X^2 .05 = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts with the high-expenditure districts high school staffs having a greater number of high school teachers with bachelor's degrees for a longer period of time than expected.

(2) (continued) Collapsing the above data

	High	Low
Bachelor's degree before 1952	46 (34)	22 (34)
Bachelor's degree 1952-1963	29 (41)	53 (41)
	75	75

X_2^2 = 15.4946
X^2 .05 = 3.84

There was a significant difference at the .05 level between the high and low-expenditure districts with the high-expenditure districts 7-12 grade staff having a greater number of teachers receiving their bachelor's

degrees prior to 1952 and vice versa for the low-expenditure districts.

(2) (continued) Collapsing further

	High	Low
Bachelor's degree prior to 1958	60 (49.50)	39 (49.50)
Bachelor's degree 1958 to 1963	15 (25.50)	36 (25.50)
	75	75

X_2^2 = 13.104
$X^2.05$ = 3.84

There was a significant difference at the .05 level between the high and low-expenditure districts with a larger proportion of the high-expenditure districts' high school staffs receiving their bachelor's degrees prior to 1958 and vice versa for the low expenditure district staffs.

E. RECENCY OF RECEIVING MASTER'S DEGREE

(1) Grades K-6 Staff

	High	Low
Master's degree before 1951	10 (8.18)	2 (3.82)
Master's degree 1952-1957	11 (8.86)	2 (4.14)
Master's degree 1958-1963	9 (12.96)	10 (6.04)
	30	14

X_2^2 = 6.7011
$X^2.05$ = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts. A larger proportion than expected of the high-expenditure K-6 staff received more of their master's degrees prior to the last five years than the low expenditure K-6 staff.

(2) Grades 7-12 Staff

	High	Low
Master's degree prior to 1952	23 (19.23)	8 (11.77)
Master's degree 1952-1957	12 (9.92)	4 (6.08)
Master's degree 1957-1963	14 (19.85)	18 (12.15)
	49	30

X^2 = 7.6348
$X^2.05$ = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts. A higher proportion than expected of the high-expenditure 7-12 grade staff received more of their master's degrees prior to 1957.

(2) (continued) Collapsing data to (a) prior to 1952 and (b) 1952 to 1963

	High	Low
Master's degree prior to 1952	23 (19.23)	8 (16.77)
Master's degree 1952-1963	26 (29.77)	22 (18.23)
	49	30

X^2 = 3.204
$X^2.05$ = 3.84

There was no significant difference at the .05 level between the high and low-expenditure districts 7-12 grade staffs when comparing proportionate numbers of teachers who received their master's degrees prior to 1952 and those who received them between 1952 and 1963.

(2) (continued) Collapsing original data to (a) prior to 1958 and (b) 1958 to 1963

	High	Low
Master's degree prior to 1958	35 (29.15)	12 (17.85)
Master's degree 1958-1963	14 (19.85)	18 (12.15)
	49	30

$X_2^2 = 7.632$
$X^2.05 = 3.84$

There was a significant difference at the .05 level between the high and low-expenditure districts with a greater number of the high-expenditure districts 7-12 grade staffs than expected receiving their master's degrees prior to 1958 than the low-expenditure districts.

F. NUMBER OF AREAS OF PROFESSIONAL COMPETENCE TO TEACH 7-12 GRADE STAFF

The areas were defined as those in which the teacher had attained at least 16 semester hours of formal college education. Only those statistics obtained from the seventh through twelfth grade staff were usable. Although all teachers from the kindergarten through the

sixth grade attempted to answer this question on the questionnaire, there was considerable confusion as to its meaning. A large number answered "elementary education" instead of making the traditional interpretation of subject area which is apparently more readily understood by the seventh through twelfth grade teacher. No attempt was made to define the areas but rather the number of areas.

Due to the Michigan Teachers' Certification Code most Michigan teachers are required to have three teaching areas, usually a major teaching area and two minor ones. Therefore, the 7-12 grade teachers were divided into two groups, those who were qualified to teach (1) three or fewer areas and (2) more than 3 areas.

	High	Low
Three or less areas	45 (52)	59 (52)
More than three areas	31 (24)	17 (24)
	76	76

$X^2 = 5.9678$
$X^2.05 = 3.84$

There was a significant difference at the .05 level with the high expenditure districts employing more high school teachers with a greater number of qualified teaching areas.

G. EXPERIENCED TEACHERS vs. RECENCY OF ADDITIONAL EDUCATION

Recent studies[1] have indicated that quality factors pertaining to classroom teaching could be measured in terms of the experienced teacher and the recency with which he or she has had additional training. Persons with fifteen or more years of experience were selected for this section of the study. The basis for the selection of fifteen or more years' experience was due in part to the peculiarity of the Michigan Teacher Certification Code which requires a teacher to obtain ten additional semester hours of training within the first five years of teaching in order that he may have his teaching certificate renewed. In viewing the data of this study, it was also observed that most of the teachers new to the profession had had a considerable amount of additional study since graduation. It was also observed that this pace on the part of all of the younger teachers seemed to continue through the first ten or twelve years but that after 15 years experience there was a noticeable drop in additional course work.

There are two factors which may have some bearing

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[1]Bernard McKenna. op cit., p. 4.

on this phenomenon. One factor is that since teachers are compelled to obtain ten semester hours in their first five years of teaching which is usually one third of the requirement for a master's degree, they may be electing to continue work toward that degree. Some colleges have also put limits on the length of time allowed to complete advanced degrees. The second factor may be due to the large attrition rate of the younger teachers. It is common knowledge that a large percentage of eligible teachers leave the profession between their fifth and tenth year of teaching. This leaves primarily career teachers who are continuing their education toward the next degree level ordinarily obtained prior to their twelfth year level of experience. Because of this, the career teacher of fifteen or more years experience was chosen for study.

(1) Persons with fifteen or more years of experience and recency of education, K-6 grades staff

	High	Low
Credit in last three years	11 (9.67)	6 (7.33)
No credit last three years	18 (19.33)	16 (14.67)
	29	22

$X^2 = .6362$
$X^2.05 = 3.84$

There was no significant difference at the .05 level between the K-6 teachers in these selected school districts of high and low-expenditure when comparing recency of training.

(2) Persons with fifteen or more years of experience and recency of education, 7-12 grade staff

	High	Low
Credit in last three years	15 (14.63)	5 (5.37)
No credit last three years	15 (15.37)	6 (5.63)
	30	11

X^2 = .0681
$X^2.05$ = 3.84

There were no significant differences at the .05 level between the 7-12 teachers in these selected school districts of high and low-expenditure levels when comparing recency of training.

H. ORIGIN OF STAFF

McKenna and others[1] believe that a wide variety of geographical backgrounds in the teaching staff is favorable to a school system as it reflects a quality educational program. Their studies showed highest correlations with the quality criteria for the elementary

[1]Bernard McKenna, op cit., p. 6.

staffs when the per cent of staff residing outside the state prior to present employment was large. In the case of the secondary staffs, highest correlations with quality were found when a larger per cent of staff resided outside the district but in the state prior to present employment.

Though it is not intended to rationalize on his findings, one may surmise that the elementary teacher who comes from outside the state brings to her classroom, usually a self-contained one, her past sociological and geographical experiences which are easily adapted into the format of the elementary curriculum, especially reading, communication, and social studies. While currently, the secondary level of instruction in schools is much more structured and institutionalized, usually being taught on a subject basis, which affords few opportunities in limited subject areas for the instructor of varied geographical and sociological background to make a classroom impact.

In view of this a study of the origin of the staff for the selected school districts was done.

(1) Previous to present employment address of teachers of grades K-6

Origin	High	Low
Out-of-state	17 (16.28)	16 (16.72)
Outstate*	8 (13.81)	20 (14.19)
Metropolitan**	48 (42.91)	39 (44.09)
	73	75

$X^2_2 = 6.078$
$X^2.05 = 5.99$

This statistic shows a significant difference at the .05 level in the previous addresses of the K-6 staff which is observable in that the high expenditure districts have a larger proportion of its teachers coming from the "metropolitan" and fewer than expected from outstate or out-of-state.

(1) (continued) Collapsing the above data (combining "outstate" and "metropolitan")

Origin	High	Low
Out-of-state	17 (16.28)	16 (16.72)
In-state	56 (56.72	59 (58.28)
	73	75

$X^2_2 = .081$
$X^2.05 = 3.84$

There was no significant difference at the .05 level in the K-6 staffs of the high and low-expenditure

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*Outstate to mean coming from all counties in Michigan except Wayne, Oakland and Macomb Counties.

**Metropolitan to mean Wayne, Oakland and Macomb Counties.

districts when compared on the basis of "out-of-state" and "in state."

(1) (continued) Collapsing again

	High	Low
Out-of-state	17 (13.52)	16 (19.48)
Outstate	8 (11.48)	20 (16.52)
	25	36

X^2 = 3.306
$X^2.05$ = 3.84

This was not significant at the .05 level when the origin of the K-6 staff was broken into two parts, "out-of-state" and "outstate" for the high and low-expenditure districts.

(1) (continued) Collapsing again

	High	Low
Outstate	8 (13.63)	20 (14.37)
Metropolitan	48 (42.37)	39 (44.50)
	56	59

X^2 = 5.990
$X^2.05$ = 3.84

There was a significant difference at the .05 level with the high-expenditure districts having more teachers whose previous residence was in the metropolitan area than was expected.

(2) Previous to present employment address of teachers of grades 7-12 staff

	High	Low
Out-of-state	9 (14.40)	20 (14.60)
Outstate	27 (23.35)	20 (23.65)
Metropolitan	40 (38.25)	37 (38.75)
	76	77

X^2 = 5.3152
$X^2.05$ = 5.99

There appears to be no significant difference at the .05 level in origin of grades 7-12 staff characteristics between the high and low-expenditure districts.

The data were collapsed into two categories--Out-of-state and In-state.

(2) (continued) Previous to present employment address of teachers of grades 7-12

	High	Low
Out-of-state	9 (14.40)	20 (14.60)
In-state	67 (61.60)	57 (62.40)
	76	77

X^2 = 4.9628
$X^2.05$ = 3.84

There was significant difference at the .05 level in these data. It was observed that greater numbers of high school teachers in the low-expenditure districts came from "out-of-state" while a larger number of high

school teachers in the high-expenditure districts "came from within the state" than expected.

I. DOMESTIC AND FOREIGN TRAVEL

In the studies reported by McKenna,[1] it was found that highest correlations with quality criterion for the elementary staff were obtained when a greater per cent of the staff had traveled 500 miles in the previous eight years than had not.

After consultation with the advisor of this study, it was decided to limit the time to last three years. The question was so constructed that it was also possible to obtain data regarding the number of trips each teacher took in the several categories of distance. In the category of foreign travel, Canadian travel under 150 miles was excluded because of the proximity of Canada to Michigan and the Metropolitan Detroit area. Although data were obtained indicating the number of foreign countries visited by the teacher, it was felt that this criterion could not be used in this form due to the varying length of time the teachers may or may not have spent in each country. It was surmised that some

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[1] Bernard McKenna, op cit., p.6.

foreign travel was done by airplane or pleasure cruise with the stopovers in foreign countries varying from minutes to weeks or months. Such experiences would have varying degrees of impact on the teacher which undoubtedly would have been directly related to the amount of time spent in the country and the variety of experiences. However, the fact that the teacher had visited foreign countries was recorded separately in this study because it seemed to be a measure of the teacher's global interests.

(1) Travel of staff of grades K-6

	High	Low
At least one trip of 500 miles	43 (44.92)	43 (41.08)
At least one trip of 1000 miles	36 (36.04)	33 (32.96)
At least one trip of 2500 miles	34 (36.04)	35 (32.96)
Foreign travel	39 (35.00)	28 (32.00)
	152	139

$X^2_2 = 1.3707$
$X^2.05 = 7.815$ (3df)

There was no significant difference at the .05 level in amount and kind of travel of the K-6 staffs of the high and low-expenditure districts.

(2) Travel of staff of grades 7-12

	High	Low
At least one trip of 500 miles	44 (49.56)	46 (40.44)
At least one trip of 1000 miles	43 (44.60)	38 (36.40)
At least one trip of 2500 miles	33 (32.49)	26 (26.51)
Foreign travel	54 (47.35)	32 (28.65)
	174	142

x^2 = 3.6118
$x^2.05$ = 7.815

There was no significant difference at the .05 level in amount and kind of travel of the 7-12 grade staffs of the high and low-expenditure districts.

Collapsing the above data into two categories of travel---non-foreign and foreign.

(2) (continued) Grades 7-12 staff

	High	Low
Non-foreign travel	120 (126.65)	110 (103.35)
Foreign travel	54 (47.35)	32 (38.65)
	174	142

x^2 = 2.8549
$x^2.05$ = 3.84

There was no significant difference at the .05 level when comparing the seventh through twelfth grade staffs' foreign and non-foreign travel of the high and low-expenditure districts.

Since there was a sizeable group of teachers who had taken four or more trips of varying lengths in the last three years an attempt was made to determine any measurable significant difference.

(3) Travel of staff of grades K-6--Four or more trips

	High	Low
Four or more trips of 500 miles	16 (16.49)	15 (14.51)
Four or more trips of over 500 miles	9 (8.51)	7 (7.49)
	25	22

X^2 = .0912
$X^2.05$ = 3.84

There was no significant difference at the .05 level in comparing the high and low-expenditure districts' kindergarten through sixth grade staffs and the number of teachers who had taken four or more trips of 500 miles and those who had taken four or more trips of over 500 miles.

(4) Travel of staff of grades 7-12--- Four or more trips

	High	Low
Four or more trips of 500 miles	16 (16.96)	14 (13.04)
Four or more trips of over 500 miles	10 (9.04)	6 (6.96)
	26	20

X^2 = .3592
$X^2.05$ = 3.84

There appears to be no significant difference at the .05 level between the high and low-expenditure districts and the number of teachers who took four or more trips of 500 miles and those who took four or more trips of over 500 miles.

J. LITERARY INTERESTS

Previous studies[1] of staff characteristics indicated the importance of the teacher being a reader outside the area of his profession which would be reflected in the quality of his teaching. Highest correlation obtained in the criteria used was found in the per cent of elementary and secondary staff who owned 150 or more non-professional books. Most of the more promising criteria used in previous studies was used here.

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[1] Bernard McKenna, op cit., p. 6.

(1) Non-professional books owned by grades K-6 staff

	High	Low
Under 50 books owned	16 (16.65)	18 (17.35)
50-99 books owned	10 (12.24)	15 (12.76)
100-149 books owned	10 (11.26)	13 (11.74)
150+ books owned	35 (30.85)	28 (32.15)
	71	74

X^2 = 2.2230
$X^2.05$ = 7.815

There was no significant difference at the .05 level in the number of non-professional books owned by the K-6 grade staffs of the high and low-expenditure districts studied.

(1) (continued) Collapsing the above data

	High	Low
Under 150 books owned	36 (40.15)	46 (41.85)
150 and over books owned	35 (30.85)	28 (32.15)
	71	74

X^2 = 1.9342
$X^2.05$ = 3.84

There was no significant difference at the .05 level in the number of kindergarten through sixth grade teachers in the high and low-expenditure districts who owned under 150 non-professional books and those who owned 150 or over.

(2) Non-professional books owned by 7-12 grade staff

	High	Low
Under 50 books owned	9 (12.17)	16 (12.83)
50-99 books owned	16 (15.58)	16 (16.42)
100-149 books owned	10 (10.71)	12 (11.29)
150 and over books owned	39 (35.54)	34 (37.46)
	74	78

$X_2^2 = 2.3791$
$X^2.05 = 7.815$

There was no significant difference at the .05 level in comparing the number of seventh through twelfth grade teachers of the high and low-expenditure districts and the number of non-professional books owned by each group.

(2) (continued) Collapsing the above data

	High	Low
Under 150 books owned	35 (38.46)	44 (40.54)
150 and over books owned	39 (35.54)	34 (37.46)
	74	78

$X^2 = 1.2628$
$X^2.05 = 3.84$

There was no significant difference at the .05 level in comparing the number of seventh through twelfth grade teachers of high and low-expenditure districts who owned under 150 non-professional books and 150 and over.

(3) Non-professional books purchased in last three years by K-6 grades staff

	High	Low
Under 10 books purchased	14 (16.77)	20 (17.23)
10-19 books purchased	15 (16.67)	19 (17.23)
20-29 books purchased	15 (16.27)	18 (16.73)
30 and over books purchased	28 (22.19)	17 (22.81)
	72	74

X^2 = 4.4681
$X^2.05$ = 7.815

There was no significant difference at the .05 level when comparing the number of kindergarten through sixth grade staff of the high and low-expenditure districts who purchased under 10, 10-19, 20-29, and 30 and over non-professional books in the last three years.

(3) (continued) Non-professional books purchased in last three years by K-6 grades staff

	High	Low
Under 30 books purchased	44 (49.81)	57 (51.19)
30 and over books purchased	28 (22.19)	17 (22.81)
	72	74

X^2 = 4.3380
$X^2.05$ = 3.84

There was a significant difference at the .05 level between the high and low-expenditure districts with a greater number of K-6 teachers than expected in the high-

expenditure districts purchasing more than thirty books in the last three years.

(4) Non-professional books purchased in last three years by grades 7-12 staff

	High	Low
Under 10 books purchased	15 (13.23)	12 (13.77)
10-19 books purchased	16 (17.15)	19 (17.85)
20-29 books purchased	13 (12.25)	12 (12.75)
30 and over books purchased	30 (31.37)	34 (32.63)
	74	77

$X^2 = .8229$
$X^2.05 = 7.815$

There was no significant difference at the .05 level when comparing the number of seventh through twelfth grade staff of the high and low-expenditure school districts who purchased under 10, 10-19, 20-29, and 30 and over non-professional books in last three years.

(5) Non-professional books read during the last three years by the grades K-6 staff

	High	Low
Under 10 books read	13 (15.29)	18 (15.71)
10-19 books read	14 (12.82)	12 (13.18)
20-29 books read	11 (11.35)	12 (11.65)
30 and over books read	35 (33.54)	33 (34.46)
	73	75

X^2 = 1.0377
$X^2.05$ = 7.815

There was no significant difference at the .05 level when comparing the number of K-6 staff of the high and low-expenditure districts who read under 10, 10-19, 20-29, and 30 and over non-professional books in the last three years.

(6) Non-professional books read during the last three years by the grades 7-12 staff

	High	Low
Under 10 books read	7 (8.05)	9 (7.95)
10-19 books read	19 (16.61)	14 (16.39)
20-29 books read	10 (14.59)	19 (14.41)
30 and over books read	40 (36.75)	33 (36.25)
	76	75

X_2^2 = 4.4528
$X^2.05$ = 7.815

There was no significant difference at the .05 level when comparing the number of 7-12 grade staff of the high and low-expenditure districts who read under 10,

10-19, 20-29, and 30 and over non-professional books during last three years.

(7) Subscribe to non-professional magazines, K-6 grade staff

	High	Low
0-2	20 (22.19)	25 (22.81)
3-4	25 (24.67)	25 (25.33)
5 or more	28 (26.14	25 (26.86)
	73	75

X^2 = .6952
$X^2.05$ = 5.99

There was no significant difference at the .05 level when comparing the number of K-6 grade staff of the high and low-expenditure districts who subscribed to 0-2, 3-4, 5 or more non-professional magazines.

(8) Subscribe to non-professional magazines, 7-12 grade staff

	High	Low
2 and under	14 (21.36)	29 (21.64)
3-4	34 (24.84)	16 (25.16)
5 and over	28 (29.80)	32 (30.20)
	76	77

X^2 = 11.9679
$X^2.05$ = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts with the low expenditure districts 7-12 grade staff subscribing to two or fewer and five or more magazines than expected.

(9) Purchase of professional books during last three years by K-6 grades staff

	High	Low
0-9 books	42 (46.35)	54 (49.65)
10-19 books	21 (15.93)	12 (17.07)
20 and over books	7 (7.72)	9 (8.28)
	70	75

$X^2 = 4.0384$
$X^2.05 = 5.99$

There was no significant difference at the .05 level when comparing the number of K-6 grade staff of the high and low-expenditure districts who purchased 0-9, 10-19, and 20 and over professional books during the last three years.

(10) Purchase of professional books during last three years by 7-12 grade staff

	High	Low
0-9	43 (39.91)	39 (42.09)
10-19	19 (17.52)	17 (18.48)
20 and over	11 (15.57)	21 (16.43)
	73	77

$X^2 = 3.3219$
$X^2.05 = 5.99$

There was no significant difference at the .05 level when comparing the number of 7-12 grade staff of the high and low-expenditure districts who purchased 0-9, 10-19, and 20 and over professional books during the last three years.

(10) (continued) Collapsing the above data

	High	Low
Under 20	62 (57.43)	56 (60.57)
20 and over	11 (15.57)	21 (16.43)
	73	77

$X^2_2 = 3.3208$
$X^2.05 = 3.84$

There was no significant difference at the .05 level when comparing the number of 7-12 grade staff of the high and low-expenditure districts who purchased under 20 and 20 and over professional books during the last three years. A preliminary inspection of the statistics had suspicioned a significant difference in favor of the low-expenditure districts in the 20 or over category.

(11) Annual professional magazines subscribed to by K-6 grades staff

	High	Low
0-1 magazines	33 (33.50)	34 (33.50)
2-3 magazines	35 (36.50)	38 (36.50)
4-5 magazines	6 (4.00)	2 (4.00)
	74	74

$X^2 = 2.1380$
$X^2.05 = 5.99$

There was no significant difference at the .05 level when comparing the number of K-6 grade staff of the high and low-expenditure districts who subscribed to 0-1, 2-3, 4-5 professional magazines annually.

(12) Annual professional magazines subscribed to by 7-12 grades staff

	High	Low
0-1 magazines	19 (23.84)	29 (24.16)
2-3 magazines	44 (42.71)	42 (43.29)
4-5 magazines	12 (8.45)	5 (8.55)
	75	76

X^2_2 = 4.9948
X^2.05 = 5.99

There was no significant difference at the .05 level when comparing the number of 7-12 grade staff of the high and low-expenditure districts who subscribed to 0-1, 2-3, 4-5 professional magazines annually.

(12) (continued) Collapsing data - 2 categories 0-1 and 2-5

	High	Low
0-1 magazines	19 (23.84)	29 (24.16)
2-5 magazines	56 (51.16)	47 (51.84)
	75	76

X^2 = 2.8618
X^2.05 = 3.84

There was no significant difference at the .05 level when comparing the number of 7-12 grade staff of the high and low-expenditure districts who subscribed to 0-1, and 2-5 professional magazines annually.

K. AGE OF STAFF

(1) Chronological age of K-6 grades staff

	High	Low
20-29 years old	19 (22.69)	27 (23.31)
30-39 years old	19 (17.26)	16 (17.74)
40+ years old	35 (33.05)	32 (33.95)
	73	75

X_2^2 = 1.7571
X^2.05 = 5.99

There was no significant difference at the .05 level between the high and low-expenditure districts K-6 grade staff when comparing the chronological age of staffs in the groupings of 20-29 years old, 30-39 years old, and 40 years and older.

(2) Chronological age of 7-12 grades staff

	High	Low
20-29 years old	18 (32)	46 (32)
30-39 years old	21 (18)	15 (18)
40+ years old	38 (27)	16 (27)
	77	77

X_2^2 = 22.2128
X^2.05 = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts, with a greater proportionate number than expected of the high-expenditure 7-12 grade staff being "40 + years old."

(2) (continued) Collapsing the above data to (a) 20-29 years old and (b) 30 years and older

	High	Low
20-29 years old	18 (32)	46 (32)
30 years and older	59 (45)	31 (45)
	77	77

$X^2_2 = 20.9610$
$X^2.05 = 3.84$

There was a significant difference at the .05 level between the high and low-expenditure districts with more of the high-expenditure district 7-12 grade staff than expected being 30 or more years old while more of the low-expenditure district 7-12 grade staff was under 30 years old.

(2) (continued) Collapsing the original data to (a) under age 40 and (b) age 40 and older

	High	Low
Teachers under age 40	39 (50)	61 (50)
Teachers age 40 and over	38 (27)	16 (27)
	77	77

$X^2_2 = 13.8028$
$X^2.05 = 3.84$

There was a significant difference at the .05 level between the high and low-expenditure districts with more of the low-expenditure district 7-12 grade staff than expected being under 40 years old. By inspection it was

also noted that the high-expenditure district 7-12 grade staff were quite evenly divided between the two age levels, "under 40" and "40 and over."

L. SALARY OF HIGH SCHOOL STAFF

The data used in this study are the same as reported to the North Central Association of Colleges and Secondary Schools for the 1962-1963 school year by the participating school districts. Salaries included here are for total staff including teachers, librarians, guidance and counseling personnel.

(1) Instructional staff salaries, 7-12 grades

	High	Low
$8000 and over	114 (56.23)	6 (63.77)
$6500 - $7999	55 (78.72)	113 (89.28)
$5000 - $6499	47 (81.05)	126 (91.95)
	216	245

X_2^2 = 152.0495
$X^2.05$ = 5.99

There was a significant difference at the .05 level between the high and low-expenditure districts with over one-half the 7-12 grade staffs of the high-expenditure districts receiving salaries of "$8000 or more" which was more than expected. On the other hand, the low-expenditure districts' staffs had only six of a total of

245 persons receiving $8000 or more salary. Over one-half of the low-expenditure group received salaries of less than $6500.

2. SELECTED PUPIL-STAFF AND PHYSICAL PLANT CHARACTERISTICS

In Chapter II several studies were referred to which had to do with class size and staff adequacy.[1,2] There appeared to be considerable agreement that money spent for a combination of "well-qualified staff and small class size was more important than spending money for a small class size only." McKenna and Ross used the pupil-total teaching staff ratio instead of the pupil-classroom teacher ratio. They also felt there was sufficient evidence indicating that the elementary and secondary class size statistics should be handled separately.[3]

Because most studies reviewed indicated there is a wide range of ways to determine pupil-teacher ratios, the

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[1]Donald H. Ross and Bernard McKenna. Class Size: The Multi-Million Dollar Question (New York: Metropolitan School Study Council, 1955) Columbia, New York.

[2]Clarence A. Newall. Class Size and Educational Adaptability (See Page 15, Chapter II).

[3]Donald H. Ross and Bernard McKenna, op cit.

statistics given here used the total membership on the schools' rolls on the fourth Friday after Labor Day divided by the total professional staff. Since there appeared to be some question in previous studies regarding using the total K-12 student body as one unit, for purposes of this study, students and staffs of grades K-6 and grades 7 through 12 were treated separately. As another possibility, the same data were divided into grades K-9 and grades 10 through 12. The latter grouping was done because it has been suspicioned by many educators in Michigan that, since the North Central Association of Colleges and Secondary Schools encourages lower high school pupil-teacher ratios, there is a tendency for school districts to lower the high school (grades 10-12 or 9-12) ratios at the expense of the elementary schools' pupil-teacher ratios. (Elementary schools are not presently accredited by any similar agency.) Strayer[1] found guidance-related items were sensitive to levels of support of the total educational program in school districts, with more services going to the high-expenditure districts. Library services and

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[1]Stayer, page 16, Chapter II.

plant adequacy also appeared to be sensitive to the quality criterion.

In the data presented herein, two items were used for study of the high school libraries, books available per pupil and size of library. The source of data was from the 1961-62 North Central Association of Colleges and Secondary Schools reports and the 1961-62 Annual Statistical Reports of each school district, as submitted to the Michigan Department of Public Instruction.

Pupil-Teacher Ratio (Grades K-6)

Pupils per Teacher		Pupils per teacher	
High		Low	
	x		y
A	27.3	X	28.9
B	19.0	Y	30.5
C	25.5	Z	31.0
$\bar{X}$	23.9	$\bar{Y}$	31.6
S^2_x	19.57	S^2_x	1.21

t^* = 2.96

$t_{.05}$ = 2.35

There was a significant difference at the .05 level between the high and low-expenditure districts studied in

*Formula as developed by Wilfred J. Dixon and Frank J. Massey, Jr. Introduction to Statistical Analysis (McGraw-Hill, New York, 1957) p. 123. Same used throughout study for "t" test.

pupil-teacher ratios in grades K-6, with the high-expenditure districts having the lower pupil-teacher ratio.

Pupil-Teacher Ratio (Grades 7-12)

Pupils per teacher		Pupils per teacher	
High		Low	
	x		y
A	20.4	X	26.1
B	21.1	Y	23.1
C	20.5	Z	30.8
$\bar{x}$	20.5	$\bar{y}$	26.9
s_x^2	.16	s_x^2	13.05

$t = 2.95$
$t_{.05} = 2.35$

There was a significant difference at the .05 level between the high and low-expenditure districts studied in pupil-teacher ratios in grades 7-12 with the high-expenditure districts having the lower pupil-teacher ratio.

Pupil Teacher Ratio (Grades K-9)

Pupils per teacher		Pupils per teacher	
High		Low	
	x		y
A	27.5	X	28.7
B	21.5	Y	28.9
C	24.1	Z	32.0
$\bar{x}$	24.3	$\bar{y}$	29.8
s_x^2	9.1	s_y^2	2.9

$t = 2.80$
$t.05 = 2.35$

There was a significant difference at the .05 level between the high and low-expenditure districts studied in pupil-teacher ratios in grades K-9 with the high-expenditure districts having the lower pupil-teacher ratio.

Pupil-Teacher Ratio (Grades 10-12)

Pupils per teacher		Pupils per teacher	
High		Low	
	x		y
A	15.5	X	24.3
B	19.5	Y	22.7
C	21.9	Z	25.6
$\bar{x}_2$	18.9	$\bar{y}_2$	24.2
s_x	10.4	s_x	2.11

$t = 2.59$
$t.05 = 2.35$

There was a significant difference at the .05 level between the high and low-expenditure districts studied in pupil-teacher ratios in grades 10-12, with the high-expenditure districts having the lower pupil-teacher ratio.

High School Pupils per High School Counselor

Pupils per counselor		Pupils per counselor	
	High		Low
	x		y
A	331.7	X	349
B	304.0	Y	306
C	337.0	Z	473
$\bar{x}$	324.2	$\bar{y}$	376
s_x^2	309.7	s_x^2	6955.56

$t = 1.05$
$t_{.05} = 2.35$
$t_{.05} = 1.94$*[1]

There was no significant difference at the .05 level

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*Since a "t" score of 1.05 indicated a reject H_o when $t_{.05} = 2.35$ at 4 degrees of freedom, the formula developed by Edwards[1] more accurately develops the degrees of freedom which was then used. Previous data in this portion of the study had not come within the critical region, hence no need for more accurate establishment of the degrees of freedom.

[1]Allen L. Edwards. Experimental Design in Psychological Research (New York: Holt Rinehart and Winston, 1962) p. 108.

in the high school student-counselor ratio between the high and low-expenditure districts studied.[a]

Library Books per Pupil (Grades 10-12)

Books per pupil		Books per pupil	
High		Low	
	x		y
A	9.8	X	4.4
B	4.3	Y	4.3
C	12.77	Z	2.8
$\bar{x}$	8.97	$\bar{y}$	3.83
s^2_x	17.24	s^2_x	.23

$t = 2.13$

$t.05 = 2.35$[a,b]

There was no significant difference at the .05 level in the number of library books available per high school pupil in the high school libraries of the high and low-expenditure districts.

The conclusions obtained from the statistical treatment of the data from the last two criteria:[1]

(1) Comparing of high school pupils per counselor and

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[a]Since there was suspect of the normality assumption in this data, the Mann Whitney "U" test as referred to earlier was also used with the same conclusions resulting.

[b]The degrees of freedom to arrive at the t.95 level were also figured as per procedure outlined by Edwards[1] with same final result.

[1]Edwards, ibid., p. 108.

(2) Comparison of library books per pupil, may be the result of the North Central College and Secondary Schools accreditation requirements. Further explanation and interpretation will be done in the last chapter.

High School Membership, Seated-Not Seated in Library

Although a review of past studies indicates none has been conducted which might relate quality to the size of the library facilities that will adequately house a proportion of the student body at a given time, the Association of North Central College and Secondary Schools uses a criterion of minimal facilities importantly in evaluating high schools for accreditation. Hence it is included in this study. Since this is a dichotomous population, the chi square method of analysis is used.

High School Library Facilities

	High	Low
Seated	296 (229.7)	293 (359.3)
Non-seated	3677 (3743.3)	5920 (5853.7)

$X^2_2 = 31.0$
$X^2.05 = 3.84$

There was a significant difference at the .05 level between the adequacy of size of the high school

libraries to seat a proportion of its student body at any one time in the high and low-expenditure school districts. By inspection of the observed and expected statistics the high-expenditure districts studied had a larger proportional number of students seated than expected.

3. SELECTED QUANTITATIVE COMMUNITY CHARACTERISTICS

This part of the study deals with quantitative characteristics of the community. The raw data for this section were taken from the 1960 census.[1] The writer used the chi square technique for the statistical analysis of the data.

There appeared to be a bimodal distribution of income levels in the two groups of cities studied. Because of this, the data were used in two different ways, dividing the population of families into two groups, according to their income. Group No. I had two sections, families with an annual income over $3000 and those with income less than $3000. In Group No. II

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[1]United States Bureau of Commerce. "United States Census of Population 1960--General Social and Economic Characteristics, Michigan." Final Report P.C.(1) 24C (Washington, D.C.: 1962, United States Government Printing Office.)

were families with annual income over $10,000 and those under $10,000.

A. FAMILY INCOME (ABOVE-BELOW $3000)

		High		
		A	B	C
$3000 and above	Expected	(8405)	(3994)	(3712)
	Observed	7532	3517	3404
Below $3000	Expected	(1085)	(515)	(479)
	Observed	1958	982	784
		Low		
		X	Y	Z
$3000 and above	Expected	(12148)	(7817)	(10473)
	Observed	12747	8519	10827
Below $3000	Expected	(1569)	(1009)	(1353)
	Observed	970	307	999

$X^2_2 = 2424$
$X^2.05 = 11.1$

These two groups of communities were significantly different at the .05 level when comparing family incomes of $3000 and over with those families with incomes under $3000.

The low-expenditure community had more families than were expected in the $3000 and over range of income while the high-expenditure community had more families in the "under $3000 income group."

The above data was collapsed into a 2 x 2 which gave the same kind of results.

A. FAMILY INCOME (continued)

		High	Low
$3000 income and above	Expected	(16108)	(30435)
	Observed	14452	32093
Below $3000 income	Expected	(2082)	(3932)
	Observed	3738	2276

X_2^2 = 2279
$X^2.05$ = 3.84

The two community groups were significantly different at the .05 level with the low-expenditure communities having more families earning $3000 and above incomes than expected, and the high-expenditure communities having more families earning less than $3000 than was expected.

B. FAMILY INCOME (ABOVE-BELOW $10,000)

		A	B	C
Family Income	Expected	(1533)	(729)	(677)
$10,000 and above	Observed	1575	539	453
Family Income	Expected	(7957)	(3780)	(3514)
Under $10,000	Observed	7915	3970	3738

		X	Y	Z
Family Income	Expected	(2215)	(1426)	(1909)
$10,000 and above	Observed	2439	1628	1853
Family Income	Expected	(11502)	(7400)	(9917)
Under $10,000	Observed	11728	7198	9973

$X^2_2 = 207$
$X^2.05 = 11.1$

There was a significant difference at the .05 level between the six communities. However, inspection showed one of the high-expenditure and two of the low-expenditure districts had more families than was expected earning $10,000 or over.

B. FAMILY INCOME (continued) Collapsing the above data

		High	Low
Family Income	Expected	(2937)	(5550)
$10,000 and over	Observed	2567	5920
Family Income	Expected	(15253)	(28819)
Under $10,000	Observed	15623	28449

$X^2_2 = 82$
$X^2.05 = 3.84$

There was a significant difference at the .05 level between the high and low-expenditure communities. By inspection, the low-expenditure community had more families in the "$10,000 and above" group than was statistically expected, and vice versa for the high-expenditure community.

C. EDUCATIONAL LEVEL (ABOVE-BELOW SEVENTH GRADE) 25 YEARS AND OLDER, ALL RESIDENTS

		A	B	C
7th grade and above	Expected	(20502)	(7882)	(7526)
	Observed	20026	6658	6262
Below 7th grade	Expected	(4575)	(1759)	(1680)
	Observed	5051	2983	2944
		X	Y	Z
7th grade and above	Expected	(22814)	(14173)	(19179)
	Observed	23257	15639	20234
Below 7th grade	Expected	(5080)	(3161)	(4278)
	Observed	4648	1695	3223

X^2 = 3475
$X^2.05$ = 11.1

There was a significant difference at the .05 level between the high and low-expenditure communities. It was observed that the high-expenditure communities had a greater proportion than was expected of their population of 25 years and older who had less than a seventh grade education, while the low-expenditure communities had more of their "25 years and older population" with an education of seventh grade or above.

D. EDUCATIONAL LEVEL--MALES, 25 YEARS AND OLDER (ABOVE-BELOW SEVENTH GRADE)

		A	B	C
7th grade and above	Expected	(9307)	(3949)	(3785)
	Observed	8907	3313	2999
Below 7th grade	Expected	(2328)	(987)	(946)
	Observed	2728	1623	1732

		X	Y	Z
7th grade and above	Expected	(11107)	(7039)	(9457)
	Observed	11468	7822	10133
Below 7th grade	Expected	(2776)	(1759)	(2364)
	Observed	2415	976	1688

X^2_2 = 2145
X^2.05 = 11.1

A significant difference existed at the .05 level. Upon inspection, it was found that there were fewer males 25 years and older in the high-expenditure communities with a "seventh grade education or above" than expected and vice versa for the low-expenditure communities.

E. EDUCATIONAL LEVEL--FEMALES, 25 YEARS AND OLDER (ABOVE-BELOW SEVENTH GRADE)

		A	B	C
7th grade and above	Expected	(11223)	(3929)	(3737)
	Observed	11119	3345	3263
Below 7th grade	Expected	(2219)	(776)	(738)
	Observed	2323	1360	1212

		X	Y	Z
7th grade and above	Expected	(11707)	(7127)	(9715)
	Observed	11789	7817	10101
Below 7th grade	Expected	(2315)	(1409)	(1921)
	Observed	2233	719	1535

X_2^2 = 1393
$X^2.05$ = 11.1

There was a significant difference at the .05 level between the high and low-expenditure communities with fewer females than expected 25 years and older in the high-expenditure districts having a "seventh grade or above" education. It was vice versa for the low-expenditure districts.

F. EDUCATIONAL LEVEL, 25 YEARS AND OLDER (ABOVE-BELOW TWELFTH GRADE)

		A	B	C
12th grade and above	Expected	(2634)	(1012)	(966)
	Observed	3931	659	508
Below 12th grade	Expected	(22443)	(8629)	(8240)
	Observed	21146	8982	8698

		X	Y	Z
12th grade and above	Expected	(2930)	(1821)	(2462)
	Observed	2243	2268	2216
Below 12th grade	Expected	(24975)	(15513)	(20995)
	Observed	25662	15066	21241

X_2^2 = 1417
$X^2.05$ = 11.1

There was a significant difference at the .05 level between the six communities when comparing the expected and observed differences in the population with respect to those persons having "twelfth grade or above" education. However, the results from the data used in this manner were not conclusive since one of the high-expenditure communities and one of the low-expenditure communities had more persons than expected 25 years or older with an education of 12th grade or above, and vice versa for the other four communities.

F. EDUCATIONAL LEVEL (continued) Collapsing the above data

		High	Low
12th grade and above	Expected	(4645)	(7283)
	Observed	5098	6727
Below 12th grade	Expected	(39579)	(61483)
	Observed	39126	61769

$X_2^2 = 383$

$X^2.05 = 3.84$

There was a significant difference at the .05 level between the high and low-expenditure districts with the high-expenditure districts having an observed population of more persons "25 years and older" with a twelfth grade and above education than expected and a lower number of

persons below a twelfth grade education than expected. It was vice versa for the low-expenditure districts.

G. 14-17 YEAR OLDS (IN-NOT IN) SCHOOL

		A	B	C
In	Expected	(1836)	(907)	(979)
	Observed	1805	827	986
Not	Expected	(222)	(111)	(118)
	Observed	253	191	111
		X	Y	Z
In	Expected	(2874)	(1581)	(2369)
	Observed	2939	1595	2341
Not	Expected	(349)	(191)	(287)
	Observed	284	177	265

X^2 = 83
$X^2.05$ = 11.1

There was a significant difference at the .05 level between the communities in the proportion of 14-17 year olds that were in school. By inspection, the results of the computations were not conclusive since one of the high-expenditure communities and two of the low-expenditure communities had more of the 14-17 year olds in school than expected.

G. (continued) Collapsing the data

		High	Low
In	Expected	(3720)	(6823)
	Observed	3618	6925
Not in	Expected	(453)	(828)
	Observed	555	726

$X_2^2 = 40$
$X^2.05 = 3.84$

There was a significant difference at the .05 level between the high and low-expenditure communities, with more of the 14-17 year olds not being in school in the high-expenditure district than expected.

H. MOBILITY OF POPULATION

		A	B	C
Moved into house 1958 or before	Expected	(30173)	(14385)	(13736)
	Observed	28047	13682	12477
Moved into house after 1958	Expected	(7890)	(3762)	(3592)
	Observed	10016	4465	4851

		X	Y	Z
Moved into house 1958 or before	Expected	(42752)	(30136)	(39789)
	Observed	44627	31213	40923
Moved into house after 1958	Expected	(11181)	(7881)	(10406)
	Observed	9306	6804	9272

$X_2^2 = 2187$
$X^2.05 = 11.1$

There was a significant difference at the .05 level between the communities with more persons than was expected who had moved into their present house since 1958 in all of the high-expenditure communities and vice versa for the low-expenditure communities.

I. NATIVE - FOREIGN BORN

		A	B	C
Native	Expected	(34325)	(16365)	(15627)
	Observed	33525	16891	16025
Foreign Born	Expected	(3738)	(1782)	(1701)
	Observed	4538	1256	1303
		X	Y	Z
Native	Expected	(58637)	(34284)	(45266)
	Observed	45151	36266	46642
Foreign Born	Expected	(5296)	(3733)	(4929)
	Observed	8782	1751	3553

$X^2_2 = 2036$

$X^2_{.05} = 11.1$

There was a significant difference at the .05 level among the six communities with more of the low-expenditure communities having more foreign born than was expected and vice versa for the high-expenditure districts.

I. (continued) Collapsing the data

		High	Low
Native	Expected	(66315)	(128185)
	Observed	66441	128059
Foreign Born	Expected	(7223)	(13960)
	Observed	7097	14086

$X^2 = 3.5$
$X^2.05 = 3.84$

There was no significant difference at the .05 level between the two groups of communities when comparing the population of native and foreign born.

4. ANALYSIS OF BUDGETARY AREAS OF EXPENDITURE

This part of the study deals with the analysis of the budgetary areas of expenditure.

The 1961-1962 budgets of the six school districts were converted to cost per pupil and the percentage each budget category was of the total expenditure. The procedures used here have been previously set forth in this study. Two sets of data were obtained, one being the actual dollars spent per pupil in each category, such as, administration, instruction, etc., and the other being the per cent each category was of the total

cost. In this manner, a possible comparison of similarity of conclusions could be made with some of the previous conclusions reached by Bothwell[1] and Brickell.[2]

The Mann Whitney non-parametric and parametric U test[3] was used on this data to locate any possible significant differences. By using this test, a comparison could be made of the two groups of schools, i.e., the high-expenditure group and the low-expenditure group.

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[1]Bruce K. Bothwell, op cit., p. 8.

[2]Henry M. Brickell, op cit., p. 41.

[3]Sidney Siegel, op cit., pp. 116-136.

AN ANALYSIS OF BUDGETARY AREAS OF EXPENDITURE

Cost per pupil total membership of current operation expenditures excluding transportation 1961-1963

School District	Administration Cost Dollars	%	Instruction Cost Dollars	%	Operation Cost Dollars	%	Maintenance Cost Dollars	%
A	17.87	3.05	436.53	74.68	71.81	12.28	30.15	5.15
B	33.08	5.25	452.50	71.91	88.24	14.02	23.94	3.80
C	29.54	5.32	387.49	69.91	88.26	15.91	28.30	5.10
X	10.91	3.20	257.94	75.88	53.85	15.82	8.21	2.41
Y	10.12	3.15	266.27	83.09	34.53	10.77	4.97	1.55
Z	10.18	3.27	248.62	80.01	38.34	12.33	6.37	2.05

School District	Fixed Charges Cost Dollars	%	Auxiliary Services Cost Dollars	%	Total Dollars
A	9.46	1.61	18.68	3.19	584.50
B	2.16	.34	29.25	4.64	629.18
C	8.86	1.59	11.60	2.09	554.25
X	3.33	.97	5.68	1.67	339.93
Y	3.25	1.01	1.31	.40	320.44
Z	5.59	1.79	1.61	.51	310.72

ADMINISTRATION

A. Costs per pupil--dollar value

u = o

u.05 = o = significant difference (any other value of u than o indicates no significant difference.

There was a significant difference at the .05 level with the high-expenditure districts spending more money per pupil for the administrative function than the low-expenditure districts.

B. Costs per pupil--percentage value

u = 3

u.05 = o = significant difference (any other value of u than o indicates no significant difference).

There was no significant difference at the .05 level between the high and low-expenditure districts when comparing the percentage costs of the administrative function to the total costs.

The high-expenditure districts spent more per pupil for the administrative function but not a greater proportion of total budget. This would tend to indicate that as the total budgets of the schools

increase, the administrative category of the budgets increase proportionately.

INSTRUCTION

A. Cost per pupil--dollar value

$u = o$

$u.05 = o$ = significant difference (any other value of u than o indicates no significant difference).

There was a significant difference at the .05 level with the high-expenditure districts spending more money per pupil for the instruction category of the budget than the low-expenditure districts.

B. Cost per pupil--percentage value

$u = o$

$u.05 = o$ = significant difference (any other value of u than o indicates no significant difference).

There was a significant difference at the .05 level with high-expenditure districts spending a smaller percentage of the total budget for the instruction category of the budget.

Possible conclusions: Although the high-expenditure districts spent more money per pupil for

instructional purposes than the low-expenditure districts, they spent at lower proportionate rate of the total budget than the low-expenditure districts.

OPERATION

A. Cost per pupil--dollar value

$u = o$

$u.05 = o$ = significant difference (any other value than o indicates no significant difference).

There was a significant difference at the .05 level with the high-expenditure districts spending more money per pupil for the operation category than the low-expenditure districts.

B. Cost per pupil--percentage value

$u = 4$

$u.05 = o$ = significant difference (any other value of u than o indicates no significant difference).

There was no significant difference at the .05 level between the high and low-expenditure districts when the percentage costs of operation to total costs were compared.

Possible conclusions: The high-expenditure districts spent more per pupil for the operation of the school plant but the percentage of total expenditure was proportionately similar. This would tend to indicate that, as the total budgets of schools increase, the cost of operation increases proportionately.

MAINTENANCE COST

A. Cost per pupil--dollar value

$u = o$

$u.05 = o$ = significant difference (any other value of u than o indicates no significant difference).

There was a significant difference at the .05 level with the high expenditure districts spending more money per pupil for maintenance costs than the low-expenditure districts.

B. Cost per pupil--percentage value

$u = o$

$u.05 = o$ = significant difference (any other value of u than o indicates no significant difference).

There was a significant difference at the .05 level with the high-expenditure districts spending a

larger percentage of their total budgets for maintenance costs than the low-expenditure districts.

Possible conclusions: The high-expenditure districts spent more as well as a larger proportionate amount of their total budgets for maintenance costs than the low-expenditure districts.

FIXED CHARGES

A. Costs per pupil--dollar value

u = 3

u.05 = o = significant difference (any other value than o indicates no significant difference).

There was no significant difference at the .05 level between the high and low-expenditure districts when comparing the dollars spent per pupil for fixed charges in the school budgets.

B. Costs per pupil--percentage value

u = 3

u.05 = o = significant difference (any other value than o indicates no significant difference).

There was no significant difference between the high and low-expenditure districts when comparing the per cent of total budget spent for fixed charges.

Possible conclusions: There were no measurable patterns when analyzing the category of fixed charges as compared to the total budget in dollars or per cents. The needs of each district appeared to be peculiar unto itself with no observable relationship with other budgetary items nor between districts of high or low-expenditure.

AUXILIARY SERVICES

A. Costs per pupil--dollar value

u = o

u.05 = o = significant difference (any other value than o indicates no significant difference).

There was a significant difference at the .05 level with the high-expenditure districts spending more money per pupil for auxiliary services than the low-expenditure districts.

B. Costs per pupil--percentage value

u = o

u.05 = o = significant difference (any other value than o indicates no significant difference).

There was a significant difference at the .05 level with the high-expenditure districts spending a

larger percentage of their total budgets for auxiliary services than the low-expenditure districts.

Possible conclusions: The high-expenditure districts spend more money as well as a higher percentage of total budget per pupil for auxiliary services. This area of the budget may have more import for the high-expenditure districts than the low-expenditure districts or it may be that after an adequate level of support for the other areas of the budget is accomplished more money and percent of total budget is allocated to auxiliary services.

Summary

This chapter began with a presentation of the methods and techniques of analysis used in the conduct and method of the study. The techniques used to analyze the different kinds of data were the chi-square, the t-test, the Mann Whitney, and the Kolmogorov-Smirnov two-sample test. An analysis of the data followed which was arranged by sections into the following areas: (1) the Teacher, (2) the Student,

(3) the Community, and (4) Analysis of the Budget. For each section, tables graphically explained the data studied as well as designated the results of the statistical techniques used and the level of significance with a reliability figure.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

I. STATEMENT OF PROBLEM

The major purpose of this study was to analyze data from selected Michigan school districts for the purpose of making comparisons of a selected group of previously identified possible quality related factors. It was hoped that in this manner, our quest for criteria to measure quality in education in Michigan schools might be advanced.

II. EVALUATION OF RELATIONSHIP

During the previous chapters, promising criteria which indicated a relationship to quality education were identified. From selected Michigan school districts, selected data which pertained to these criteria were presented. These data have been statistically treated. Following is an interpretation, discussion, and qualification of the findings. Speculative observations by the writer of possible uncontrollable variables will

be so noted. Since this study used many of the previously established more promising quality related criteria in education, an attempt will be made to speculate on how well the selected schools fit into the general pattern of findings of previous studies. This is recognized by the writer to be generally dangerous procedure since the techniques, design, and statistics of other studies varied so widely in form, method, and design.

Although many of the criteria used in this study have been previously established, some question of the validity of the criteria is raised by the findings of this study. In those instances, an attempt to compare the general direction of sensitivity of this and previous studies will be made. This also may point up areas for further research.

THE STAFF - IN SUMMARY

A simplified chart of the major results of the staff characteristics part of this study is presented. The chart summaries are brief in order that the reader may get an overview of this part of the study. A more complete analysis and interpretation follows the chart.

STAFF

	CRITERIA	SIG.DIF.[2] K-6	SIG.DIF.[2] 7-12	WHAT RELATIONSHIP
1.(A)[1]	Total teaching experience	Yes	Yes	High expenditure districts--more experience
2.(A)	Previous teaching experience prior to present employment	No	Yes	High expenditure districts--more previous experience to present employment
3.(B)	Level of education	Yes	Yes	High expenditure districts--more teachers with higher degrees
4.(C)	Recency of Bachelor's Degree	Yes	Yes	Low expenditure districts--more teachers having obtained degree more recently

[1]Capital letters used in this column are same as used in Chapter IV to identify "areas of study for staff."

[2]Significant difference at .05 level.

	CRITERIA	SIG.DIF. K-6	SIG.DIF. 7-12	WHAT RELATIONSHIP
5.(C)	Recency of Master's Degree	Yes	Yes	Low expenditure districts--more teachers having obtained degree more recently
6.(D)	Areas of teaching competence	---	Yes	High expenditure districts--teachers qualified to teach more subject areas
7.(E)	Experienced teachers vs. recency of additional education	No	No	No relationship exists
8.(F)	Origin of staff--out-of-state, outstate, metropolitan	Yes	No	High expenditure districts--more teachers from metropolitan (K-6 staff)
9.(F)	Origin of staff, out-of-state vs. in state	No	Yes	Low expenditure districts--more teachers out-of-state
10.(F)	Origin of staff--out-of-state vs. outstate	No	No	No relationship exists by inspection of data

	CRITERIA	SIG.DIF. K-6	SIG.DIF. 7-12	WHAT RELATIONSHIP
11.(F)	Origin of staff--outstate vs. metropolitan	Yes	No	High expenditure districts--more teachers metropolitan by inspection
12.(G)	Travel of staff--500, 1000, 2500 miles or foreign	No	No	No relationship
13.(G)	Travel of staff--foreign, non-foreign	No (by inspection)	No	No relationship
14.(G)	Travel of staff--4 trips 500 miles vs. 4 over 500	No	No	No relationship
15.(H)	Non-professional books owned, under 50, 50-99, 100-149, 150+	No	No	No relationship
16.(H)	Non-professional books owned, under 150, over 150	No	No	No relationship

	CRITERIA	SIG.DIF. K-6	SIG.DIF. 7-12	WHAT RELATIONSHIP
17.(H)	Non-professional books purchased last 3 years, under 10, 10-19, 20-29, 30 and over	No	No	No relationship
18.(H)	Non-professional books purchased last 3 years, under 30, 30 and over	Yes (By inspection)	No	More high expenditure district teachers purchasing 30 or more books
19.(H)	Non-professional books read last 3 years, under 10, 10-19, 20-29, 30 and over	No	No	
20.(H)	Purchase of professional books last 3 years, 0-9, 10-19, 20 and over	No	No	
21.(H)	Purchase of professional books last 3 years, 0-9, 10 and over	No	No (by inspection)	

	CRITERIA	SIG.DIF. K-6	SIG.DIF. 7-12	WHAT RELATIONSHIP
22.(H)	Purchase of professional books last 3 years, 10-19 books, 0-9 and 20 or more	Yes (by inspection)	No	More K-6 teachers in high expenditure districts purchased 10-19 books
23.(H)	Purchase of professional books last 3 years, under 20, 20 and over	No (by inspection)	No	
24.(H)	Yearly professional magazines subscribed 0-1, 2-3, 4-5	No	No	
25.(H)	Yearly professional subscribed, 0-1, 2-5	No (by inspection)	No	
26.(I)	Chronological age of staff, 20-29 years, 30-39, 40+ years	No	Yes	Greater numbers of 7-12 teachers in high expenditure districts being "40 years or older" than expected

	CRITERIA	SIG.DIF. K-6	SIG.DIF. 7-12	WHAT RELATIONSHIP
27.(I)	Chronological age of staff, 20-29, 30 and older	No (by inspection)	Yes	Greater number of 7-12 high expenditure district teachers over 30 years than expected
28.(I)	Chronological age of staff, under 40, 40 and over	No (by inspection)	Yes	Greater number of 7-12 high expenditure district teachers 40 years and older than expected. The ratio of "under 40" and "40 and over" was almost 1 to 1 in high expenditure districts with 4 to 1 in low expenditure districts
29.(J)	Salary range of high school staff $8000 and over, $6500-$7999, $5000-$6499	---	Yes	Greater number of 7-12 high expenditure district teachers receiving $8000 and over salaries than expected

All of the criteria of the cost-quality factors listed in the preceding chart had been established by earlier studies. Some of the data in this study were grouped differently from the groupings used in the previous studies. However, the general pattern and results of the findings in this research allowed for some general observations concerning the direction of sensitivity to compare with previous studies. An analysis was made to determine whether the selected high and low expenditure district staffs fit these criteria of expectations.

It was found that the K-12 staff of the high expenditure districts had more teachers with:

(1) a longer teaching experience

(2) a higher level of training

(3) bachelor's and master's degrees for longer periods of time than their counterparts in the low expenditure districts

It was also found that the K-6 staff of the high expenditure districts had:

(1) more of its staff recruited from the metropolitan Detroit area

(2) had purchased more non-professional books in the last three years

The 7-12 staff of the high expenditure districts was found to have:

(1) more teachers with previous teaching experience prior to present employment

(2) a larger proportion of teachers over 30 years of age and 40 years of age

(3) a higher salary range than their counterparts in the low expenditure districts

There was no significant difference between the low and high expenditure districts K-12 staffs when comparing:

(1) the experienced teachers and recency of training

(2) origin of staff--out-of-state vs. outstate

(3) foreign and domestic travel of staff by distance and number of trips

(4) non-professional books owned, non-professional books read in last three years

(5) professional books purchased in last three years

(6) yearly subscription to professional magazines

There also was no significant difference in the K-6 staffs of the high and low expenditure districts when comparing:

(1) previous experience prior to present employment

(2) origin of staff (out-of-state vs. instate)

(3) number of non-professional magazines subscribed

(4) the chronological age of staff

The 7-12 groups had no significant difference when comparing:

(1) origin of staff--out-of-state or outstate vs. metropolitan

(2) non-professional books purchased in last three years

The writer would like to speculate on some of the uncontrolled variables that may have affected certain of the findings. It is common knowledge that there has been a critical shortage of teachers for the past several years. The results of this study showed that

there was no significant difference in the number of teachers who had previous experience prior to present employment in the elementary staffs of either group of schools studied. However, it was noted that there was a difference in the high school staffs of the two groups. The high expenditure districts high school staffs had had more previous experience, older in age, more teaching experience, and older degrees. This might indicate that at the time of the study all school districts were competing for the newly trained elementary teachers because the population "explosion" has hit the elementary grades while the high school staffs of the high expenditure districts were either holding or having more of the older, experienced "career" teachers gravitating to the higher salaries. This point is also borne out by the data which indicates the chronological ages of the elementary teachers in both types of districts are similar. Yet the higher expenditure districts have more elementary teachers with more experience. The "age" criteria may indicate a greater number of the "trousseau teachers" have returned to their own neighborhood low expenditure districts

after their families have grown hence the chronological age similarity, while the high expenditure districts have had the longer experienced "career" teachers. There was also an indication of this in the criteria of "origin of staff" with more high expenditure districts elementary teachers than expected coming from the metropolitan area, while the low expenditure districts had more elementary teachers coming from "outstate" and "out-of-state" than expected. Also, more of the low expenditure districts high school teachers came from "out-of-state" which may be an indication of salary factors and the recruiting procedures required of the low expenditure districts to fill their staffs since certain neighboring states are known to have lower salaries. (Inspection of the returned questionnaires indicated a large number of these teachers originated in these low salaried neighboring states.) It would appear that there is a possibility that once a teacher has been recruited to the metropolitan area from out-of-state, he or she may then move to the high expenditure district. As a statistic for this study, such a teacher would have been

tabulated as an "in state" or "metropolitan" transfer depending upon the breakdown of the data.

Previous studies had indicated "out-of-state" origin a criteria of quality. Due to the limitations of the definitions of "origin" in this study it can neither add nor detract from previous findings because of the difficulty of ascertaining the true origin of the teachers.

There appeared to be no significant differences in the amount of travel and the "literary interest" of the high and low expenditure district staffs. Perhaps both groups of teachers may be caught up in the American avocation of vacation travel as well as a literary interest in the mass media. Mention should also be made that the proportionate number of teachers in both groups were found to be keeping up equally well in the "recency of training" category.

PUPIL RATIO CHARACTERISTICS

There are many studies which have claimed a relationship between pupil-teacher ratio and quality education.[1]

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[1]Clarence A. Newall. op. cit. p. 111.

It was found that the average teacher's salary in Michigan had amounted to over 60% (62.9% for 1961-62) of the total school operating budget for the past ten years.[1]

A statistical analysis of the pupil-teacher ratio data showed there was a significant difference between the high and low expenditure districts, with the high expenditure districts having the lower pupil-teacher ratio. Further arithmetical analysis also showed that the "average" teacher of the low expenditure district was teaching approximately 1/3 more elementary students than the "average" teacher in the high expenditure districts. This coupled with the previous teacher salary data would give indication that the lower pupil-teacher ratios may influence the increased cost per pupil of the high expenditure districts.

The same observation can be made for the high school teachers of the two kinds of districts. They too

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[1]Michigan Education Association Bulletin--An Analysis of Trends in Revenue Receipts and Expenditures of Michigan School Districts during the period 1951-52 through 1961-62. Research Division, Michigan Education Association, Lansing, Michigan, March 1963, p. 12.

are teaching 1/3 more students in the low expenditure districts than the high.

It was also noted by inspection of the data that, whichever combination of grades included the data from the junior high staffs (K-6 and 7-9 vs. K-9 vs. 10-12), the pupil-teacher ratio of both types of districts was increased considerably. This would indicate that the pupil-teacher ratio in the junior high schools (grades 7-9) was higher than either the elementary (K-6) or the high school (10-12) because the teacher pupil ratio was lowered for the high schools when the ratio was figured for grades 10-12 only. The junior high pupil-teacher ratio appears to be an area which may prove fruitful for further study since it may be that many educators attempt to keep class sizes smaller in the lower grades in order that the very young student may get a "good start" in school while at the same time the North Central Association of Colleges and Secondary Schools accreditation requires lower pupil-teacher ratios in the high school. This may tend to leave the junior high pupil-teacher ratio as a matter of budgetary convenience.

As was mentioned earlier, there was no significant difference between the student counselor ratio and library books per high school pupil ratios of the two types of schools studied. In both instances, this, too, may be attributed to the North Central Association of Colleges and Secondary Schools high school accreditation requirements.

The criteria of proportionate seating space available in the high school libraries as compared to the total high school student body indicated a significant difference, the high expenditure districts having a higher proportionate amount of space available. Although this criteria has not been well established in previous cost-quality studies, the North Central Association of Colleges and Secondary Schools does have minimal library size requirements for accreditation. The physical size of the library is a minimal operational budget cost item because, at most, the additional size would slightly increase costs for heat, light, maintenance and upkeep. However, the initial investment for the cost of construction of a larger than minimum library facility may be an indication of the direction and intent the Board of Education, the staff

and community wanted the future educational program to take. Consequently this criteria of size of libraries may be very difficult to measure in terms of quality except by intent.

COMMUNITY CHARACTERISTICS

A simplified chart of the major findings of this part of the study was made which will facilitate an orderly discussion and interpretation.

Community

Criteria	Finding
1. Family income--above-below $3000	Significant difference* with more families "above $3000 income in low expenditure districts than expected.
2. Family income--above-below $10,000	Significant difference* with more families above $10,000 income in low expenditure districts than expected.
3. Education levels--25 years and older, 7th grade and above, below 7th grade	Significant difference* with more of the 25 years or older population in the low expenditure districts having 7th grade and above education than expected. This was also true when categorized by sex.

*"Significant difference at the .05 level."

Community

Criteria	Finding
4. Education levels--25 years and older, 12 grade and above, below 12th grade	Significant difference* with more of the 25 years and older population in the high expenditure districts having a "12th grade and above" education than expected.
5. 14-17 year olds in--not in school	Significant difference* with more of the 14-17 year olds not in school in the high expenditure districts than expected and vice versa for the low expenditure districts.
6. Mobility of population, moved into house 1958 or before, since 1958	Significant difference* with all of the high expenditure districts having more persons moving into house since 1958 than expected. Vice versa for low expenditure districts.
7. Native vs. foreign-born	There was a significant* difference statistically established with more of the low expenditure communities having more foreign born residents.

*"Significant difference at the .05 level."

The preceding summary of the statistical interpretation of the community characteristics data creates confusing results when compared with previous studies. Goodman[1] found that the socio-economic community factors listed had a positive relationship to quality education and level of support.

In this study, it was found that (1) the number of families with incomes above the $3000 and the $10,000 levels, (2) the proportionate number of persons 25 or older having a 7th grade or above education, and (3) the proportionate number of 14-17 year olds still in the schools of the low expenditure districts exceeded the expected, while the reverse was true in the high expenditure districts. While the high expenditure districts had a proportionately larger number of persons who had a 12th grade or above as well as more people "moving into present house since 1958" than was statistically expected.

Although the writer has reservations there was no significant difference when comparing the 1960 census figures the foreign-born and the native-born in the two

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[1]Goodman. op. cit. pp. 1-25.

kinds of communities. As a matter of speculation, it might be interesting to study the community characteristics of these districts 20 or 30 years previous. Further, the data pertaining to mobility of population, one notes that there is considerable mobility in the high expenditure districts. It might be suspicioned that this moving is causing a major change in socio-economic structure of the districts. This latter observation is given some support when it is noted that both the proportionate number of persons "below a 7th grade education" and "above a 12th grade education" in the high expenditure districts is larger than expected.

It is suspicioned that the education level may have been lowered in recent years but hadn't reached the critical stage by the 1960 census. This suspicion is given some support by the writer's personal observation and inspection of the six communities.

The reported previous studies which established the community characteristics criteria did not attempt to weight one criteria over another or determine the more dominant factor. There may be one basic or combinations of these kinds of criteria or still others

which tend to influence the level of support. It could be argued from the results of this study that the higher proportionate number of persons in the community who have a 12th grade or above education may be the more dominant factor influencing the level of support since the other measured factors of income and the number of 14-17 year olds in school seem to be to the advantage of the low expenditure districts. Since the establishing of these criteria was not the purpose of this study, this limited study would be inconclusive except to point up a possible area for future study.

The concern and design of this report did not include a study of the factors affecting the level of support for education; but rather an analysis of selected socio-economic community characteristics of the selected communities which had been observed in previous studies to correlate quality programs and expenditure levels. However, there are facets which may more directly affect the level of support of schools. There is evidence in other studies[1] that the expenditure levels of Michigan school districts has a

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[1]Jeung Rhee. op.cit. pp. 154-155.

direct relationship to the taxable wealth. Because of its possible importance for further study, a brief resume of school support, hence level of expenditure in Michigan schools is given.

Excluding money from state sources, since the actual expenditure per pupil in most districts in the state exceeds the state's basic allowance of $224.00 per child, all districts levy additional taxes above the specified minimum to participate in the state aid formula. This tax is levied on the local property to reach the actual total level of support in each community. Since the state equalized valuation per pupil has an approximate variance from $6000 to $27,000 between the low and high expenditure districts studied, it is apparent that a 1 mill levy in the two kinds of districts would bring $6.00 per pupil in the low expenditure districts and $27.00 in the high expenditure districts; or approximately 4½ times as much for the same 1 mill effort. This would suggest the evaluation of the factor of tax effort as it affects quality education as a possible area for future study. There is a possibility that the high expenditure districts may

have put forth little tax effort of their total local potential to receive high per pupil expenditure.

BUDGETARY AREAS OF EXPENDITURE

A simplified summary is presented for ease of discussion and interpretation.

area[a]	dollar value[b]	direction[c]	percent[d]	direction[e]
Administration	sig. dif.	high-higher	no sig. dif.	--- ---
Instruction	sig. dif.	high-higher	sig. dif.	low higher
Operation	sig. dif.	high-higher	no sig. dif.	--- ---
Maintenance	sig. dif.	high-higher	sig. dif.	high-higher
Fixed charges	no sig. dif.	--- ---	no sig. dif.	--- ---
Auxiliary charges	sig. dif.	high-higher	sig. dif.	high-higher

[a]Under area is listed budgetary area.

[b]Under dollar value is listed whether significant or not at the 95 level.

[c]Under direction is listed "low" for low expenditure district or "high" for high expenditure district the second term, either "lower" or "higher," to mean that that group was either lower or higher than other expenditure level group.

[d]Terms same as dollar value b, except comparison is in per cents.

[e]Terms same as c, except comparison in per cent.

Comparing the dollar amounts in all of the accounting categories under the "dollar value" column it was found that all dollar expenditure levels of the high expenditure districts were significantly higher than the low expenditure districts except the category of "fixed charges" where there was no significant difference between the high and low expenditure districts.

A different pattern developed in the percent column. This seems to concur with the findings of previous studies.[1] Speculatively the writer will attempt to interpret the varying pattern of results in the percent columns as they might compare with the dollar values.

It was noted that although there was a significant difference in the dollar value spent for administrative services, there was no significant difference in the percent of the total budget used in the high and low expenditure districts which might indicate that as the salaries of personnel and the services in the other categories increase, the

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[1]Donald H. Ross. op.cit. p. 397.

administrative expenses and salaries to adequately supervise and conduct the program have increased proportionately.

In the area of (1) Instruction, (2) Maintenance, and (3) Auxiliary Services there was a significant difference in both dollars and percentages. The low expenditure districts spent a higher percentage of their money for instruction while the high expenditure districts spent a higher percentage for maintenance and auxiliary services. Although this study furnished no data to support the suspicions of the writer, the above phenomenon may have been caused by low expenditure districts having been faced with a very inadequate budget which necessitated spending a greater percent (but considerably less dollars) of its total budget for instruction at the expense of some of the auxiliary services, while the high expenditure districts with more total dollars were able to spend a larger percent for maintenance items and auxiliary services. It should be noted, however, that a personal inspection of most of the physical plants in the districts studied found buildings 35 to 50 years old in the high expenditure

districts while the low expenditure districts had more buildings in the 20 year range. This may account for both the high per cent and high expenditure level in the high expenditure districts for maintenance.

The item of auxiliary services, which included such items as health services and recreation, could have been higher both in percentage and in dollars in the high expenditure districts because they had more money with which to work. Limited budgets could have made these kinds of expenditures more difficult in the low expenditure districts.

The operations item showed a significant difference in dollars spent with the high expenditure districts spending more but the percentage figures showed no significant difference. This may be attributed to the possibility that the housekeeping expectations are increased proportionately to other expenditures in the high expenditure districts. Another alternative is that the efficiency of newer buildings in the low expenditure districts may require less proportionate operation monies.

Fixed charges showed no significant differences in dollars spent nor percent of total budget between the high and low expenditure districts.

The four kinds of expenditures listed under fixed charges were "rent," "insurance," "interest on short term loans" and "other." The amount of dollars spent varied from a low of $2.16 per pupil in District B to a high of $9.46 in District A while the percent of expenditure varied from .34% in District B to 1.79% in system Z.

By the very nature of the fixed charges, it is usually conceded that boards of education must expend these minimal amounts for the items listed without having a great deal of power of decision over the amounts. This can be noted by the character of such items as insurance, rent, and interest on short term loans. Therefore an analysis of fixed charges as an item which might have a relationship to quality education appears to have meagre potential, at best, when considering other budgetary items of greater potentiality.

III. CONCLUSIONS AND IMPLICATIONS

The following general conclusions were reached:

1. This study of selected Michigan schools agrees only in part with the earlier studies which had located possible quality related education factors that were also related to level of support.
2. The factors of quality in education need to be more refined for better identification.
3. The level of support in education does not assure that all of the presently accepted factors related to quality education will be attained in the same proportionate degree in all districts.

From an analysis of the results of the present study, the following several more specific conclusions resulted:

1. The criteria of personnel status factors including such items as length of teaching experience, level of training, areas of teaching competence and salaries paid show a positive

sensitivity to level of expenditure for education in the selected Michigan schools studied which compared favorably with previous studies.

2. In the area of staff origin, domestic and foreign travel, and literary and professional interest, the relationship of the previously established factors related to quality and the expenditure level was not sensitive in the Michigan schools studied.

3. The class size criteria and level of support which had been used extensively in previous studies was found to be a measure with considerable sensitivity in the Michigan schools studied.

4. The community characteristics of income level, education level, school age not in school, mobility of population, and native - foreign born population and the level of support comparisons were inconclusive or for the most part showed a notable reversal from previous studies.

5. The budgetary areas of dollar expenditure, for the most part, supported the previously identified patterns in earlier studies. The trend being that as the costs increased, all areas of the dollar budget are increased but the percents of the total expenditure per pupil in some areas were different when comparing the high and low expenditure districts indicating that as the total expenditures increase, more and more money was not spent proportionately in each of the categories.

IV. RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

1. A series of related studies including the total state should follow this research which could validate, expand and go into depth on the variables used here.
2. Future research should attempt to develop uniform instruments applicable to all parts of the country which will assure a consistency of the kinds of data collected for statistical interpretation.

3. The implications of this limited study suggest that there is a critical need for a more comprehensive depth study or studies of staff characteristics and adequacy, including class loads, physical plant facilities, community characteristics, and level of support as they relate to the overall requirements for the education of the youth of the state of Michigan.

4. There are further implications in this study to indicate a need for further study of cost-quality factors as they affect the junior high or middle schools.

5. Recruiting practices of personnel directors determine the kind of teachers a school employs. The characteristics of the kinds of teachers they prefer is relevant to the kind of teachers hired. A study of recruiting practices may throw further light in the area of personnel and cost-quality factors.

6. A great amount of time, effort and money is still needed to assure a more refined approach to solving the problem of defining quality education and relating it to costs.

This study will add one more small facet in our quest for knowledge which may help clear the horizon a small bit for future researchers. This contribution may chart a path for others to follow, detail and describe. Short cuts will eventually be found which will lead to the ultimate objective of educational quality. This study does not prove by its complexity of approach and conclusions that quality is not just a thing--yet we know quality is not an absolute as we define it today--but many different things to many different people.

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APPENDIX A

RELATED DATA

TABLE A-I

NAMES OF SCHOOL DISTRICTS IN
WAYNE, OAKLAND, AND MACOMB COUNTIES

Wayne County

		K-12[1]	One[2] High School	North[3] Central
1.	Allen Park	Yes	Yes	Yes
2.	Brownstown #1	No		
3.	Carson	No		
4.	Cherry Hill	Yes	Yes	No
5.	Dearborn City	Yes	No	Yes
6.	Dearborn #3	No		
7.	Dearborn #4	No		
8.	Dearborn #7	No		
9.	Dearborn #8	Yes	Yes	No
10.	Detroit	Yes	No	Yes
11.	Ecorse	Yes	Yes	Yes
12.	Fairlane	No		
13.	Garden City	Yes	Yes	Yes
14.	Gibraltar	No		
15.	Grosse Ile	Yes	No	Yes
16.	Grosse Pointe	Yes	Yes	Yes
17.	Hamtramck	Yes	Yes	Yes

[1]Districts offering total kindergarten through 12th grade education program including a high school within the district and less than 10% non-resident students.

[2]One high school in the district instead of several.

[3]Schools accredited by the North Central Association of Colleges and Secondary Schools for at least the last five years.

		K-12	One High School	North Central
18.	Hand	No		
19.	Harper Woods	Yes	Yes	Yes
20.	Heintzen	Yes	Yes	No
21.	Highland Park	Yes	Yes	Yes
22.	Huron	Yes	No	No
23.	Inkster	Yes	Yes	Yes
24.	Lincoln Park	Yes	Yes	Yes
25.	Livonia	Yes	No	Yes
26.	Maple Grove	No		
27.	Melvindale	Yes	Yes	Yes
28.	Nankin Mills	No		
29.	Northville	Yes	No	Yes
30.	Plymouth	Yes	Yes	Yes
31.	Redford Union	Yes	Yes	Yes
32.	River Rouge	Yes	Yes	Yes
33.	Riverview	Yes	No	Yes
34.	Romulus	Yes	Yes	Yes
35.	Southgate	No		
36.	South Redford	Yes	Yes	Yes
37.	Sumpter	No		
38.	Taylor	Yes	Yes	Yes
39.	Trenton	Yes	Yes	Yes
40.	Van Buren	Yes	Yes	Yes
41.	Wayne	Yes	Yes	Yes
42.	Wyandotte	Yes	Yes	Yes

TABLE A-II

THE FORTY-TWO SCHOOL DISTRICTS BY COST PER PUPIL

RANK 1960-61

	Expenditure Per Pupil		Expenditure Per Pupil
1.	622.48	22.	386.61
2.	561.31	23.	384.63
3.	555.49	24.	384.35
4.	521.59	25.	371.82
5.	518.28	26.	370.70
6.	507.63	27.	368.54
7.	486.35	28.	366.70
8.	468.50	29.	365.22
9.	467.89	30.	359.18
10.	460.78	31.	357.84
11.	453.33	32.	357.59
12.	452.99	33.	355.74
13.	448.12	34.	354.25
14.	436.44	35.	348.73
15.	435.29	36.	346.99
16.	427.13	37.	338.54
17.	411.95	38.	335.17
18.	408.13	39.	329.07
19.	394.74	40.	323.18
20.	393.50	41.	301.69
21.	389.55	42.	276.43

Macomb County

		K-12	One High School	North Central
1.	Anchor Bay	Yes	No	Yes
2.	Armada Area	Yes	No	
3.	Center Line	Yes	Yes	Yes
4.	Chesterfield	No		
5.	Chippewa Valley	No		
6.	Clintondale	Yes	Yes	No
7.	East Detroit	Yes	Yes	Yes
8.	Fitzgerald	Yes	Yes	Yes
9.	Fraser	Yes	No	Yes
10.	Lake Shore	Yes	Yes	Yes
11.	Lakeview	Yes	Yes	Yes
12.	L'Anse Creuse	Yes	No	Yes
13.	Memphis	Yes	No	No
14.	Mount Clemens	Yes	Yes	Yes
15.	New Haven	Yes	No	No
16.	Richmond	Yes	No	No
17.	Romeo	Yes	Yes	Yes
18.	Roseville	Yes	Yes	Yes
19.	South Lake	Yes	Yes	Yes
20.	Utica	Yes	Yes	Yes
21.	Utica	Yes	Yes	Yes
22.	Warren	Yes	Yes	Yes
23.	Warren Woods	No.		

Oakland County

		K-12	One High School	North Central
1.	Avondale	Yes	No	Yes
2.	Berkley	Yes	Yes	Yes
3.	Birmingham	Yes	No	Yes
4.	Bloomfield Hills	Yes	Yes	Yes
5.	Brandon	Yes	Yes	No
6.	Clarenceville	Yes	No	Yes
7.	Clarkston	Yes	Yes	No
8.	Clawson	Yes	No	Yes
9.	Dublin	No		
10.	Farmington	Yes	No	Yes
11.	Ferndale	Yes	Yes	Yes
12.	Hazel Park	Yes	Yes	Yes
13.	Holly	Yes	No	Yes
14.	Huron Valley	Yes	Yes	No
15.	Lake Orion	Yes	Yes	Yes
16.	Lamphere	Yes	No	Yes
17.	Lyon Township	Yes	No	No
18.	Madison Township	Yes	No	Yes
19.	Novi	No		
20.	Oak Park	Yes	Yes	Yes
21.	Oxford	Yes	No	Yes
22.	Pontiac	Yes	No	Yes
23.	Rochester	Yes	Yes	Yes
24.	Royal Oak	Yes	No	Yes
25.	Southfield	Yes	Yes	Yes
26.	Troy	Yes	Yes	Yes
27.	Walled Lake	Yes	Yes	Yes
28.	Waterford	Yes	No	Yes
29.	West Bloomfield	Yes	No	Yes

TABLE A-III

TOP TEN EXPENDITURE PER PUPIL SCHOOL DISTRICTS IN 1960-61, WITH EXPENDITURES PER PUPIL AND RANK FOR THE SCHOOL YEARS 1957-58 THROUGH 1961-62

S/D	Exp. 1957-58	Rank	Exp. 1958-59	Rank	Exp. 1959-60	Rank	Exp. 1960-61	Rank	Exp. 1961-62	Rank	Total Rank for 5 Years	Rank
1	553.27	2	541.99	2	589.78	2	622.48	1	599.33	1	8	2
2	662.78	1	617.04	1	667.54	1	561.31	2	565.53	2	7	1
3	516.42	3	504.64	4	468.28	6	555.49	3	480.36	7	23	5
4	451.58	5	470.13	5	493.60	4	521.59	4	538.15	4	22	4
5	484.92	4	507.37	3	531.81	3	518.28	5	542.18	3	18	3
6	409.33	6	416.52	8	480.89	5	507.63	6	508.26	5	30	6
7	370.36	10	399.35	10	428.52	10	486.35	7	438.96	9	46	9
8	388.85	9	415.08	9	433.60	9	468.50	8	432.48	10	45	8
9	408.60	7	423.11	6	433.87	8	467.89	9	500.50	6	36	7
10	404.37	8	419.95	7	435.15	7	460.78	10	461.38	8	40	10

TABLE A-IV

BOTTOM TEN EXPENDITURE PER PUPIL SCHOOL DISTRICTS IN 1960-61, WITH EXPENDITURES PER PUPIL AND RANK FOR THE SCHOOL YEARS 1957-58 THROUGH 1961-62

S/D	Exp. 1957-58	Rank	Exp. 1958-59	Rank	Exp. 1959-60	Rank	Exp. 1960-61	Rank	Exp. 1961-62	Rank	Total Rank for 5 Years	Rank
1	257.29	1	242.50	1	250.22	1	276.43	1	279.28	1	5	1
2	282.15	4	285.75	4	284.04	3	301.69	2	319.15	3	16	3
3	275.56	2	280.80	2	295.82	4	323.18	3	309.10	2	13	2
4	279.49	3	284.09	3	271.85	2	329.07	4	334.32	5	17	4
5	284.29	5	301.65	6	322.18	5	335.17	5	364.09	9	30	6
6	292.32	6	291.76	5	333.56	6	338.54	6	338.42	6	29	5
7	316.43	8	335.65	8	364.08	9	346.99	7	328.21	4	36	7
8	296.37	7	307.09	7	346.74	7	348.73	8	353.46	7	36	7
9	399.87	10	369.98	10	365.17	10	354.25	9	363.41	8	47	10
10	330.82	9	339.66	9	350.63	8	355.74	10	366.28	10	46	9

APPENDIX B

COPIES OF CORRESPONDENCE AND QUESTIONNAIRE FORM

SCHOOL DISTRICT OF THE CITY OF HIGHLAND PARK
12541 Second Avenue
Highland Park, 3, Michigan

Dear Fellow Educator:

At one time or another, each of us in education has found it necessary to conduct studies to partially fulfill requirements for a degree. I find myself in this spot in making the following request. (A MSU requirement for Ed.D.)

We are studying the role expectations of selected successful teachers to determine the amount of concommital learning and experience beyond the formal "college" training teachers take with them to teach children. It is hoped that, as a result of this research, we may disclose other usable criteria in our quest to measure quality in education.

Although we are approaching the end of the school year, it is my hope you will take 5 to 10 minutes of your busy day to complete the enclosed questionnaire. A stamped self-addressed envelope is enclosed for your convenience.

Should you want a tabulation of the results of this portion of the total study for your own files, please give your name and address indicating your request on the questionnaire.

Thank you for a reply at your earliest convenience.

Very truly yours,

NORMAN P. WEINHEIMER /s/
Norman P. Weinheimer
Superintendent of Schools

Enclosures

May-June, 1963

TEACHER CHARACTERISTICS QUESTIONNAIRE

Please insert word or check appropriate answers.

1. I have been employed in present system ___ years. Previous experience ___ years.

2. Prior to my present employment, I was considered a resident of the state of _____ in the city of _____.

3. I have made round trips during the past 3 years, excluding visits to immediate family and foreign travel, as follows:

   a. ___(number) round trips of 500 miles or more.
   b. ___(number) round trips of 1000 miles or more.
   c. ___(number) round trips of 2500 miles or more.

4. I have visited _____ (number) foreign countries (excluding "local trips" under 150 miles in Canada).

5. I own apprximately ____(number) non-professional books (including paper backs).

6. I have purchased ____(number) non-professional books during the last 3 years.

7. I have read approximately ____ (number) non-professional books during the last 3 years.

8. I subscribe to ____ non-professional magazines.

9. I purchased ____ professional books during the past 3 years.

10. I subscribe to _____ professional magazines.

11. I am qualified to teach in ____1____2____3____4 ____5 areas of study (usually major and minors).

12. Bachelor's degree____when completed_____; Master's degree____ when completed _____; Specialist_____ when completed_____; Doctor's degree____ when completed_____; Number of hours beyond last degree _____.

13. I have completed _____ semester or _____ term hours of credit in the last 3 years or since graduation if less than 3 years.

14. Number of credits in education courses,____semester hours or _____ terms hours (estimate).

15. My major area of teaching is within _____ K-6 _____ 7-12.

16. I have attended _____ different professional conferences of 1/2 day or more. Total days of conference_____.

17. My age group ____20-30 ____30-40 ____ over 40.