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ABSTRACT

A STUDY OF THE RELATIONSHIPS BETWEEN THE EDUCATIONAL CHARACTERISTICS CRITERION, (ECC), THE STANFORD ACHIEVEMENT TEST, AND SELECTED COST FACTORS

by Owen Springer

Purpose, Procedure, and Design

This study was undertaken to determine the relationship between administrator and teacher perceptions of characteristics of quality education, student achievement and selected cost factors. The major purpose of the study was to determine the ability of the <u>Educational</u> <u>Characteristics Criterion</u> to predict school achievement independent of selected cost factors.

Sixteen Michigan public school systems which had used the <u>Stanford Achievement Test</u> in the sixth grade in 1962-63 volunteered to participate in the study. Administrators and teachers of the schools that participated were asked to complete a fifty-five item instrument, the <u>Educational Characteristics Criterion</u>. Respondents indicated on a four point scale the degree to which their school was characteristic of each statement of quality. <u>Stanford Achievement Test</u> scores for the appropriate grade and year were submitted by each school

system and the cost data (size, expenditure per pupil, millage, and state equalized valuation) were obtained from a report of the Michigan Department of Public Instruction.

The <u>ECC</u> is based on the assumption that educational quality resides more in the mind of the observer than in the structure of the educational program and that those persons most closely associated with educational programs (administrators and teachers) perceive and react to school and community characteristics which contribute to quality education. Each of the fifty-five statements was assigned to one of the following seven categories: (I) Student's Level of Knowledge and Attitudes, (II) Community Attitudes, (III) Curriculum (IV) Use of Facilities, (V) Socio-cultural Composition of the Community, (VI) Administration and Supervision, and (VII) The Teacher and Teaching Methods.

The three General Hypotheses tested were:

- I. There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the <u>Educational</u> <u>Characteristics</u> Criterion.
- II. There are positive relationships among the administrator and teacher perceptions of characteristics of quality education as measured by the <u>Educational Characteristics</u> <u>Criterion</u>, student achievement, and cost factors.

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III. There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the <u>Educational</u> <u>Characteristics</u> <u>Criterion</u> and student achievement independent of cost factors.

The design permitted the seventy administrator and the 726 teacher scores on the <u>ECC</u> to be compared separately or combined on a Total Quality Score and on a Category Quality Score for each of the seven categories. These scores were then compared with school mean achievement scores and with school size, expenditure per pupil, millage, and state equalized valuation data.

Product moment correlations were computed to determine the relationships in General Hypotheses I and II. The partial correlation technique was used for General Hypothesis III. A one-tailed test significant at the .10 level was used to determine the significance of the correlations.

Major Findings and Conclusions

The high positive correlations between administrator and teacher responses on each of the seven Category Quality Scores indicate that administrators and teachers perceive in the same way those characteristics which have been identified as contributing to quality education. Thus, a combined Total Quality Score may be used to measure educational quality. However, there is a

greater chance that the respondent groups differ in their perceptions of quality education for those characteristics related to Socio-cultural Composition of the Community, Administration and Supervision, and The Teacher and Teaching Methods.

There appears to be no statistical difference between the correlation of <u>ECC</u> scores and school achievement when the cost factors of size, expenditure per pupil, millage, and state equalized valuation are partialled out. The <u>ECC</u> may be able to predict school achievement free of the influence of these combined cost factors.

The correlation between administrator responses and school achievement was higher than the correlation between teacher responses and school achievement. Administrator perceptions as measured by the <u>ECC</u> may be better predictors of school achievement. This may be due to a different frame of reference and a larger scope of the educational community with which administrators identify.

Those characteristics of quality education related to Curriculum, Administration and Supervision, and The Teacher and Teaching Methods indicated the highest correlations with achievement independent of the cost factors. These characteristics relate to the administrator-teacher-student behavior and should contribute

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to instruction and classroom activities. Administrator perceptions of these characteristics had a higher correlation with school achievement than did teacher perceptions.

This exploratory study indicated the potential of the <u>ECC</u> to predict school quality as validated by school achievement. By using the partial correlation technique the freedom of the <u>ECC</u> from the effects of cost factors when predicting school achievement has been shown. A larger, more inclusive study which could differentiate between the perceptions of elementary and secondary teachers is recommended. Further development of the <u>ECC</u> using other reference groups for the population and other criteria for measuring quality has been suggested.

A STUDY OF THE RELATIONSHIPS BETWEEN THE EDUCATIONAL CHARACTERISTICS CRITERION, (ECC), THE STANFORD ACHIEVEMENT TEST, AND

SELECTED COST FACTORS

by

Owen Springer

A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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Dr. Herbert C. Rudman has served as chairman of the writer's doctoral committee and has directed this study. His continued encouragement and support has been of great personal strength and his counsel and guidance during the program have proved to be very wise. His advice and recommendations during this project have been most helpful. Other members of the committee who have assisted and suggested improvements have been Dr. John X. Jamrich, Dr. Richard Featherstone, Dr. Joe Saupe, and Dr. John Useem. They have been most helpful in supplying assistance and direction in clearing problems related to statistical and writing skills.

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Dr. Van Mueller's help in preparing materials to be used in our similar studies has been appreciated. Mrs. Linda Oostmeyer has been most helpful and efficient in typing all copy and Mr. Orville Barr provided programming assistance for the computations.

To my wife, June, and daughter, Lori Sue, I wish to give credit for their understanding, patience, and cooperation. Without their encouragement and motivation a goal we agreed to undertake would not have been reached.

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CHAPTER I

THE PROBLEM

Since World War II, education has been challenged by a rapidly increasing population and an increase in knowledge which surpasses any previous historical era. Advances in technology and production as well as conflicts in ideologies have placed additional demands upon the American educational system. Interest in international developments, cultural differences, and political changes have caused Americans to expect more and better educational programs. The importance of education, the many forces which affect educational decision making, and the emphasis upon quality education have been summarized by the Committee on Education Beyond the High School.¹

These challenges, advances, and interests have caused a change in educational emphasis from quantity to quality. It has been said that quality will be the

¹The President's Committee on Education Beyond the High School, <u>Second Report to the President</u>, (Washington, D.C.: Superintendent of Documents, Government Printing Office, 1957), p. 1.

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"frontier in education" for the next twenty years where quantity has been the concern for the last hundred years? Education has been concerned with who, how many, and how much; the new emphasis may well be on the kind of programs, outcomes, and processes used in educating the students. Concern for what happens to each child while he or she is in school is a part of the new emphasis.

In discussing the improvement of education, Clabaugh indicates that more and better education is an "imperative of our time."³ The importance of improving the quality of education for today's students rests in the fact that the future depends upon their abilities and their decisions. The values that today's students develop and the responsibilities that they assume in making personal and community decisions will determine the opportunities that others will have available to them. Consequently, those decisions which communities are making about schools and educational programs will have long range effects upon society.

²William G. Carr, "How Good Are Your Schools?" (Washington, D.C.: National Education Association, 1958), p. 32.

³R. E. Clabaugh, "Improving Quality in Public Education," Quality Schools for All Illinois Children, (Springfield, Illinois: Illinois School Board Association, 1959), p. 3.

Quality Defined

Quality can be defined as an attribute or a characteristic of a thing or as a specific identity--that element that makes something what it is. It may also be used to identify the general nature, over-all basis, or category of elements involved in a description. A quality could be considered a rating, ranking, or scale as used when comparing degrees of excellence. Quality can be termed the most excellent or superior rating as when one discusses the best one as having the quality.⁴ Regardless of which form of the definition of quality that one chooses to use when referring to quality of education or quality schools, the complex environment in which education is placed must be considered. Forces within the school have means and goals at their disposal for influencing educational decisions as do those forces outside the school. The impact of the home, church, radio, television, and other elements of our culture on educational performance cannot be forgotten. The native ability, scholastic aptitude, and values of the school enrollment and the school community are important forces

⁴Webster's <u>New World Dictionary of the American</u> Language, (Cleveland: The World Publishing Company, 1962) p. 1189.

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⁵Nati Cost More, Bulletin, tion), Vol Gstan Certain So Financed R dissertati York, 1954 John W. Po Hill Book

7_{Art} havior: A farper and and factors affecting quality. The degree to which these forces interact determines what a school is and what a school staff does. These many and varied factors contribute to a school's quality over a period of time and the change in their importance and impact on one another at a particular time gives the school its particular quality.⁵ Smith states that the "sum total of these forces, large and small, measured and yet to be measured, gives a school its particular quality of education"⁶

Quality as a Function of Perception

Combs and Snygg discuss perceptual theory and how people react to stimuli.⁷ According to Combs and Snygg, people do not behave according to the facts as other people may view them but according to the facts as they,

⁵National Education Association, "Better Schools Cost More," National Education Association Research Bulletin, (Washington, D.C.: National Education Association), Volume 37, Number 2, p. 41, April, 1959.

⁶Stanley V. Smith, "Quality of Education Related to Certain Social and Administrative Characteristics of Well-Financed Rural School Districts" (unpublished Doctoral dissertation, Teachers College, Columbia University, New York, 1954), cited by Paul R. Mort, Walter C. Reusser, John W. Polley, <u>Public School Finance</u>, (New York: McGraw-Hill Book Co., 1960), p. 104.

⁽Arthur W. Combs and Donald Snygg, <u>Individual Be-</u> <u>havior: A Perceptual Approach to Behavior</u>, (New York: Harper and Row, 1959, revised), p. 17.

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8Will Evaluation Project, F State of N (Mimeograp 9Nati Schools?" themselves, see them. Behavior is a function of an individual's perception of an event and not the event, <u>per se</u>. For any individual, his behavior results from his particular perceptions of himself and of the world in which he lives. The meanings, values, and experiences that comprise his background determine his perceptions. In this manner quality may be perceived in different ways by different persons: what a person or community values will affect his or its concept of quality. What people look for a school to do and how well they think the school is functioning toward their design for it will determine to a great degree the feelings that they have about education in their community.

How people view their community and school is important. That citizens have an interest in schools, make personal judgments concerning education, and in effect evaluate schools by their own personal criteria is indicated by Firman⁸ and the N.E.A.⁹ Parents and the public at large express themselves in general conversation or in planned school committees concerning their

⁸William D. Firman, "Procedures in School Quality Evaluation," A Second Report of the Quality Measurement Project, First Draft, (New York: The University of the State of New York, Division of Research, 1961), p. 1 (Mimeographed.)

⁹National Education Association, "How Good Are Your Schools?" <u>op. cit.</u>, p. 4.

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feelings about the schools. These informal evaluations play an important part in determining community behavior towards schools and their needs. Comparisons of schools are made on the basis of many criteria. For some citizens the athletic, music, dramatic, or other special activity may determine the best school. For some the academic honors, scholarships, or general academic reputation of a school may determine for them the quality school. Others may be interested in the variety of curricular offerings, the experience of the administrative and teaching staff, or the guidance or special services offered. For some the physical plant, buildings, maintenance, library facilities, the general appearance, or athletic facilities may determine the school they select as having quality. The power of mass communications media in intentionally or unintentionally helping form these opinions cannot be overlooked.

Students evaluate schools as a result of their experiences in them. They like or dislike, approve or disapprove, agree or disagree as determined by what happens to them in the course of their school experiences. The success or failure that students experience in school activities and programs formulates a set of perceptions upon which they draw in forming their opinions

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and expressing them to others. Their behavior will depend upon these opinions and values.

Formal evaluations of schools are made by professional personnel, school boards, and lay advisory committees or combinations of these groups. Expert studies in which professional educators outside the local community make evaluations and recommendations are not uncommon. Local studies involving local school personnel and representative lay groups are quite common. The use of experts with local committees and groups is a way of using local involvement and impartial professionals as resource persons. These formal evaluations may utilize local objectives, general checklists, questionnaires, statistical data, prepared guide questions for discussion techniques, and other devices for structuring their studies. Studies may be complete evaluations or stress some particular aspect of education as curriculum, finance, building needs, maintenance, personnel, policies and regulations, or special services.

Within these formal and informal evaluations people express their opinions, beliefs, attitudes, and values in terms of what education has been, is, or ought to be for them. Quality of education is what people perceive their schools as doing or what they believe the schools should be doing.

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Quality as a Function of Values

The Committee for Economic Development indicates a belief that the American people value education and can be brought to value the improvement of education.¹⁰ That education actually is valued might be challenged in view of low financial support in some areas and voter apathy in school elections. The implication that if education is not now valued it can be made a part of the value system of the public is important. If education is to be valued it would appear that those responsible for education in a community--teachers, administrators, and school board members--must play an important part in developing a priority for education in the eyes of the public. By placing the responsibility for a school program in the hands of the local school district the concept of local control is valued. When educators, parents, and citizens make educational matters their concern by maintaining and exercising their right to make decisions on the character of education as prescribed by lay and recognized administrative procedures we have evidence of local initiative, close

¹⁰Committee for Economic Development, <u>Paying</u> For <u>Better Public Schools</u>, (New York: Committee for Economic Development, 1959), p. 10.
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The Measurement of Quality

Is it possible for those who are in positions which determine the policies that govern and determine a school's destiny to ascertain the values, beliefs, attitudes, or perceptions of various groups? Can educational values and attitudes be measured? Thurstone indicates that human values are essentially subjective and that in measuring social, moral, and aesthetic values, the problem is to determine a subjective measuring device.¹³ When people are asked to make a judgment and compare one thing to another some process is involved which permits a discrimination to be made by each person in terms of his perception of what differences exist. The better item has a quality about it which distinguishes it from a poorer item--at least in the perception of the respondent. One criticism of measuring opinions is that we are not sure that the opinion expressed is a true opinion but

¹³L. L. Thurstone, <u>The Measurement of Values</u>, Chicago: University of Chicago Press, 1959), pp. 182-194.

¹¹Paul R. Mort, Walter C. Reusser, and John W. Polley, Public School Finance, (New York: McGraw-Hill Book Company, 1960), p. 24.

^{12&}lt;sub>Committee</sub> for Economic Development, <u>op</u>. <u>cit</u>., p. 11, 56-57.

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may be tempered by what one anticipates or expects is the correct or desired response. It should be noted that a similar criticism could be levied against measures of overt actions since these responses may be in terms of anticipated or expected behavior. Tn measuring either opinion or overt behavior it should be recognized that the measurement at least indicates an attitude that the respondent is trying to make people believe he has. In measuring opinions, values, or attitudes the best results occur when there is a minimum of pressure on the respondent in relation to the attitude to be measured. It is important that those who are responding to the items feel free to express their true feeling and that any circumstances which might keep them from responding freely should be kept to a minimum. In support of the use of scales Thurstone states that. "As a matter of fact we get along quite well with the concept of a scale in describing traits even so qualitative as education, social and economic status, or beauty."14

The "Parent Attitude Toward Education Scale" is a type of instrument which purports to provide an estimate of a parent's support for schools and of how important education is to him.¹⁵ This instrument contains forty

¹⁴<u>Tbid.</u>, p. 218.

¹⁵Gene R. Medinnus, "The Development of a Parent Attitude Toward Education Scale," Journal of Educational Research, 56:100-103, October, 1962.

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statements which relate to educational values. Each statement is rated by the respondent as whether he would strongly agree, somewhat agree, somewhat disagree or strongly disagree with the item. This instrument would seem to have a diagnostic purpose since administrators could use parental responses in evaluating local school policies.

It was indicated earlier that people evaluate schools by using various criteria, goals, or outcomes as they perceive the function of the school. There are those who support the need for stressing intellectual performance and achievement as a criterion of quality. ^{16,17,18} Whatever objectives or goals a school may possess and the variety of activities it may utilize in meeting these objectives, intellectual behavior in all educational fields can be a legitimate function of the school. Clark specifically indicates that one characteristic of quality education is a certain amount of knowledge--"content and skills or abilities learned."¹⁹ That school achievement has been recognized as one criterion

¹⁶Clabaugh, <u>op. cit.</u>, p. 4.

17Harold F. Clark, "Cost and Quality in Public Education," (Syracuse, New York: Syracuse University Press, 1963), p. 2.

¹⁸Committee for Economic Development, <u>op</u>. <u>cit</u>., p.10.
¹⁹Clark, <u>op</u>. <u>cit</u>., p. 2.

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of school quality is indicated by the studies which have used achievement tests as a measurement of academic objectives. (These are cited in Chapter II.) Firman²⁰ and Goodman²¹ indicate that the quality of a school is measured by the impact the school has on its pupils. This impact includes competency in the basic skills, appreciation of and interest in knowledge, knowledge of our cultural heritage, and citizenship and human relations That competency in the basic skills is an imvalues. portant objective of schools is evidenced by the emphasis placed upon them, the time and materials devoted to them, and their importance in our culture. Measuring these basic skills in order to obtain an index of quality for a school is one purpose of achievement tests.

Standardized tests should not be expected to measure and provide evidence on how well teachers have taught all those things they have tried to teach. They have their value in the validity and reliability of their construction and the care with which they are prepared. "A well-constructed standardized achievement

²⁰Firman, <u>op</u>. <u>cit</u>., p. 3.

²¹Samuel M. Goodman, "The Assessment of Quality," (Albany, New York: The University of the State of New York, 1959), p. 7.

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22_F Uses and 31, Sept 23" Universi January, test provides an independent, broadly based definition of <u>desirable goals</u> of achievement in all schools."²² Scores provided by the tests provide normative information and scales against which individual school system averages may be compared. The complexity of the input to achievement results must be remembered when analyzing them. Differences in school staff, material resources, educational objectives, and students encourage diversity in achievement results. Differences in school achievement scores can, in part, be attributed to the values of the school district.²³ The fact that each school district is unique and composed of children with varied abilities and backgrounds and that school personnel and course content vary combine to provide diverse results in testing.

The problem of improving the quality of educational opportunity in a given school system becomes one of assessing the values, attitudes, and perceptions that the community possesses about education. Since behavior is a function of perception, measuring the community perceptions should provide us with a picture

²²Robert L. Ebel, "Standardized Achievement Tests--Uses and Limitations," <u>National Elementary Principal</u>, 41: 31, September, 1961.

²³"School Quality Workbook Handbook," (New York: The University of the State of New York, Division of Research, January, 1963), p. 5.

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24_H Determin cr Indire Program. tion, U.S for Funds Public Le (Mimeogra 25_F 26_{Th} 27_{Me} of community behavior. Developing an instrument which will measure perceptions of a community and which has a relationship with accepted measures of educational quality is important to evaluating the quality of a local school in terms of local objectives and values.

Rationale of the Study

"It would appear that the concept of quality is a relative one that resides more in the mind of the observer than it does in the actual structure of the curriculum. If quality is a function of the perception of the observer and the values he holds, the key to the definition and measurement of quality resides in the perceptions and value orientation of those making judgments about quality in educational programs."²⁴ This position is supported by Firman,²⁵ Thurstone,²⁶ Medinnus²⁷

25_{Firman, loc. cit.}
26_{Thurstone, loc. cit.}
27_{Medinnus, loc. cit.}

²⁴Herbert C. Rudman and Stanley E. Hecker, "The Determination and Measurement of Factors Which Directly or Indirectly Affect the Quality of an Educational Program." Application to the Commissioner of Education, U.S. Department of Health, Education, and Welfare for Funds to Support Research Under the Provisions of Public Law 531, 83rd Congress, November 29, 1961 (Mimeographed).

and Combs and Snygg.²⁸ Bills²⁹ and Combs³⁰ discuss perception and values as they apply in this context. Administrators and teachers are directly involved in implementing educational programs. Therefore, it seems important to determine their perceptions of those characteristics which affect school quality and thus affect educational programs.

Previous cost-quality studies have indicated a relationship between cost and many quality factors including achievement. Achievement tests have been recognized by Ebel³¹ and Goodman³² as measurements of goals of education. The partial correlation technique has been used in this exploratory study in order to control the various cost factors. In this way the relationship of the <u>Educational Characteristics Criterion (ECC</u>) and achievement independent of cost factors could be determined.

The <u>Educational</u> <u>Characteristics</u> <u>Criterion</u>, (<u>ECC</u>), is an instrument which is designed to measure the

³¹Ebel, <u>loc. cit</u>.

32Goodman, <u>loc</u>. <u>cit</u>.

²⁸ Combs and Snygg, loc. cit.

²⁹Robert E. Bills, <u>About People and Teaching</u>, Bulletin of the Bureau of School Services, (Lexington, Kentucky: College of Education, University of Kentucky, December, 1955), Volume 28, Number 2, pp. 1-19.

³⁰Arthur W. Combs, "Personality Theory and Its Implications for Curriculum Development," <u>Learning More</u> <u>About Learning</u>, (Washington, D.C.: Association for Supervision and Curriculum Development, 1959), pp. 5-12.

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perceptions that various populations have concerning certain characteristics of quality education. Previous studies which have used the <u>ECC</u> have indicated its ability to discriminate among various populations and to hold a high relationship with cost factors as criteria of quality education.

Therefore, relationships between the perceptions of administrators and teachers concerning characteristics of quality education, achievement test scores, and certain cost factors should exist.

Statement of the Problem

Studies of the relationship of cost and quality in education have provided a variety of criteria for judging the quality of a school. An analysis of these studies has shown that whatever definition of quality has been used the expenditure of more money usually produces more of the quality. Agreement has not been reached as to what factors contribute to quality education. The American public evaluates schools and school programs according to values and purposes which vary from school community to school community. In order that a definition of "quality in education" may be obtained that will include factors which are based on the values and beliefs of the public which supports education and those persons who are directly involved in operating the schools, the <u>Educational</u> <u>Characteristics</u> <u>Criterion</u> has been developed.

The validity and reliability of the <u>ECC</u> have been indicated in studies which have used financial data as criteria of quality and administrators and teachers as respondents.^{33,34} A significant outcome of education is what the students learn. Achievement tests are used to measure academic achievement and have been used as criteria in measuring school quality. This study was undertaken in order to test the validity of the <u>ECC</u> as a predictor of school achievement.

The major concern of this study is the ability of the <u>ECC</u> to predict school achievement independent of the cost factors of size, expenditure per pupil, millage, and state equalized valuation. Specifically, are the perceptions that administrators and teachers have cf selected characteristics of quality education related to the academic achievement of students?

³³Arthur D. Berg, "The Determination of the Discrimination and Reliability Indices of the <u>Educational</u> <u>Characteristics Criterion</u> with Implications <u>Concerning</u> <u>Educational Cost-Quality Relationships</u>"(unpublished Doctoral dissertation, Michigan State University, 1962).

³⁴Van Mueller, "A Study of the Relationships Between Teacher-Administrator Perceptions of Educational Quality as Measured by the <u>Educational Characteristics Criterion</u>, (<u>ECC</u>), and Selected Cost Factors," (unpublished Doctoral dissertation, Michigan State University, 1964).

Hypotheses to be Tested

The three General Hypotheses to be tested are stated in research form. Subhypotheses will be developed in Chapter III and tested and analyzed in Chapter IV.

General Hypothesis I

There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion.

General Hypothesis II

There are positive relationships among the administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion, student achievement, and cost factors.

General Hypothesis III

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There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion and student achievement Independent of cost factors.

Importance of the Study

This exploratory study hopes to add a second dimension (achievement) to the criteria of quality upon which the <u>ECC</u> can be validated. In determining the ability of the <u>ECC</u> to predict achievement as well as the various cost factors, the development of an instrument which may be used to evaluate school quality by assessing the perceptions of administrators and teachers may

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4] Achieve become a reality. Further studies using other populations and criteria of quality could provide a more comprehensive instrument. The instrument might then become a means of determining the perceptions that various power groups have of the characteristics of quality education. This would help those who make educational decisions assess the degree to which a local school system meets local goals.

If it can be determined that the <u>ECC</u>-achievementcost relationships are sufficient to predict educational quality, the problems of determining adequate cost figures and achievement test scores could be eliminated in assessing school quality. The <u>ECC</u> might become a diagnostic instrument for assessing the perceptions that people have concerning items related to quality education.

Scope and Limitations of the Study

1) The small sample and the distribution of the sample place limits on the interpretation of the results.

2) The study is limited to determining educational quality in relationship to school achievement.

3) The study is limited to the degree that respondents report their honest and individual perceptions.

4) The reliability and validity of the <u>Stanford</u> Achievement Test have been established and the results

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obtained in this study are limited insofar as they pertain to this achievement test and the accuracy of the participating schools in scoring and reporting their data.

Assumptions of the Study

 The financial data supplied in the "Selected Data for Michigan's 534 K-12 School Districts" for 1961-62 (State of Michigan DPI Report) was compiled accurately and in a consistent manner.

2) Educational quality is a relative concept and may be defined as the perceptions and values that people have about their schools.

3) Participants in this study responded with their honest and independent rather than group or paired perceptions.

Definition of Terms

As used in this study, the following terms are defined as:

1) <u>School system</u>. The term school system refers to those Michigan public schools which maintain an educational program consisting of either grades K-12 or 1-12.

2) <u>Educational quality</u>. Those educational characteristics of a school system, both school and community, which have been perceived by educational

authoritie purposes (tional qu ECC for p 3) Achieveme students sebool sy <u>Test</u>. 4) is the st ual's EO 5) (C\$\$) is educatic followin Level of tration cultura] Teaching 6) assigned instruct 7) ficated eroup of ^{edminis} authorities as being effective in accomplishing the purposes of American public education determine educational quality. The characteristics are defined by the ECC for purposes of this study.

3) <u>School Achievement Score</u>. The term School Achievement Score (SAS) refers to the mean score of students tested in the sixth grade for a particular school system as measured by the <u>Stanford Achievement</u> Test.

4) <u>Total Quality Score</u>. Total Quality Score (TQS) is the sum of the weighted item responses on an individual's ECC.

5) <u>Category Quality Score</u> Category Quality Score (CQS) is the sum of the weighted item responses of the educational characteristics included in each of the following categories of educational quality: Student's Level of Knowledge and Attitudes, Curriculum, Administration and Supervision, Use of Facilities, Sociocultural Composition of the Community, Teacher and Teaching Methods, and Community Attitudes.

6) <u>Teacher</u>. A teacher is the certificated employee assigned to a classroom or group of students for instructional purposes.

7) <u>Administrator</u>. An administrator is the certificated employee assigned to supervise or administer a group of teachers or a building or to perform a specific administrative service or function.

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8) <u>Size of school</u>. The size of a school system is the total school membership in terms of the number of children enrolled in grades K-12 for 1961-62.

9) <u>Financial ability</u>. Financial ability is the state equalized valuation (SEV) of a school system divided by the school system membership.

10) <u>Financial effort</u>. Financial effort is the tax rate in mills levied in a school system for "current operating expenditures." These expenditures include such items as teachers' salaries, tuition, transportation, repairs, and supplies but do not include items of capital outlay or debt retirement.

11) <u>Expenditure per pupil</u>. Expenditure per pupil is the cost of educating one child as determined by dividing the total current operating expenses by the total school system membership.

Organization of Remainder of the Thesis

This chapter has presented the general problem and literature related to the area of school evaluation, definitions of quality, and perception theory. Also included have been the rationale of the study, the statement of the problem, and the purpose and importance of the study. The scope and limitations of the study, the assumptions upon which the study is based and the definition of terms used in the study completed the chapter.

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Chapter II will review the literature of costquality studies and indicate the related cost-qualityachievement studies. Chapter III will be devoted to an analysis of the instruments used in this study and of the studies which have used the <u>Educational Characteristics Criterion</u>, (ECC). The selection and description of the sample, the procedures used in collecting the data, and the treatment of the data as well as the statement of the operational hypotheses will be included in Chapter III.

Chapter IV will analyze the data to test the statistical hypotheses. Chapter V will summarize the data, make conclusions from the study, and offer recommendations and implications for education.

CHAPTER II

RELATED LITERATURE

The literature in the area of cost-quality studies in public education indicates the complexity of the problems of measurement and the variety of definitions of quality. The purpose of this chapter is to indicate the problems encountered in conducting cost-quality studies, to indicate the change in emphasis from unitcost analysis to a cost-quality analysis, and to cite those studies which have contributed to the development of definitions of quality. Of particular importance are those studies which have identified school achievement as a definition of quality.

A review of the literature indicates that a number of studies have analyzed the various factors which contribute to school achievement. Previous studies which " have used the <u>Educational Characteristics Criterion</u> as an instrument to measure perceptions of quality have indicated its reliability in discriminating between the responses of groups of people and in predicting the cost relationships of a school system. No research was found which attempted to determine the quality of an

educational program by determining the perceptions that certificated personnel held about their school system and relating these to school achievement.

Philosophical Statements of Quality

"There are almost as many definitions of quality in education as there are persons discussing the problem."³⁵ This indicates the problem of defining or classifying quality that has confronted those involved in educational cost-quality studies. Vincent summarizes the many definitions used in these studies and by the American public into nine criteria.³⁶ He indicates that those who judge schools in terms of the social respectability or position of the families of the students use a criterion of <u>exclusiveness</u> whereas those who emphasize the selectivity of the students on their mental ability employ a criterion of the <u>elite</u>. Similar to these is the criterion of <u>seclusion</u> which views the school as an educational institution for getting away from the world

³⁵Clark, <u>op</u>. <u>cit</u>., p. 2.

³⁶William S. Vincent, "Criteria of Quality," Institute of Administrative Research Bulletin, Volume 2, Number 3, (New York: Teachers College, Columbia University), pp. 1-4, April, 1962.

or a place for the different to get away from the ordinary. Those who look to the schools to pass on the traditions of the culture through a curriculum prescribed for this purpose use a criterion of tradition or stability. The criterion of equality supports the position of those who believe that no one should be disadvantaged for handicaps over which he has no control and the concept of the right of all persons to educational opportunities. Vincent describes schools meeting this criterion as being comprehensive in curricular and cultural opportunities. The simplicity criterion is used by those who view schools in terms of simple facilities and goals of an academic nature and not assuming other functions of society; they look upon the curriculum as compartmentalized and the building as a cell structure. Those who view the school in terms of the economy criterion are concerned with the amount of money spent on education. Those who view schools in terms of becoming better than they are or of moving forward use the criterion of adaptability. Fostering innovation and change in education is of importance in this concept. The criterion of democracy stresses the manner in which the educational system of a community is governed.

The complexity of these criteria and their importance in formulating policy and decisions about schools

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is summarized by Vincent:

A few clear channels through which the public may influence the schools are sufficient to make the whole enterprise most sensitive to public opinion... In fact, almost any community group... can and do disturb the school and its program in various ways both beneficial and harmful... It would be possible to judge a school district on the basis of how responsive it is to a public that influences its policy and provides its support.²⁷

In reviewing the studies which the Institute of Administrative Research has undertaken which used the criterion of adaptability as a measure of quality, Vincent concludes by saying that:

... it is likely that a more complete view of the factors that should receive primary consideration by the school administrator should depend upon measures related to more than one criterion.... If that (a battery of quality measures) is what eventuates... certainly those criteria most acceptable in public thinking should not be overlooked.²⁰

The importance of the public image of schools is indicated in "Improving Quality in Public Education."

In a democracy, the schools will not rise above the level of aspiration which the people have for them. Neither will they become better simply by our wishing they were. It is essential that there be a continuous and critical evaluation by citizens generally of the means by which the quality of public education can be improved.³⁹

37<u>Ibid.</u>, p. 2.

- ³⁸Ibid., p. 4.
- 39 Clabaugh, op. cit., p. 3.

Clark indicates that school quality varies greatly among different communities and that these differences are due largely to factors in the community which include socio-economic conditions and parental values and educational background.⁴⁰ Yet, in communities with seemingly similar characteristics differences in educational quality will appear. He concludes that there are a large number of factors that cause differences in quality of education.⁴¹

These factors combine to form the definition of quality as indicated by Firman:

The quality of any product or process is a relative description of its effectiveness in meeting specifically defined objectives. The more diverse these become, or the more complex the process or product becomes, the more difficult it is to describe the quality within the framework of an over-all or global classification system. In other words, the quality of a school must be described in terms of the quality of its parts.⁴²

These parts or characteristics of quality have been listed by the Educational Policies Commission as being the

40 Clark, <u>op</u>. <u>cit</u>., p. 31.

⁴¹Ibid., p. 32.

⁴²William D. Firman, "Which Schools Are Better?" <u>National Education Association Research Bulletin</u>, (Washington, D. C.: National Education Association), Volume 41, Number 3, p. 84, October, 1963. elementary and secondary curriculum, teaching procedures, guidance activities, size and characteristics of the staff as well as their recruitment and retention, and school board and administrator relationships and functions.⁴³ The Commission stresses individualized instruction and the importance of growth and improvement as well as the need for financial support for a quality program. In order to acquire a quality program the Commission holds that the system should develop written policies, employ a variety of professional personnel, maintain good communication between the school and community, and provide satisfactory salaries and public recognition for good work. The effect of the home environment is also mentioned as a factor contributing to a quality program.

The present study and the development of the <u>Educational Characteristics Criterion</u> is supported by the Commission's conclusion:

The quality of an educational enterprise is largely determined in each locality. High quality in a school depends directly on the character of the community at large and on the abilities and attitudes

⁴³National Educational Policies Commission, <u>An</u> <u>Essay on Quality in Public Education</u>, (Washington, D.C.: National Education Association, 1959), pp. 6-25.

of the parents, the school board, the administrator, and the school staff. The attitudes as well as the decisions of local officials reflect the views of local citizens. Thus, the taproot of quality in a school is a vigorous public commitment to education based on an understanding of what education can do and what good schools are like.⁴⁴

Related Cost-Quality Empirical Studies

Early efforts to relate educational costs with educational outcomes were made on the basis of unit costs and accounting theory. The problem of standardizing and defining costs and the categorizing of items for which funds were expended soon became apparent. As educational programs become more complex the problems become more acute. Because of the accounting procedures that were used it was not always possible to find the costs which were related to administration, instruction, maintenance, capital improvements, and other categories. Differences in pupil accounting procedures did not provide for equal analysis of enrollment data. It should be remembered that many of these problems still exist today.

In 1920, Ayers pioneered a cost-quality concept which recognized the difficulty of measuring quality and of controlling the variables of home, church, and

⁴⁴<u>Ibid.</u>, p. 26.
community values and differences in educational ability. He reported a high degree of correspondence between the level of expenditure and per cent of school-age population attending school, length of the school term, average days attended by children of school age, and high school attendance as a per cent of total attendance.⁴⁵

Norton, in 1926, reported that in the states in which more money was spent per pupil teachers were paid more, more money was expended on non-salary items, and the school plant was superior. Pupils attended school a greater number of days per year, more pupils went on to high school and the teachers were better prepared in these states.⁴⁶

Ferrell, in 1936, used expenditure per pupil as a measure of cost and related it to items of daily attendance, holding power, preparation and experience of teachers, pupil-teacher ratio, and the length of the

⁴⁵Leonard P. Ayers, <u>An Index Number for State School</u> <u>Systems</u>, (New York: Department of Education, Russell Sage Foundation, 1920), as cited in National Education Association, "Better Schools Cost More," <u>National Educa-</u> <u>tion Association Research Bulletin</u>, (Washington, D. C.: <u>National Education Association</u>) Volume 37, Number 2, p. 41, April, 1959.

⁴⁶National Education Association, "Better Schools Cost More," <u>op</u>. <u>cit.</u>, p. 41.

school term. The correlation for the six items in county schools was .92 and for independent schools $.77.^{47}$

Mort and Cornell developed "A Guide for Self-Appraisal of School Systems" in 1937. In a study of educational expenditure per elementary classroom and quality as measured by the instrument in thirty-six Pennsylvania school systems a Pearson correlation of .59 was found. This instrument was similar to <u>The</u> <u>Growing Edge</u> which later was designed for use in adaptability studies.⁴⁸ In their study of the Pennsylvania schools, Mort and Cornell "found what they called 'public expectancy' was more closely related to the criterion of school quality which they were using at the time than any other single factor except net current expenditure.⁴⁹

⁴⁸Paul R. Mort and Francis G. Cornell, <u>A Guide for</u> <u>Self Appraisal of School Systems</u>, (New York: Bureau of <u>Publications</u>, Teachers College, Columbia University, 1937) as cited in Ibid., p. 23.

49 Vincent, <u>op</u>. <u>cit</u>., p. l.

⁴⁷Doctor T. Ferrell, "Relation Between Current Expenditures and Certain Measures of Educational Efficiency in Kentucky County and Graded School Systems," Contributions to Education, Number 216, (Nashville, Tennessee: George Peabody College for Teachers, 1936), as cited in R. L. Johns and E. L. Morphet, <u>Problems and Issues in Public School Finance</u>, (New York: Teachers College, Columbia University, 1952), p. 31.

In 1948 McClure investigated the cost-quality relationships in one hundred schools using a revision of the Mort-Cornell <u>Guide</u>. Schools were divided into three expenditure categories and two hundred practices which were felt to be important for good educational programs were studied. He concluded that schools that spent little money usually had unattractive buildings which were not suited for work, had few supplementary books, and had limited supplies and equipment for teaching. The McClure study showed that the schools in the low expenditure group taught the three R's poorly and did not use activities for developing citizenship.⁵⁰

Woolatt's study in 1949 of thirty-three New York and New Jersey school systems of a high expenditure classification (above the national average) used <u>The</u> Growing Edge as a quality measure.⁵¹

The Growing Edge was designed to indicate the characteristics that schools in high expenditure

⁵⁰William P. McClure, <u>Let Us Pay for the Kind of</u> <u>Education We Need</u>, A Report of a Study of State and <u>Local Support of Mississippi Schools</u>, University Bureau of Educational Research, University of Mississippi, 1948, as cited in R. L. Johns and E.L. Morphet, <u>op. cit.</u>, p. 33.

⁵¹Lorne M. Woolatt, <u>A Cost Quality Relationship on</u> the <u>Growing Edge</u>, Metropolitan School Study Council Research Studies #4, (New York: Bureau of Publications, Teachers College, Columbia University, 1949), as cited in <u>Ibid.</u>, p. 15-17.

classifications possessed as opposed to schools in low expenditure classifications. It measures quality with emphasis on the adaptability of a school system to respond to what are considered better teaching methods and school operations procedures. It includes categories of skills, knowledge, special abilities, and behavior patterns. Woolatt accounted for sparsity, transportation, differences in elementary and secondary costs and tuition costs in his study. Since two states were involved he recognized regional differences between the states and cost of living differences. A correlation of .59 was found between expenditure level and the combined scores (four categories) of The Growing Edge.

In referring to the cost-quality studies of the thirty years from 1920-1950, Mort concludes that

They seem to indicate that after fifty years of readjustment to the revolutionary discoveries in psychology made at the turn of the century we see emerging an education of great potential and we see that one important accompaniment of such strong education is expenditure.⁵²

The <u>Educational Conference Board Study of New York</u> <u>State</u> by Vincent in 1942-43 involved the use of field workers, questionnaires, and Department of Public Instruction reports.⁵³ The Mort-Cornell <u>Guide</u> was used as a

52Johns and Morphet, <u>op</u>. <u>cit</u>., p. 35. ⁵³Ibid., p. 17-20. basis for phrasing the data to be collected. Vincent

concluded that there are

... five basic trends associated with increased expenditure. These are:

- 1) concern for the mastery of basic skills
- 2) concern for the conditions of child growth
- 3) attention to the needs of the individual 4) lack of dependence of teachers upon patent devices, and
- 5) increase of proportion of teachers who are resourceful, imaginative, and intelligent.⁵⁴

A study by the New Jersey School Survey Commission in 1932-33 to show what might be expected of schools at various expenditure levels used a checklist to indicate school practices.⁵⁵ Mort summarizes the results by saying that:

- 1) School districts which spend more tend to buy more of the sorts of things which are at the time considered good by educators in general; and.
- 2) Schools which spend more get a higher quality from administrators, supervisors, and classroom services as gauged by the best thinking of the time as to what is effective behavior for administrators, supervisors, classroom teachers, and other persons providing school services, even when no relationship is apparent between the pattern of behavior and the amount of money spent.56

⁵⁴Loc. cit. ⁵⁵<u>Ibid</u>., p. 20-21. ⁵⁶<u>Loc</u>. <u>cit</u>. Furno, using Metropolitan School Study Council data, was concerned with the time lag between changes in expenditure policies and their effect on school quality.⁵⁷ He found that maximum effect occurred in about seven years and some effect could be measured after twentyfive years.

Related Cost-Quality-Achievement Studies

Achievement of pupils has been used as a measure of quality in several studies. In 1933 Powell studied seventy one-teacher schools in one New York county. He matched children by mental ability in low and high expenditure schools and found that after five years of schooling the pupils in high expenditure schools were on the average 1.44 years advanced over those in the low expenditure schools.⁵⁸

⁵⁷⁰rlando F. Furno, "The Projection of School Quality from Expenditure Level," (unpublished Doctoral project, Teachers College, Columbia University, 1956), as cited in Paul R. Mort, Walter C. Reusser, and John W. Polley, Public School Finance, (New York: McGraw-Hill Book Company, 1960), p. 83.

⁵⁸Orrin E. Powell, <u>Educational Returns of Varying</u> Expenditure Levels, (New York: Bureau of Publications, Teachers College, Columbia University, 1933), as cited in National Education Association, op. cit., p. 42.

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In 1938, Grimm selected twenty-four schools in Illinois. Eight schools were in each of the high, middle, and low expenditure categories. He found that the scores of pupils on language, reading, and arithmetic achievement tests improved with the cost level. He found that the high expenditure schools offered more and better physical and health education, and more extracurricular activities, smaller classes, more opportunities in music, more books and better libraries, better trained teachers, more specialists, and better buildings.⁵⁹

Bloom and Statler in 1955 studied factors related to educational achievement as measured by the <u>General</u> <u>Educational Development Tests</u> in English composition, literature, social studies, natural sciences, and mathematics. Comparisons of their results were made with a study completed by Lindquist in 1943. They concluded that the differences among the states on the <u>GED</u> tests were as great in 1955 as in 1943. The differences were highly related to differences in financial support

⁵⁹Lester R. Grimm, <u>Our Children's Opportunities in</u> <u>Relation to School Costs</u>, (Springfield, Illinois: Department of Research, Illinois Education Association, 1938), as cited in National Education Association, op. cit., p. 42.

and in the level of formal education of the adult population. Those states in which students did better in 1955 than in 1943 were states which showed increases in financial support and in the level of education of the adult population. 60

Burke directed an extensive study in 1954 of the New York State Public Elementary Schools.⁶¹ The <u>Iowa</u> <u>Test of Basic Skills</u> was administered and compared with educational program offerings. The median cost per pupil for those schools "doing most" on programs was \$320. The median cost for "satisfactory" schools was \$272. and for schools "doing least" was \$255. The report indicates that

While there is a definite correlation between average costs and average test results and program, costs vary within all groups. These variations result from differences in programs within the groups, size of district, type of community.... District size, community type, and cost in that order best explain <u>mastery</u> of essential skills. Conversely, type of program appears to be most affected by costs, with district size and community type having a smaller influence.⁶²

⁶⁰Benjamin S. Bloom and Charles R. Statler, "Changes in the States on the Tests of General Educational Development from 1943 to 1955," <u>The School Review</u>, Volume LXV, Number 2, Summer, 1957, pp. 204-221.

⁶¹Arvid J. Burke, "What do Good Schools do For Children?" A Report of a Cooperative Study of Educational Programs in New York State Public Elementary Schools, Albany, New York: New York State Educational Conference Board, 1954).

62<u>Ibid</u>., p. 10.

Burke suggests that in interpreting cost-quality data it should be remembered that native ability, cultural background, and other pupil characteristics can affect the mastery ranking of a school. He notes that the educational standards of a community and the attitude it shows towards schools and teachers can "impede or encourage" maximum performance of their teachers.⁶³ The report provides specific objectives to be found in schools of high, average, and low quality (achievement) on the following general objectives: good health, good citizenship, good home life, ability to think, ability to get along with others, personal adjustment and development of individual abilities and talents.

In the first report on the Quality Measurement Project conducted by the New York State Education Department, Goodman acknowledges that achievement tests are a partial estimate of the quality of a system.⁶⁴ He indicates that a better than chance prediction for a school system's achievement can be made by using either socio-economic indices or I.Q., singly, or both in combination, as the predictors.⁶⁵ In discussing the reasons

^{63&}lt;sub>Ibid</sub>., p. 10.

⁶⁴Samuel M. Goodman, "The Assessment of Quality," Albany, New York: The University of the State of New York, 1959), p. 7.

^{65&}lt;u>Ibid</u>., p. 27.

for over-achievement and under-achievement of school systems he holds that community expectation, staff orientation, pupil aspiration, and what the schools do with and for pupils in the process of education must be the roots of the differences.

The over-achievement of the districts in the more favored socio-economic settings must be attributed to something in the dynamics of the communityschool situation.⁶⁰

In discussing the relationship between school expenditure and achievement expectancy, the report indicates a product moment correlation of .51 (at grade 7) when socio-economic factors are included and .31 when the socio-economic factors are partialled out.

These consistently positive correlations document an abiding relationship between system expenditure and system effectiveness--or quality--in achieving the skills outcomes. The size of the correlations suggests that the educational benefits of additional funds are not automatic. However, they leave no doubt that better outcomes are related to additional expenditure, judiciously administered.⁰⁷

Contrary to the findings of most cost-quality studies, the study conducted by the Connecticut Citizens for the Public Schools "found significantly less relationship between quality (achievement tests) and expenditure level as measured....⁶⁸

66<u>Loc. cit.</u> 67<u>Ibid.</u>, pp. 27-28. 68_{Paul R. Mort, et. al., <u>op. cit.</u>, p. 82.}

Summary

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The review of the literature related to cost-quality studies and especially to studies which defined quality in terms of achievement has indicated the variety of definitions of quality in education. The emphasis upon local objectives and the many forces which directly or indirectly affect educational input and outcome points to the need for evaluating school systems in terms of local goals and values. The use of checklists, questionnaires, teams of observers, and lay advisory groups have led to many approaches of local evaluation. The various studies cited and the work of Mort and Burke in assessing the problems in cost-quality studies show the difficulty of measuring both cost and quality.

From the literature it seems that there is a factual basis for dealing with the relationship between quality in education and cost and that the relationships are quite involved. Whatever definitions have been used for quality, higher-quality is obtained in schools which spend more for their schools. High-quality education is seldom found in low-expenditure schools yet more money does not automatically make for better schools. We need to be able to ascertain cost-related and non-costrelated factors contributing to quality education.

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CHAPTER III

INSTRUMENTATION AND METHODOLOGY OF THE STUDY

This study is designed to determine and analyze the perceptions of administrators and teachers which relate to the factors of quality in education as measured by the <u>Educational Characteristics Criterion</u>, (<u>ECC</u>). The design permits the analysis of these perceptions in relationship to achievement of schools as measured by the <u>Stanford Achievement Test</u>. The relationship of certain cost factors to achievement and to the <u>ECC</u> responses is also included in the design. This chapter describes the instruments used to obtain the data, the nature of the sample and its selection, and the statistical procedures used in testing the hypotheses.

Instrumentation

Educational Characteristics Criterion

The <u>Educational Characteristics Criterion</u>, (ECC), was developed by Herbert C. Rudman as a result of a two-phase study conducted in the College of Education, Michigan State University. He first asked selected faculty members to identify those factors which con-

tributed to the quality of education. After an extensive analysis of the items which were submitted by the faculty, curriculum specialists were asked to respond to items factored out of approximately four hundred items. These items represented those elements which either directly or indirectly affected quality of an educational program. From an analysis of the results of this second phase of the study, Rudman developed the ECC. The fifty-five items which comprised the ECC were distributed among seven categories: (I) Student's Level of Knowledge and Attitudes, (II) Community Attitudes, (III) Curriculum, (IV) Use of Facilities, (V) Socio-cultural Composition of the Community. (VI) Administration and Supervision, and (VII) The Teacher and Teaching Methods. These categories have been retained in the revision of the instrument. The items which are identified with each category can be found in Appendix C.

Kraft duplicated the second phase of the Rudman study to determine the differences in the perceptions of professors of education, professors in areas other than education, and school board members concerning the factors which contributed to the quality of

education.69 He concluded that there appears to be a relationship between the group of which an individual is a part and his perception of the quality factors. Kraft identified each group of respondents with the categories that it held most relevant in determining quality education. The three groups seemed to be in ' agreement that Category VII. (The Teacher and Teaching Methods) affected the quality of an educational program. Category V. (Socio-cultural Composition of the Community) was perceived by the three groups as being least important in affecting quality education.⁷⁰ In a later study. Berg administered the ECC to teachers and administrators in Michigan school systems that were defined as high financial support and low financial support districts.71 His financial data included school size, millage, expenditure per pupil, and state equalized valuation. Berg concluded that:

⁷⁰<u>Ibid</u>., p. 93. ⁷¹Berg, <u>op</u>. <u>cit</u>.

⁶⁹Leonard E. Kraft, "The Perceptions Held by Professors of Education, Professors in Areas Other Than Education, and School Board Members on Ninety Factors Which May or May Not Affect the Quality of an Educational Program," (unpublished Doctoral dissertation, Michigan State University, 1962).

The Educational Characteristics Criterion is an excellent measure of educational quality in public school districts. This instrument... can discriminate between Michigan public school districts having high financial support and those having low financial support with high reliability in terms of consistency of individual responses.⁽²⁾

He based this conclusion on the analysis that total scores, the seven category scores and forty-one of the fifty-six individual item scores showed a positive relationship between educational quality and financial support as indicated by teachers or administrators. Within high financial support and low financial support districts Berg found agreement between teachers and administrators on total scores and the majority of category scores. He reported total score reliabilities of .89 to .95 for teachers or administrators in the high or low support districts. Each of the fifty-six characteristics of the ECC had point biserial coefficients "significantly positive at the level of P < .01except number 52 and number 19.⁷³ These two items were: "The parents in this community expect their children to perform their share of family chores" and "Teachers have complete freedom to teach what they consider important."

⁷²<u>Ibid</u>., p. 209. ⁷³<u>Ibid</u>., p. 193. An analysis of the relationship of each of the seven categories and the items in each category showed correlation coefficients of .38 to .62. The relationship of the items in each category to total score showed median correlations for the seven categories of .20 to .54. In each analysis, category V. (Socio-cultural Composition of the Community) had the lowest category 74 reliability and discrimination power.

Berg recommended that the <u>ECC</u> should be tested with administrator and teacher respondents from the second and third quartile financial support schools in Michigan and that "the relationship of <u>ECC</u> scores to educational output ... such as achievement gains be investigated."⁷⁵ He indicated that: "The individual educational characteristics and categories of educational characteristics which are present in high degree in conjunction with high achievement gains should be identified as being desirable."⁷⁶

Mueller replicated Berg's Michigan study of the relationship of the <u>ECC</u> scores and cost factors on a national sample.⁷⁷ Contrary to Berg's conclusions,

⁷⁴<u>Ibid., pp. 194-197.</u> ⁷⁵<u>Ibid., pp. 248-249.</u> ⁷⁶<u>Loc. cit.</u> ⁷⁷Mueller, <u>op. cit.</u>

Mueller found that teachers and administrators did not agree on their perceptions of educational quality. Administrators placed a higher value on all seven categories of educational characteristics than did teachers. He found that the Total Quality Scores of both administrators and teachers confirmed the findings of previous research that there is a cost-quality relationship. It was found that on each of the seven category scores and on forty-one of the individual ECC characteristics teachers perceived educational quality to be present significantly higher in high financial support districts than in low financial support districts. In analyzing Total Quality Scores based on administrator or teacher responses Mueller's study showed reliability coefficients to range from .89 to .91 except for categories I and V ("Students Level of Knowledge and Attitudes" and "Socio-cultural Composition of the Community"). Fifty-two of the fifty-six individual characteristics indicated positive discriminative power (P < .01) in relation to total score and category score. He reported that category V ("Socio-cultural Composition of the Community") possessed low discrimination levels.⁷⁸ One of Mueller's recommendations for

78<u>Tbid</u>., pp. 179-182.

further study was that the relationships between <u>ECC</u> scores and achievement test scores should be studied.⁷⁹ Those individual characteristics and those categories which relate to such measures as scholastic achievement should be identified for further study in assessing the quality of a school's educational program.

Stanford Achievement Test

In reviewing the <u>Stanford Achievement Test</u> (1953 edition), Gage describes it as a "useful, plodding, dependable workhorse" that can serve most school systems well in measuring pupil achievement.⁸⁰ He notes that the reliabilities of the fifty-two sub-tests range from .66 (arithmetic reasoning) to .96 (paragraph meaning) and that forty-three of the sub-tests have coefficients above .85. The median coefficient is .88. In summarizing these correlations Gage states, "It certainly looks in any case as if reliability is high enough in most grade levels in most sub-tests to insure that the tests sample adequately the domain of pupil achievement which they do sample.⁸¹

⁷⁹<u>Ibid.</u>, p. 190.
⁸⁰Oscar Krisen Buros (ed.), <u>The Fifth Mental</u>
<u>Measurements Yearbook</u>, (Highland Park, N. J.: The Gryphon Press, 1959), pp. 75-80.
⁸¹<u>Ibid.</u>, p. 78.

Gage indicates a concern that the 1953 edition of the <u>Stanford Achievement Test</u> does not contain imaginative innovations in its format and construction. He comments that it deals with "miscellaneous knowledge rather than problem solving skills, critical understandings, and applications of learning.⁸² These criticisms lead to his conclusion that this edition (1953) does not permit the test to take its "rightful share of the leadership role to which decades of use in American schools have made it heir.⁸³ His implication that the <u>Stanford</u> has been a leader in achievement testing and his conclusions based on the sub-test correlations of the 1953 edition are important.

The reliability coefficients to which Gage referred are evaluated by Noll as being "quite satisfactory".⁸⁴ Since these coefficients are restricted to a range of one grade Noll concludes that he would expect the reliability of the batteries as a whole to be higher. These withingrade reliabilities are important because the tests are

83<u>Loc. cit</u>.

⁸⁴Victor H. Noll, <u>Introduction to Educational</u> <u>Measurement</u>, (Boston: Houghton-Mifflin Company, 1957), p. 162.

⁸²Ibid., p. 80.

used widely to differentiate among pupils within a given grade. In evaluating the validity of the batteries, he refers to the test manual which indicates that a major goal in the construction of the test was that the content should be in harmony with the <u>present</u> objectives of schools and would measure what <u>is</u> actually taught in them. In this regard, the content of the test items was chosen on the basis of word counts, analysis of textbooks and courses of study, and in consultation with experts in the areas tested. His general conclusion is that the <u>Stanford Achievement Test</u> has been a leader in the field for thirty years and "is still probably one of the best-known and most widely used survey batteries in existence."⁸⁵

The test manual for the <u>Stanford Achievement Test</u>, <u>Intermediate and Advanced Complete Batteries</u>, indicates that the tests are "designed to measure the important knowledges, skills, and understandings commonly accepted as desirable outcomes of the major branches of the elementary curriculum."⁸⁶ The authors acknowledge that

⁸⁵<u>Ibid</u>., p. 157.

⁸⁶ Truman L. Kelly, Richard Madden, Eric F. Gardner, Lewis M. Terman, and Giles M. Ruch, "Stanford Achievement Test, Directions for Administering, (Yonkers-on-Hudson, New York: World Book Company, 1953), p. 1.

the test does not measure all aspects of pupil growth as they relate to attitudes or group behavior; neither do they claim for the test an ability to diagnose specific learning problems. They do claim that it measures general mastery of the several subjects taught in schools. The manual indicates split-half reliability coefficients (Spearman-Brown formula) for the sixth grade (used in this study) ranging from .818 (Language) as the lowest and .892 (Study Skills) as the second lowest to .933 (Spelling) as highest. The median coefficient is .900.⁸⁷ The manual provides details of the standardization and construction of the test.

Financial Data

The financial data (size, expenditure per pupil, millage, and state equalized valuation) was obtained from a mimeographed report of the Michigan Department of Public Instruction.⁸⁹ It is assumed that these data were reported and compiled accurately and consistently. Information concerning the pattern of school district

⁸⁹Michigan Department of Public Instruction "Selected Data for Michigan's 534 K-12 School Districts for 1961-62." (Mimeographed).

⁸⁷Ibid., p. 18.

⁸⁸Ibid., p. 22-23.

organization, elementary and secondary pupil-teacher ratios and type of population center was obtained from a questionnaire completed by the superintendent of each participating school. This questionnaire is referred to as the Supplementary Information Form.⁹⁰

Selection and Description of the Sample

After selecting the <u>Stanford Achievement Test</u> as the instrument to use in measuring pupil achievement (a criterion of quality) Harcourt, Brace and World, Inc., publishers of the test, were asked to submit a list of Michigan school systems who ordered the test in 1962. From this list eighty-seven public school systems in Michigan were selected. These eighty-seven school systems (excluding the city of Detroit) were sent a summary of the proposed study⁹¹ and were asked to participate in the cost-quality project.⁹² Twenty-nine school systems indicated a willingness to participate.

An analysis of the grades tested in these twentynine school systems indicated that the sixth-grade was

⁹⁰ Appendix H. ⁹¹Appendix E. ⁹²Appendix D.

the unit most commonly tested. From these twenty-nine school systems, sixteen were selected to participate in the study.⁹³ The sixteen participating school systems are located in fifteen counties in Michigan. Six of the school systems are in the upper peninsula and represent six distinct geographic areas. Of the other school systems two are in the upper third of the state, one in the southwest sector, one in the extreme eastern portion, two in the central area, and four in the south central area.

Table 1 classifies the 534 Michigan school districts and the school systems in this study according to the factor of size (membership). In terms of membership, two schools in the sample are in the fourth (top) quartile of Michigan schools, six in the third quartile, three in the second, and five in the first (lowest) quartile.

On the state-equalized valuation factor (Table 2) four school systems are found in the top quartile, eight in the third quartile, and only two in each of the second and first quartiles. On this factor three-fourths

⁹³In order to maintain the confidence of the participating schools, the identity of the schools and the coding related to their data is not presented here but remains with the project director, Dr. Herbert C. Rudman, Professor of Education, Michigan State University.

TABLE 1. Classification of 534 Michigan School Districts and the School Systems in this Study According to Size (Membership)

Quartile	Range of Michigan Schools	Number in This Sample
Quartile 4 Quartile 3 Quartile 2 Quartile 1	2,473 - 288,113 1,253 - 2,472 673 - 1,247 64 - 667	2635

TABLE 2. Classification of 534 Michigan School Districts and the School Systems in this Study According to Financial Ability (State-Equalized Valuation)

Quartile	Range of Michigan Schools	Number in This Sample
Quartile 4	14,129 - 55,619	4
Quartile 3	10,877 - 14,090	8
Quartile 2	7,988 - 10,872	2
Quartile 1	1,133 - 7,985	2

of the sample represents the fourth and third quartiles while those school systems in the lower half of the state-equalized valuation rankings represent one-fourth of the sample.

A similar finding of the factor of expenditure per pupil must be considered in Table 3. Eleven school systems are in the upper half of the rankings and only five are in the lower half. The second quartile is not represented.

When total millage is considered, twelve school systems in the sample fall in the fourth and third quartiles of the total Michigan scale as shown in Table 4. Six school systems are in each of these two quartiles. One system is in the second quartile and three are in the first (lowest) quartile. It is acknowledged that the sample does not represent a normal distribution and is positively skewed when state equalized evaluation, expenditure per pupil, and millage are considered. It does, however, represent the voluntary response of the school systems who were willing to participate and supply the necessary Stanford Achievement Test data.

Table 5 shows the number of teacher, administrator, and combined teacher-administrator responses from each school system. In eleven of the sixteen systems all of the administrators responded. Four of the systems

TABLE 3. Classification of 534 Michigan School Districts and the School Systems in this Study According to Expenditure Per Pupil.

Quartile	Range of Michigan Schools	Number in this Sample
Quartile 4 Quartile 3 Quartile 2 Quartile 1	360.40 - 630.37 318.25 - 360.25 294.35 - 318.22 238.40 - 294.11	5 6 5

TABLE 4. Classification of 534 Michigan School Districts and the School Systems in this Study According to Millage.

Quartile	Range of Michigan Schools	Number in this Sample
Quartile 4	14.25 - 30.00	6
Quartile 3	11.30 - 14.25	6
Quartile 2	9.00 - 11.30	1
Quartile 1	7.00 - 9.00	3

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TABLE 5. Number and Per Cent of Responses

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	Teach	er Responses	Administr	ator Responses	Combine	d Responses
School	Number	Per cent of potential	Number	Per cent of potential	Number	Per cent of potential
ー 2 F ↓ 2 0 0 ~ 2 2 7 4 2 7 0 0 1 2 F ↓ 2 ろ 0 1 2 F ↓ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	$\mathbf{\tilde{v}}_{\mathbf{v}}^{\mathbf{v}}$	40700000000000000000000000000000000000	MMMMMAQQQAAQ T	00000000000000000000000000000000000000	4988249797977777777777777777777777777777	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1-16	726	79 . 4	70	89.7	796	80.2

report considerably lower percentages as a result of only one administrator failing to respond. Four of the eleven administrators failed to respond in system number twelve. Eighty-nine and seven-tenths per cent (89.7%) of the potential administrator respondents submitted completed \underline{ECC} 's.

Of the potential teacher respondents 79.4% submitted completed ECC's. (See Table 5.) Those eleven school systems which reported 70% or more of their teachers responding comprise 624 responses or 86% of the potential teacher responses. Of the five school systems represented in the 14% of the teacher sample which is reflected by lower than 70% participation two are smaller systems in which a total of four additionalresponses would have placed them in the 70% category. The variation in the number of completed teacher responses could be attributed to the manner in which superintendents prepared their staffs for participation in the study. their administration of the questionnaires, and/or the fact that the nearness to the end of the school year as a time for completing the questionnaire makes for competition of a teacher's time and professional tasks.

The combined administrator and teacher responses (Table 5) shows that 80.2% of all potential respondents submitted completed ECC's. The combined figures

indicate that three school systems reported less than 70% participation.

The distribution and collection of the <u>ECC</u>'s were handled by local administrators. Respondents scheduled their own time as well as place for completing the <u>ECC</u> in order to insure privacy; completed <u>ECC</u>'s were submitted in sealed envelopes and no financial obligation was incurred by respondents. To have had the <u>ECC</u> completed in a staff meeting or other group situation might have brought a larger response but such a mandatory and controlled situation could have created a negative response attitude.

Mailing and Administrative Procedures

The superintendent of schools of each school system selected to participate in the study was sent a personal letter indicating that the materials for the study were being sent under separate cover.⁹⁴ This letter also indicated the achievement test data which would be needed for the study. Postage for returning the materials was enclosed.

Under separate cover each superintendent was sent detailed instructions for administering the study in his

⁹⁴Appendix I.

school system⁹⁵ and an <u>ECC</u> envelope for each teacher and each administrator in his school system. Each <u>ECC</u> envelope contained a copy of the <u>ECC</u>⁹⁶ and instructions for completing the <u>ECC</u>.⁹⁷ Materials for administrator respondents were stamped ADMINISTRATOR. Instructions to the respondents indicated that the <u>ECC</u> should be completed within twenty-four hours, sealed in the <u>ECC</u> envelope, and returned to a central collection point as specified by the superintendent of schools.

The superintendent of schools was asked to complete a <u>Supplementary Information Form</u>.⁹⁸ He was also asked to arrange for the class summary sheets or student profile sheets of the <u>Stanford Achievement Test</u> for the sixth grade for 1962-63 to be returned with the <u>ECC</u> responses. Labels which were addressed for returning the materials and EDUCATIONAL MATERIALS stickers were supplied to each participating school system. After the <u>Stanford Achievement Test</u> data were processed the summary sheets or student profile sheets were returned to each school system.

⁹⁵Appendix G.
⁹⁶Appendix A.
⁹⁷Appendix B.
⁹⁸Appendix H.

Treatment of the Data

Each participating school system was assigned a code number. As the materials were received from each system each <u>ECC</u> response, each sheet of <u>Stanford</u> <u>Achievement Test</u> data, and the <u>Supplementary Information Form were marked with the school system code number. For each system, its code number, the coded <u>Supplementary Information Form</u> data, financial data (size, expenditure per pupil, millage, and state equalized valuation), and school achievement averages were punched into IBM cards. A code to indicate whether the respondent was an administrator or a teacher was punched into an IBM card for each respondent as were his responses on each of the fifty-five items on the ECC.</u>

In order to determine a school system's mean achievement score, the data submitted by each participating system for each sixth-grade student tested in 1962-63 and his school system code number were punched into an IBM card. School system averages for each subtest and for the combined sub-tests were determined for later use.

Procedures Involved in Conversion of Data

This study is based upon the voluntary participation of school systems and their administrators and teachers as respondents. School systems were asked to submit the <u>Stanford Achievement Test</u> scores for their 1962-63 sixth grade in order that a school system mean grade equivalent score could be computed for each system. Two problems resulted from the submission of this data. First, systems did not organize their data in the same way and, secondly, they did not test at the same time of the year.

The <u>Stanford Achievement Test</u> student profile chart upon which scores are plotted is drawn to record and interpret modal-age norms. These norms are based on the scores of those pupils who are typical in respect to age for a particular grade. The use of the modalage norms allows comparisons to be made of pupils who are alike with respect to age and grade placement. These norms exclude accelerated and retarded pupils who are not of the same age as the norm for the grade.⁹⁹ For the sixth grade, the modal-age norms represent 63.0% of

⁹⁹Stanford Achievement Test, "Directions for Administering Intermediate and Advanced Complete Batteries, Forms J, K, L, M, and N," (Yonkers-on-Hudson, N.Y.:World Book Company, 1953), pp. 11-13.

the sample tested.¹⁰⁰

Total-group grade norms are based on the results of all pupils in a given grade. These include the accelerated and retarded groups which were excluded from the modal-age norms. For this reason, total-group norms are recommended for use when mean scores of a total class, a school, or a school system are to be compared.

Therefore, in the present study after the mean grade equivalents and percentile scores were converted to grade scores, total-group grade equivalents were determined for each subtest.¹⁰¹ The mean total-group grade equivalent was determined for each school system from the subtest scores.

To account for the variable dates of testing which ranged from 5.8 to 6.9 the following procedure was used to correct the mean total-group grade equivalent to a grade placement of 6.8.¹⁰² The mean total-group grade

100 Ibid., p. 22, Table 8, "Total Numbers of Pupils Tested, Numbers in Norm Sample, and Numbers and Per Cents in Modal-Age Groups, by Grade."

¹⁰¹<u>Ibid.</u>, p. 12, Table 1, "Total-Group Grade Equivalents Corresponding to Grade Scores For All Batteries." Harcourt, Brace and World, publishers of the <u>Stanford</u> <u>Achievement Test</u> (revised 1964) supplied unpublished data which permitted the conversion of scores from two schools that used the 1964 edition to equivalent 1953 Total Group Grade Equivalents by letter dated July 17, 1964.100

1964. 1020ne school which tested at the end of the fifth grade was included since it was the only school volunteering to participate which tested near a sixth grade placement at the time of testing.

equivalent was divided by the grade placement at the time of testing in order to determine the mean gain for ten months and then for each month. The difference between a school system's grade placement at the time of testing and 6.8 was determined and multiplied by the mean gain per month. For systems testing after 6.8 the product was subtracted from their mean totalgroup grade equivalent; for schools testing prior to 6.8 the product was added to their mean total-group grade equivalent. This corrected mean total-group grade equivalent is called a school system's mean school achievement score and was used in the computations.

The distribution of economic data is typically skewed in a positive direction. The financial data of the sixteen school systems in this study are no exception. To reduce the skewness in these data and make them more suitable for the statistical analysis of the study, they were transformed to logarithms. The logarithmic transformations of the cost variables were then used in the analysis.

Hypotheses

The hypotheses to be tested in this study are stated below in a general form and the sub-hypotheses are stated in an operational form.

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General Hypothesis I

There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion.

Operational Hla

There is a positive correlation between administrator respondent scores and teacher-respondent scores as measured by each <u>ECC</u> Category Quality Score.

Operational Hlb

There is a positive correlation between administrator-respondent scores and teacher-respondent scores as measured by ECC Total Quality Scores.

General Hypothesis II

There are positive relationships among administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion, student achievement and the cost variables.

Operational H2a

There is a positive correlation between administrator and teacher Total Quality Scores as measured by the <u>ECC</u> and school mean achievement scores on the <u>Stanford</u> Achievement Test.

Operational H2b

There is a positive correlation between administrator and teacher Total Quality Scores as measured by the ECC and size of the school system.

Operational H2c

There is a positive correlation between administrator and teacher Total Quality Scores as measured by the ECC and expenditure per pupil.
Operational H2d

There is a positive correlation between administrator and teacher Total Quality Scores as measured by the ECC and millage rate.

Operational H2e

There is a positive correlation between administrator and teacher Total Quality Scores as measured by the ECC and state equalized valuation.

Operational H2f

There is a positive correlation between school mean achievement scores on the <u>Stanford</u> <u>Achieve</u>-ment Test and size of the school system.

Operational H2g

There is a positive correlation between school mean achievement scores on the <u>Stanford</u> <u>Achieve</u>-ment Test and expenditure per pupil.

Operational H2h

There is a positive correlation between school mean achievement scores on the <u>Stanford</u> <u>Achieve</u>-ment Test and millage rate.

Operational H2i

There is a positive correlation between school mean achievement scores on the <u>Stanford</u> <u>Achieve</u>-ment Test and state equalized valuation.

General Hypothesis III

There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion and student achievement independent of the cost variables.

Operational H3a

There is a positive correlation between teacher Total Quality Scores on the ECC and school mean achievement scores as measured by the <u>Stanford</u> Achievement Test independent of the cost variables.

Operational H3b

There is a positive correlation between teacher Category Quality Scores as measured by the <u>ECC</u> and school mean achievement scores on the <u>Stanford Achievement Test</u> independent of the cost variables.

Operational H3c

There is a positive correlation between administrator Total Quality Scores as measured by the ECC and school mean achievement scores on the <u>Stanford</u> Achievement Test independent of the cost variables.

Operational H3d

There is a positive correlation between administrator Category Quality Scores as measured by the ECC and school mean achievement scores on the <u>Stanford</u> Achievement Test independent of the cost variables.

Operational H3e

There is a positive correlation between the combined administrator and teacher Total Quality Scores as measured by the ECC and school mean achievement scores on the <u>Stanford</u> <u>Achievement</u> <u>Test</u> independent of the cost variables.

Operational H3f

There is a positive correlation between the combined administrator and teacher Category Quality Scores as measured by the <u>ECC</u> and school mean achievement scores on the <u>Stanford</u> <u>Achievement</u> <u>Test</u> independent of the cost variables.

Research Design and Statistical Methodology

The publishers of the <u>Stanford Achievement Test</u> were asked to submit a list of Michigan school systems which had purchased the tests during the 1962-63 school year. From this list those Michigan public school systems which included grades K or 1 through 12 in their program were invited to participate. Sixteen school systems volunteered to participate by having their administrators and teachers respond to the <u>Educational Characteristics</u> <u>Criterion</u> and by supplying <u>Stanford Achievement Test</u> scores for the 1962-63 sixth grade. Data concerning the size, expenditure per pupil, millage, and state equalized valuation of each participating school system were obtained from a Michigan Department of Public Instruction report.

The <u>Educational Characteristics Criterion</u> is constructed in a manner which provides that scores may be obtained in seven categories of characteristics of quality education and a total score. Administrator and teacher responses were identified in order that combined or separate scores by type of respondent could be determined. This procedure permitted administrator, teacher, and combined administrator and teacher scores on each of the seven categories and the total instrument to be compared with achievement test scores and the cost variables.

Pearson product-moment correlations were computed in order to show the relationships for each of the general and sub-hypotheses I and II. The partial correlation technique was used to control the cost data which

was called for in general hypothesis III. The Control Data Corporation (CDC) 3600 computer was used to process the data and perform the computations.

A one-tailed test significant at the .10 level was used to determine the significance of the correlations. Values for the product-moment correlations which were obtained in testing general hypotheses I and II were determined for N-2df (14); for general hypothesis III the values were determined for N-3df (13) and N-6df (10).

Summary

The <u>Educational Characteristics Criterion</u>,(ECC), was used to measure the perceptions that administrators and teachers of sixteen Michigan public school systems have about certain characteristics of their systems which are felt to indicate educational quality. Financial data indicating the size, expenditure per pupil, state equalized valuation, and millage of each of the participating school systems were obtained from a report prepared by the Michigan Department of Public Instruction.

¹⁰³Allen L. Edwards, <u>Statistical Methods for the</u> <u>Behavioral Sciences</u>, (New York: Rinehart and Company, Inc., 1960), p. 303.

<u>Stanford Achievement Test</u> scores for sixth-grade students tested in 1962-63 (and one fifth grade tested in the spring, 1962-63) were supplied by each of the systems. Seventy administrators and 726 teachers or a total of 796 respondents comprise the sample. Sixteen school systems participated and supplied achievement test data for 1,549 students.

This chapter presents evidence to support the use of these instruments in this study as well as analyzing the sample and stating the hypotheses to be tested. The procedures for obtaining the sample, administering the <u>ECC</u>'s and handling of the data have been indicated. The methods used in converting data to common units of measurement have been outlined and the statistical procedures used in analyzing the data and the statistics used to test the hypotheses have been outlined.

CHAPTER IV

ANALYSIS OF DATA

This chapter presents the analysis of data appropriate to each of the general hypotheses. Within the discussion of each general hypothesis will be found the decision to accept or reject the statistical hypothesis.

A ten per cent (.10) level of significance (onetailed test) was chosen as the basis for rejecting each hypothesis. The degrees of freedom for the productmoment correlations were 14 and for the partial correlations one degree of freedom was lost for each variable eliminated. A correlation coefficient greater than .34 would cause rejection of the statistical hypotheses and acceptance of the research hypotheses. Other significant correlations for 14 df are .43 at the five per cent level, .50 at the .025 level, .57 at the one per cent level, and .62 at the .005 level. Partial correlation coefficients significant at the .10 level are .35 for 13df (when one variable is controlled) and .40 for 10df (when all four of the cost variables are controlled).

Sampling Effect

In the discussion which follows it should be remembered that the sample from which the <u>ECC</u> responses and the <u>Stanford Achievement Test</u> scores were obtained do not represent a normal distribution on the cost factors of size of the school system, expenditure per pupil, millage, and state equalized valuation. The sample reflects a more normal distribution on the basis of size of the school system but includes more systems with higher state equalized valuation, larger expenditures per pupil, and higher millage rates than would be expected in a normal distribution of Michigan schools.¹⁰⁴ For these reasons the results should be interpreted in terms of those systems which have higher cost variables.

General Hypothesis I

General Hypothesis I

There is a posi	tive relationship between ad-
ministrator and	teacher perceptions of
characteristics	of quality education as
measured by the	Educational Characteristics
Criterion.	

The coefficients for the correlations between administrator and teacher responses on the <u>ECC</u> category

 104 See Tables 1-4, pp. 54 and 56.

and total scores are indicated in Table 6. All correlations between administrator Category Quality Scores and teacher Category Quality Scores and the correlation between administrator Total Quality Score and teacher Total Quality Score are positive and significant.

Therefore, the research hypothesis that there is a positive correlation between administrator and teacher perceptions of characteristics of quality education is accepted. This would indicate that administrators and teachers do perceive those characteristics of quality education defined by the <u>ECC</u> categories in the same manner.

Correlation coefficients between administrator scores and teacher scores on Category I (Student's Level of Knowledge and Attitudes) .66, Category II (Community Attitudes) .79, Category III (Curriculum) .77, Category IV (Use of Facilities) .79, and Total Quality Score, .69, are the highest and indicate a strong tendency for the two respondent groups to view these characteristics of quality in the same way.¹⁰⁵ There is a greater chance that administrators and teachers do not view those items in Category V (Sociocultural Composition of the Community), Category VI

105Significant at the .005 level.

tegory Quality Scores)	
ad Teacher Os		
inistrator a	bcores (TQS)	Retween
between Adm	al Quality S	- SUNTRIS-
Norrelations	CQS) and Tot	ACT WC
Table 6. Ç		

p (cbc)	liu loual qualluy Jo Between Adminis- trator Scores and	Detween Combined TOS and Combined			
	Teacher Scores on	CQS on		X	ß
<u>Category I</u> Student's Level			Administrator Teacher		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
of Knowledge and Attitudes	.66	89	Combined	Г .0	< , , , , , , , , , , , , ,
<u>Category</u> II Community			Administrator Teacher	510 010	1. 692 692
Attitudes	67.	. 95	Combined		5.67
<u>Category III</u> <u>Curriculum</u>	-77.	.84	Administrator Teacher	い <u>+</u>	(1 K) - 0 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
<u>Category IV</u> Use of Facilities	62.	.61	Combined Administrator Teacher	て い の で よ こ る	205 87 76
Category V			Combined	С • •	-97
<u>Socio-cultural</u> Composition of			Administrator Teacher	26.4 25.7	4.02 10,7
Community	• 58	.78	Combined	50	66
<u>Category VI</u> <u>Administrat</u> ion an	ជេ		Administrator Teacher	16 . 1 14 . 6	к.к. 0-0- 1-1-
Supervision Category VIT	•53	+6·	Combined Administrator	14•7 40	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
The Teacher and The reacher and	C	YU	Teacher Combined		
TOGOLITIC MONOR) •	•	Administrator	152.35	00
Total Score	.69	1.00	Teacher Combined	141.35 142.45	51.90 51.35
The level of p <.01 is .57; p.	<pre>significance for N <.005 is .62; (one-</pre>	-2df at p <.05 is . tailed tests).	.43; p <.025 is	•50;	

(Administration and Supervision), and Category VII (The Teacher and Teaching Methods) in the same way. Correlations between administrator and teacher scores on these categories are .58, .53 and .40 respectively.

It may be that administrators and teachers make value judgments concerning the characteristics of quality education from different fields for those categories showing lower correlations and have a common perceptual field for those categories with higher correlations. Both respondent groups may use the larger community as a basis for making decisions about student academic and personal attitudes, community attitudes about education, organization for curriculum improvement, the system's testing program, educational goals, and the adequacy of the school plant. These may be areas that are included in the school public relations program or stressed by commercial news media and be of general interest to all.

In the areas of social and cultural activities in the community, religious composition of the community, school policies, involvement in decision making, the teacher's knowledge about pupils and their individual differences, and teaching techniques and procedures the perceptual environment may be different for administrators than for teachers. Because of the emphasis upon

the classroom and the teacher's personal involvement in these activities she may become more personally identified with her own immediate circumstances and needs whereas the administrator perceives these activities in terms of a larger group of teachers (the school building or the school district).

The correlations between administrator and teacher Combined Category Quality Scores and each of the seven categories range from .61 to .96 and are significant. This would indicate that when administrator and teacher scores are combined in a school system their Total Quality Score would have a strong relationship with each Category Quality Score. It should be noted that teachers' scores comprise approximately ninety per cent of the Combined CQS and TQS.

Summary

It may be concluded that teachers and administrators do perceive those characteristics of quality education as measured by the <u>Educational Characteristics Criterion</u>, <u>ECC</u>, categories in the same way. Therefore, administrator and teacher scores may be combined to provide a Combined Total Quality Score for a school system. It should be remembered that such a score heavily reflects teacher perceptions. There is less chance that

administrators and teachers view those characteristics which relate to administration and supervision, composition of the community, and teachers and their methods of instruction in the same way.

General Hypothesis II

General Hypothesis II

There are positive relationships among administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion, student achievement, and cost factors.

Table 7 indicates the relationships between school mean achievement and the <u>ECC</u> scores of administrators, teachers, and their combined <u>ECC</u> scores. The correlation between the Combined TQS and school achievement (.31) is not significant and causes acceptance of the statistical hypothesis that there is not a positive correlation between Combined TQS and achievement. However, the correlation approaches significance which indicates that care should be taken in interpreting the conclusion that the Combined TQS does not predict achievement. The positive correlation between teacher TQS and school achievement (.25) is not significant but would indicate a trend that teachers' perceptions of those characteristics of quality as measured by the ECC are higher in those schools with

TABLE 7. Correl	ations	betwe	son ECC	Scores	and	School	Mean A	chieve	ment	
		Adminand	nistrat	tor Scor	e Te an	acher (d	core	Admir Teach Score	listrat(er Com and	or and oined •••
		ч	Х	ß	ч	Х	മ	ч	Х	ß
Category I Student's Level Knowledge and Attitudes	of	26	16.5	ج• 00	• 23	15.6	3.35	.27	15.6	3.33
<u>Category II</u> Community Attitu	ldes	40 ³	29.3	4.92	• 29	26.9	5.69	к. К.	27.1.	5.67
Category III Curriculum	·	R D D D	15.8	2.73	• 19	14.9	ج 03	•22	14,9	3 . 02
Category IV Use of Facilitie	ŋ	40,	2.7	.87	25.	5. t	76.	, yl	5.	76.
Category V Socio-cultural C position of the Community	- mo		26.4	3.62	- 05	25.7	4.01	.01	25.7	к. 66
<u>Category VI</u> Administration a Supervision	pu	.61 ^a	16.1	3.04	C) C •	14.6	3.54	.02	14.7	3.52
Category <u>VII</u> <u>The Teacher</u> and Teaching Methods		59 ^a	45.7	5.84	1 1	42.7	6.60	40 ²	0.K4	6.59
Total Score		538	152.35	28.60	.25	141.35	31.90	.31	142.45	31.35
301 201 4 200	1+ + - +									

Significant at the .10 level.

high achievement levels. The high positive correlations between administrator TQS and achievement $(.53)^{106}$ indicates that administrators' perceptions of school quality relate significantly with achievement test scores. Administrators' perceptions of the degree to which characteristics of quality as measured by <u>ECC</u> Total Quality Score are better predictors of achievement than are those of teachers or of administrators and teachers combined.

Since Table 6 indicated that administrator scores and teacher scores could be combined into a Total Quality Score and Table 7 indicates that there are differences in the relationship of their perceptions with school achievement, a comparison of Category Quality Scores follows. Table 7 shows that the correlations between administrator CQS and achievement are higher than teacher CQS and achievement for each category except Use of Facilities (Category IV). It would seem that teachers in high achieving school systems believe their facilities are adequate whereas those in lower achieving school systems are more likely to feel that their buildings and plant are not adequate. Administrator perceptions about the adequacy of the physical facilities of their school systems vary in both high and low achieving schools.

Possible differences between the attitudes of teachers, the administrative organization, the interpersonal relationships, and the methods of teaching may cause different responses particularly in those areas of Administration and Supervision (Category VI) and The Teacher and Teaching Methods (Category VII). It would seem that elementary teachers who are more closely associated with the activities of the elementary school would perceive more accurately those activities which have contributed to the elementary achievement being measured. It should be noted that possibly a larger number of elementary principals contributed to the administrator scores and are more closely related to the elementary schools from which the achievement scores were obtained. Too, the perceptions of administrators should reflect a broader reference field and a more comprehensive view of the educational experiences contributing to achievement than do individual teachers.

The larger number of teachers contributing to the Combined CQS and TQS is indicated in the nearness of the correlations of teacher scores and combined scores on each category and the total score. The very low relationship between Combined TQS and Category V (Socio-cultural Composition of the Community) indicates that the perceptions that certificated personnel have of the religious,

ethnic, and cultural composition of their communities do not relate with or predict achievement. It would seem to be particularly true of teachers' perceptions in these areas since the correlation between teacher CQS for Category V and achievement is -.05. However, it should be noted that administrators' scores show a nearly significant .33 relationship with the factors indicated in Category V.

The correlations between administrator CQS and achievement are significant or approach significance for each category except for Category V (Use of Facilities). High positive relationships between administrator CQS and Administration and Supervision (.61) and The Teacher and Teaching Methods (.59)¹⁰⁷ would indicate that administrators' beliefs and judgments concerning their teachers' recognition of individual differences of pupils, the variety of teaching techniques teachers use, the cooperation among teachers, the involvement of the community in instruction and in school planning, and the development of policies are good predictors of school achievement.

Table 8 indicates the relationships between <u>ECC</u> Total Quality Scores, school achievement, size, expenditure per pupil, and millage. The data shows there is a

¹⁰⁷Correlations greater than .57 are significant at .01.

significant relationship between the size of a school system and the degree to which its administrators and teachers perceive it as possessing characteristics of quality. Large schools are perceived by their certificated personnel to possess characteristics of quality of education; small schools are perceived by their administrators and teachers to have fewer characteristics of quality as measured by the ECC.

TABLE 8. Intercorrelations between ECC Total Quality Scores (TQS), School Mean Achievement, Size, Expenditure per Pupil, Millage, and State Equalized Valuation

	School Achieve- ment	Size -	Expend iture per Pupil	_ Millage	State Equalized Valuation
Administrator TQS	•53 ^a	.50 ^a	.07	.004	.13
Teacher TQS	•25	•35ª	.13	06	.35 ^a
Combined TQS	.31	.36 ^a	.17	02	.37 ^a
School Achievement		02	.34 ^a	.38ª	.06
Size			 57 ^b	47 ^b	26
Expenditure per Pupil				.85ª	.66ª
Millage					.28

^aCorrelation significantly positive at p <.10

^bCorrelation significantly negative at p < .10

In this exploratory study the correlation between school achievement and size (-.02) indicates that there is not a significant relationship between these two variables. High achievement as well as low achievement was found in both large and small school systems. However. Appendix K indicates that all of the school systems represented in this study are above the national average at the grade level tested. Therefore, high achievement is represented in all of the schools. Too, it should be remembered that the school systems in this sample do not represent a normal distribution on the basis of expenditure per pupil but are schools in the higher expenditure per pupil guartiles of the state of Michigan. An analysis of the data of the participating schools shows that those schools that had achievement scores above the median for this sample were those that provided financial support for education by means of higher expenditures per pupil, millage, and/or state equalized valuation regardless of the size of the system. Those schools with lower achievement scores tended to be those with lower financial support regard-108 less of size.

However, further analysis of data not used in the correlational statistics but which was supplied by

¹⁰⁸See Appendix K.

the superintendents of the participating schools showed that those schools with higher achievement scores had smaller pupil-teacher ratios for elementary classrooms (25-1) than did those schools with lower achievement (29-1). The lower pupil-teacher ratios were associated with rural and rural-village communities whereas larger pupil-teacher ratios were associated with communities having populations in excess of 5,000.¹⁰⁹

The high positive correlation between expenditure per pupil and the variables millage (.85) and state equalized valuation (.66) and the significant correlation between school achievement and the variables expenditures per pupil (.34) and millage (.38) indicate that the higher the expenditure per pupil the higher is the millage rate and the state equalized valuation. This would be anticipated since the expenditure per pupil is a function of millage and assessed valuation. If the state equalized valuation is low a higher millage rate is necessary to provide sufficient funds for school purposes.

The correlation between school achievement and state equalized valuation (.06) shows that schools with ability to support educational programs through high state equalized valuation may or may not have high

¹⁰⁹See Appendix K.

achievement levels. The relationship of millage to state equalized evaluation could account for this.

The significant negative correlations between size and expenditure per pupil (-.57) and millage (-.47) and the negative correlation between size and state equalized valuation (-.26) would indicate an inverse relationship between size and these cost variables. This would be anticipated since size is a measure of enrollment and thus provides a larger denominator upon which to base expenditures per pupil. It would seem that one of the primary reasons for this inverse relationship is that teachers' salaries which comprise a large percentage of a school's expenditure for education may be divided among a larger school enrollment. Larger pupil-teacher ratios are possible since the number of students enrolled may be used to fill classrooms; teachers need not be hired to meet less than maximum enrollments. Smaller school systems would be in a position to hire a teacher to teach a class for which the maximum potential enrollment might be quite small. Too, fixed charges and costs of auxiliary services diminish as reflected in expenditure per pupil as the size of the school increases.

A positive correlation between achievement and expenditure per pupil (.34) and between achievement and

millage $(.38)^{110}$ indicates that these variables are associated with achievement. They indicate, as might be expected, that the higher the expenditure per pupil, the higher the school achievement may be expected to be. The more money that is expended per pupil for education should be reflected in more and better education; money is obtained and expended to improve educational quality and it is expected that it should be shown in some measure of achievement. However, it is possible that costs of auxiliary services, noninstructional items, maintenance, and related activities are included in expenditure per pupil computations yet may not contribute materially to increasing achievement levels. This may be particularly true in urban areas where these costs may be larger in comparison to the same costs in rural or rural-village communities.

¹¹⁰Correlations between the Associated Public School <u>Time Scale</u> and two groups of community factors were .33 and .30; personal income, .34; expenditure per pupil, .48; and small item expense, .31. Pierce found correlations between the <u>Growing Edge</u> and state equalized valuations to be .30. Vincent reports correlations between the <u>Growing Edge</u> and millage to be .48 and between the instrument and size to be .43. In view of these correlations for these recognized instruments, the stated correlations for the ECC would seem to be acceptable.

An analysis of the use of funds should provide a measure by which instructional costs per se can be assessed.

Summary

It may be concluded that the Combined Total Quality Score of the ECC approaches a significant relationship with achievement. Administrator Category Quality Scores have higher correlations with achievement than do teacher CQS and would more accurately predict school achievement. Lower teacher CQS and TQS contribute heavily to the Combined TQS. This study shows that there is no relationship between achievement and size; the effect of millage, state equalized valuation, and expenditure per pupil in providing funds for educational purposes regardless of the size of the school system seemed to account for this chance relationship. The significant relationships between expenditure per pupil and state equalized valuation and between school achievement and the expenditure per pupil and millage variables show the effect of effort and ability upon school achievement. The significant negative relationship between size and expenditure per pupil and millage appears logical since large school systems are able to spread their expenditures over a larger denominator (enrollment).

For this study it is concluded that <u>ECC</u> Total Quality Score may be used to predict school achievement and that there is a significant relationship between school achievement and expenditure per pupil and millage.

General Hypothesis III

General Hypothesis III

There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion and student achievement independent of cost factors.

In order to determine the correlation between ECC scores and achievement scores independent of the various factors of cost (size, expenditure per pupil, millage, and state equalized valuation) partial correlations were computed and are shown in Table 9. The correlation between administrator and teacher Combined Total Quality Score and school achievement independent of all four cost factors (.29) is not significant. The statistical hypothesis that there is not a positive relationship between ECC Total Quality Score and school achievement independent of the four cost factors is accepted. The effect of the predominance of teachers' scores on the Combined Total Quality Score has been discussed in the analysis of general hypothesis II. Some possible causes for the low correlations between

Achievement	
Mean	
and School	
ECC Scores	
between actors	
Correlations dent of Cost F	
Partial Independ	•
TABLE 9.	

	Respondent Group	Responde	nt Score	Achievement
		X	ര	<u>X</u> 7.7 s .46
				Ч
Category I Student's Level of Knowledge and Attitudes	Administrator Teacher Combined	177. 19.00	KIKIKI O KIKI O TUKI	.26 .23
Category II Community Attitude	Administrator Teacher Combined	20.2 20.5 20.5	- 100 100 100 100 100 100 100 100 100 10	4000 800 800 80 80
<u>Category III</u> Curriculum	Administrator Teacher Combined		0.00 200 200	ы 199 199 19
<u>Category IV</u> Use of Facilities	Administrator Teacher Combined	000 	78°. 70°.	• 04 • 32 • 1
<u>Category V</u> Socio-cultural Com- position of Community	Administrator Teacher Combined	26.4 255.7	μ4. 000 00100	 . 05 . 01
Category VI Administration and Supervision	Administrator Teacher Combined	-761 -661 -146 -114	10.00 00.00 00.00 0.00	.61 ⁸ .22 .29

s and School Mean Achievement	pe
9. Partial Correlations between ECC Score	Independent of Cost Factors Continu
TABLE	

	Respondent Group	Responde	ent Score	Achievement
		X	ß	ч
Category VII The Teacher and Teaching Methods	Administrator Teacher Combined	0.44 0.47	6.60 59 59	.59 ^a
Total Score	Administrator Teacher Combined	152 141.35 142.455	28.60 31.90 31.35	.55 25 25 8

^aSignificant at the .10 level.

Levels of significance p <.10 l4df, .34; l3df, .35; l0df, .40.

, , ,

Partial Correlations between <u>ECC</u> Scores and School Mean Achievement Independent of Cost Factors -- Continued TABLE 9.

\$13543.75 6807.84 rigini 100ri 61 8 10 10 10 10 10 10 кл<u>н</u> сл 1000 сл r1000 9 K/8 SEV Ч . k o \$13.41 4.34 Millage 9.04 10.07 10.07 UNA HOU a a a ,00'± 000'± 282 282 8999 8999 Я K ₪ • \$359.69 82.06 r Exp. Pupil .42ª 000 000 000 လိုက်လို ė -.01 Achievement Independent of k o Size 1306 911 ൻ 504 104 104 10 10 1-05 1-05 05 4 k/k/ k/0 k/ 9 k'k' 4 k'H N.40 Ч N N All Four Cost Factors .67ª .24 4 K.K. 000 0 7 0 0 0 20.18 24.03 Ъ 2024

Partial Correlations between ECC Scores and School Mean Achievement Independent of Cost Factors -- Continued TABLE 9.

	SE N 2000 2000 2000 2000 2000 2000 2000 2
	Millage r r t61 a t60 a t60 a
pendent of	Exp. Pupil r .61 ^a .37a .37a .22 .22
Achievement Inde	Si NUXOF TATUA TAT
	All Four Cost Factors r .57 ^a .44a .55a .29

^aSignificant at the .10 level.

Levels of significance p <.10 14df, .34; 13df, .35; 10df, .40.

Combined TQS and achievement were also analyzed. A review of Table 8 (p. 82) shows that the two factors which correlate highest with teacher TQS or Combined TQS (size and state equalized valuation) do not correlate highly with achievement. The two factors which correlate highest with achievement (expenditure per pupil and millage) do not correlate highly with the Combined TQS. Consequently, little difference is noticed between the correlations between Combined TQS and achievement (.31) and between these two factors independent of the four cost factors (.29). Further analysis shows that there seems to be little difference in the relationships between administrator TQS and achievement (.53) or achievement independent of the cost factors (.55); similarly, little difference is noticed between teacher TQS and achievement (.25) or achievement independent of the cost factors (.23). Seemingly small differences are noticed whether achievement is independent of the cost factors or not for ECC scores (administrator, teacher, or combined) for Category VI (Administration and Supervision) and Category VII (The Teacher and Teaching Methods) which have been discussed as being more directly associated to teaching activities and the entire school program.111

¹¹¹Statistical tests of these differences were not made.

It is concluded that the interrelationships of the four cost factors combine in such manner that they may have no affect upon the ability of the <u>ECC</u> Total Scores (administrator, teacher, or combined) to predict achievement. This would mean that the perceptions that certificated personnel have of the characteristics of quality education as measured by the <u>Educational Characteristics Criterion</u> may be used to predict achievement whether the cost factors of size, expenditure per pupil, millage, and state equalized evaluation are made independent or not.

Summary

Although the correlation between the Combined TQS and achievement independent of the four cost variables is not significant (.29) the potential of administrator TQS and the Combined TQS as measures of school quality should not be overlooked. The effect of possible differences between elementary and secondary teachers on Category Quality Scores and Total Quality Score (and the possible difference in behavior indicated by the possible difference in these scores) would seem advisable for study.

¹¹²Table 9 also indicates the relationship between ECC scores and achievement independent of each cost variable for those who may be interested in the effect that each variable has in relation to category scores and achievement.

It appears that little difference is shown between the relationships of <u>ECC</u> scores (administrator, teacher, combined) and achievement whether the cost variables are controlled or not. This would indicate that within the limits of this study the <u>ECC</u> might be used as a predictor of quality as defined by achievement tests with little regard to the effects of the combined cost factors of size, expenditure per pupil, millage, and state equalized valuation.

Summary

The conclusions and decisions concerning the hypotheses in this chapter are based on a small, skewed sample which represents the larger schools and more schools with higher state equalized valuations, larger expenditures per pupil, and higher millage rates than would be found in a normal distribution of Michigan schools. Consequently, the sample reflects schools with higher cost variables--a high financial group of schools.

The correlations between administrator and teacher scores on the <u>ECC</u> are positive for each category and for the Total Quality Score. The correlations are significant at p < .10. It is concluded that administrators and teachers perceive similarly in their schools those characteristics of quality as measured by the <u>ECC</u>. There is less chance that they view those characteristics which

relate to administration and supervision, composition of the community, and teachers and their methods of instruction in the same way. The correlations between administrator and teacher combined Total Quality Score and each Category Quality Score range from .61 to .96.

The correlation between Combined TQS and school achievement (.31) approaches significance. The correlation between teacher Total Quality Score and achievement is .25; the correlation between administrator TQS and achievement (.53) is significant. It is suggested that since the Combined TQS represents a large percentage of teacher responses, differences in the perceptual fields of elementary and secondary teachers may account, in part, for the lower relationship between the Combined TQS and achievement. It is believed that the perceptions of elementary teachers might be more related to the achievement level as measured by sixth grade **S**tanford Achievement Test scores.

The relationship between achievement and expenditure per pupil (.34) and millage (.38) indicates that the more money that is made available the higher the achievement may be expected to be. There appears to be no significant relationship between achievement and size; this is explained through the relationships of financial effort and ability in the large and small

schools and the high achievement level of all participating schools.

The relationship between <u>ECC</u> Combined Total Quality Score and achievement independent of the four cost factors is not significant but is positive and would suggest continued analysis of the <u>ECC</u> as a measure of quality education. It appears that small differences are shown between the correlations between <u>ECC</u> scores (administrator, teacher, or combined) and achievement whether the four cost variables are controlled or not. This is explained in terms of the interrelationships of the cost factors in providing the funds for educational expenditures.

Further study of the <u>ECC</u> and achievement is encouraged and it is recommended that an analysis of elementary and secondary teachers' perceptions be an important consideration in future studies.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The Study

This study was undertaken to determine the relationships of the Educational Characteristics Criterion, (ECC), and school achievement as measured by the Stanford Achievement Test, and the cost variables of size, expenditure per pupil, millage, and state equalized valuation. The major purpose of the study was to determine the ability of the ECC to predict school achievement independent of the cost variables. Sixteen Michigan public school systems which had used the Stanford Achievement Test in the sixth grade in 1962-63 volunteered to participate in the study. Administrators and teachers of the systems that participated were asked to complete a fifty-five item questionnaire, the Educational Characteristics Criterion, (ECC). Responses were received from seventy administrators and 726 teachers representing sixteen school systems in fifteen Michigan counties. Respondents indicated on a four point scale the degree to which their school system was character-

istic of each statement of quality. <u>Stanford Achievement</u> <u>Test</u> scores for the appropriate grade and year were submitted by each school system and the cost data were obtained from a report of the Michigan Department of Public Instruction.

The <u>ECC</u> is based on the assumption that educational quality resides more in the mind of the observer than in the structure of the educational program and that those persons most closely associated with educational programs (administrators and teachers) perceive and react to school and community characteristics which contribute to quality education. Each of the fifty-five statements was assigned to one of the following seven categories: I. Student's Level of Knowledge and Attitudes; III. Community Attitudes; III. Curriculum; IV. Use of Facilities; V. Socio-cultural Composition of the Community; VI. Administration and Supervision; VII. The Teacher and Teaching Methods.

The three General Hypotheses were:

- I. There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion.
- II. There are positive relationships among the administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion, student achievement, and cost factors.

III. There is a positive relationship between administrator and teacher perceptions of characteristics of quality education as measured by the Educational Characteristics Criterion and student achievement independent of cost factors.

The design permitted administrator and teacher scores on the <u>ECC</u> to be computed separately or combined on a Total Quality Score and also on each of the seven categories to provide a Category Quality Score. These scores were then compared with school mean achievement scores and with school size, expenditure per pupil, millage, and state equalized valuation.

The sample from which the <u>ECC</u> responses and the <u>Stanford Achievement Test</u> scores were obtained does not represent a normal distribution on the basis of the cost factors. It reflects a more normal distribution on the basis of the size of the school system but is skewed in favor of those schools with higher state equalized valuations, larger expenditures per pupil, and higher millage rates. For these reasons the results should be interpreted in terms of those schools which have higher cost variables.

The level of significance used to test the hypotheses in this study was set at .10. In view of the exploratory nature of this pilot study and the small sample it seemed reasonable that a .10 significance level should be used.

Conclusions

1) The high positive correlations between administrator and teacher responses on each of the seven Category Quality Scores and the Total Quality Score indicate that administrators and teachers perceive in the same way the degree to which their schools possess those characteristics which have been identified as contributing to quality education. This is consistent with Kraft's study in which he concluded that there appears to be a relationship between the group of which an individual is a part and his perception of the auality factors.¹¹³ Berg reported agreement was present between perceptions of teachers and administrators in 114 high financial schools and in low financial schools. Mueller, however, found that administrators and teachers did not perceive characteristics of quality education in the same way. 115

¹¹³Leonard E. Kraft, "The Perceptions Held by Professors of Education, Professors in Areas Other Than Education, and School Board Members on Ninety Factors Which May or May Not Affect the Quality of an Educational Program." <u>op. cit</u>.

¹¹⁴Arthur D. Berg, "The Determination of the Discrimination and Reliability Indices of the <u>Educational</u> <u>Characteristics Criterion</u> with Implications <u>Concerning</u> <u>Educational Cost-Quality Relationships," op. cit.</u>

¹¹⁵Van Mueller, "A Study of the Relationships Between Teacher-Administrator Perceptions of Educational Quality as Measured by the Educational Characteristics Criterion, (ECC), and Selected Cost Factors, "op. cit.
2) A Combined Total Quality Score representing the responses of both groups (administrators and teachers) may be used to measure educational quality. A Combined TOS will adequately reflect the perceptions of teachers and administrators. It should be remembered that teacher responses contribute a large percentage to such a score. The correlation between administrator Total Quality Score and teacher Total Quality Score (.69) is significant at the .005 level.

3) There is a greater chance that administrators and teachers may differ in their perceptions of quality education for those characteristics related to Category V (Socio-cultural Composition of Community), Category VI (Administration and Supervision), and Category VII (The Teacher and Teaching Methods). Although the correlations reported are significantly positive for this study, they are lower than other categories.

4) The correlation between Administrator Total Quality Score and school mean achievement is significant and has a higher relationship with achievement than does the Teacher Total Quality Score. The responses of administrators and teachers on their respective Total Quality Scores and the Combined Total Quality Score may be used to predict school achievement. The correlation between the ECC Combined Total Quality Score

and school mean achievement, although not significant for the limits of this exploratory study, approaches significance and encourages the use of this instrument as a predictor of school achievement.

5) The responses of administrators, teachers, or their combined score have a significantly positive relationship with size of the school system and with state equalized valuation (except for administrator TQS and state equalized valuation). Correlations between these scores and expenditure per pupil are not significant. Berg and Mueller combined the four cost factors into a common cost factor. They agreed that the ECC discriminated between perceptions of administrators and teachers between their "high financial guartile" and "low financial quartile" schoools. On the basis of size and state equalized valuation the present study would indicate that high scores on the ECC would relate with larger schools and those schools having high state equalized valuations. However, on the basis of expenditure per pupil and millage, the ECC scores do not discriminate between the high and low schools. On the basis of the four cost factors combined it appears that the ECC may be independent of the effects of the cost factors.

6) There is a significant relationship between teacher CQS and state equalized valuation. This would

indicate that teachers in school systems having a high assessed valuation (as represented by valuation of real property) tend to view their schools as having quality characteristics; school systems with lower state equalized valuations tend to report lower perceptions of quality characteristics as perceived by their teachers. This does not seem to affect the relationship between teacher CQS and achievement for the various categories since achievement has a low correlation with state equalized valuation.

7) School achievement shows no significant relationship with size or with state equalized valuation. Large and small schools may expect either high or low achievement. Achievement does have a significant relationship with expenditure per pupil and millage indicating that the expenditure of funds for educational purposes does, as should be expected, produce higher achievement. The interrelationships of these factors combine to produce the "cost base" or financial composition of a school system.

8) The relationships between size and expenditure per pupil, millage, and state equalized valuation are negative. Larger schools are associated with lower expenditures per pupil, lower millage rates, and lower state equalized valuations. The larger enrollment provides a broader base upon which to compute the expenditure per pupil.

9) The relationship of <u>ECC</u> scores and achievement independent of the four cost factors shows that Combined Total Quality Score does not meet the .10 significance Level for 10df. However, the relationship between Combined Total Quality Score and achievement (.31) is s lightly lower when cost factors are made independent (.29).¹¹⁶ Little difference is indicated for adminis trator or teacher respondent relationships with achievement when the four cost factors are made independent. The relationship between administrator Total Quality Score and achievement (.61) is significant at the .005 level; when the cost factors are made independent the relationship (.55) is significant at the .025 level.

10) Since there may be no statistical significant difference between the relationships of <u>ECC</u> scores and achievement when the cost factors are made independent and when they are not, the <u>ECC</u> may be able to predict school achievement free of the influence of the combined factors of size, expenditure per pupil, millage, and state equalized valuation. One noticeable exception is that for Category III (Curriculum) the administrator

¹¹⁶ References to differences between correlations when cost factors are made independent are surface observations and have not been determined statistically by a test of significant differences.

CQS, teacher CQS, and Combined CQS relationships with a chievement increase when cost factors are made independent. Table 9 shows that when either size, millage, or expenditure per pupil is made independent the relationship between either administrator, teacher, or combined CQS for Category III, achievement increases. Size also appears to affect the relationships between teacher CQS for Category V (Socio-cultural Composition of the Community) and for administrator CQS for Category VI (Administration and Supervision).

11) Administrator perceptions of quality relate **bigher** with achievement than do teacher perceptions **except** for Category IV (Use of Facilities) whether the **cost** factors are independent or not; a slightly higher **correlation** is reported for teacher CQS for Category I **(Student's Level of Knowledge and Attitudes).** The **differences** between the two respondent groups for the **seven** categories range from .03 (Category I) to .38 **(Category VI, Administration and Supervision) and .39 (Category VII, the Teacher and Teaching Methods).** Administrator perceptions of the characteristics of **quality education are better predictors of school achievement than are teacher perceptions.**

12) What seems important in assessing school quality as measured by achievement are the kinds of activities indicated in Categories III, VI, and VII

(Curriculum, Administration and Supervision, and The Teacher and Teaching Methods). These categories have the highest correlations with achievement independent of cost factors. These areas are directly associated with the administrator-teacher-student behavior which should contribute to instructional and classrcom activities. The categories contain items measuring teachers' attitudes about their students and their individual differences, teaching methods, instructional materials, teacher cooperation, and teacher and public participation in decision making concerning curriculum and school policies.

13) Kraft's study showed that professors of education, professors in fields other than education, and school board members perceived those characteristics of quality measured by Category VII (The Teacher and Teaching Methods) as being the most important in contributing to quality education. The present study shows that Administrator CQS, Teacher CQS, or their Combined CQS for this category correlate significantly with achievement. The Combined CQS correlation with achievement for this category is the highest correlation reported between a Combined CQS and achievement. This would indicate that the items in Category VII have a high relationship with achievement and supports Kraft's findings.

Implications

1) It has been shown that the correlations between administrator CQS for Categories III, VI, and VII (Curriculum, Administration and Supervision, and The Teacher and Teaching Methods) and achievement are higher than the correlations between teacher's CQS on these same categories. It may be that the perceptual field from which the two respondent groups view their activities is different for these areas. Both groups may respond to the community and other environmental characteristics in terms of a total or common environment. Communication media could effect the perceptions that teachers and administrators have about their community and their environment by providing a common reference area for the two groups. However, when the characteristics being measured are more personal or are more closely viewed by the respondents their perceptual fields change. It is implied that teachers may perceive behavior in terms of their own activities Or the behavior of their class or even the behavior of a small part of their class; administrators should be reacting to a broader field including many teachers, many pupils, and the entire school program and thus report a consensus of behavior. This implies that because of his position the administrator should be more

perceptive of the activities of the entire school and his staff.

2) The use of expenditure per pupil as a measure of educational expenditure must be treated with caution. Differences in reporting data may contribute to errors of analysis and large expenditures for auxiliary services or non-instructional purposes may give the appearance of providing a large expenditure per pupil but not contributing to the educational activities of any or all of the students, particularly in those activities which would be expected to improve achievement levels. Effects of inflation when longitudinal studies are undertaken and differences in the costs for providing the same services in different geographic areas should be considered in cost-quality studies.

Since the availability and the expenditure of funds is related with achievement, those schools with lower expenditures per pupil should be encouraged to increase their expenditures for instructional services and expect increased achievement as a result. The data provided in Appendix K implies that urban area schools, even though expending larger sums per pupil for education, may need to provide larger sums than the average in order to provide equal or increased achievement with schools expending the same amount in a rural or ruralvillage community. This may be due to higher auxiliary costs, higher maintenance costs, and the need to pay higher salaries than the smaller communities because of possible higher cost of living factors in larger communities. Increased costs without improvement in service would not be expected to contribute to achievement. Since achievement in this study was determined at the sixth grade level, consideration of class size at the elementary level indicated that higher achievement tended to be associated with smaller pupil-teacher ratios.

3) Those categories which may not have a direct relationship with the administrator-teacher-student relationship in school learning situations relate least to school achievement. Perceptions of students' knowledge and attitudes, community attitudes, facility utilization, and socio-cultural aspects of a community apparently do not relate with achievement. This may be because the perceptions are not consistent with the measurable characteristics which may affect achievement or because these characteristics may not be reflected in school planning, curricular offerings, administratorteacher-student relationships, or instructional techniques or methods.

4) During this study and in discussion with those who have undertaken studies involving the <u>ECC</u> some of the items appear to confuse the scoring of the <u>ECC</u>. If students own cars and contribute to the Socio-cultural

Composition of the Community category, would research support that these students also would contribute to higher achievement in high school? Does a high score for the item "early dating" (number 55) contribute to achievement? Do the items concerning the religious and cultural groups in the community tend to balance one another? Does a high score for one of the items relating to the community being predominantly Protestant. Catholic, or Jewish (items 46, 47, and 48) in Category V (Socio-cultural Composition of the Community) imply a lower score for the other two? It is implied that a study of the items and their category assignment might clarify these problems. If an item can contribute to more than one category it would seem that scoring procedures could be developed to allow the item to contribute more fully to the measurement of quality education.

5) Category IV (Use of Facilities) contains one item ("The physical facilities of the school system --buildings and equipment--are completely adequate"). The teacher CQS relationship for this category with achievement (.32) indicates that their responses more nearly reflect the level of achievement than do administrators' scores (.04). This is the only category on which the teacher CQS correlation with achievement is higher than administrator CQS. The data also indicate that the mean score for teachers on this category is 2.4 and the administrator mean score is 2.7. Analysis of the original data indicates that of the sixteen participating school systems only four of them show a school system mean score on the <u>ECC</u> to be higher for teachers than administrators.

This may imply that administrators have information concerning future enrollment and building needs and see them as being met whereas teachers perceive crowded or less desirable facilities for <u>teaching purposes</u> than do administrators. Teachers may be better judges of the adequacy of instructional facilities than administrators whereas administrators may respond in terms of more than the classroom and be including evaluations or perceptions which include space and equipment for non-achievement related activities. Teachers may need teaching spaces or visualize different types of facilities and view their current circumstances as being less desirable.

One conclusion could be that regardless of how teachers perceive the buildings and equipment that they have available to them, they still function in such a way that school achievement (learning) takes place. This could mean that a study of the relationship of school plant and achievement is appropriate in order to determine what facilities (buildings and equipment) contribute to school achievement and what facilities contribute to other school objectives or goals. It is possible that teachers have perceived "equipment" to mean supplies and feel that they have not been supplied these items; administrators may be viewing equipment in terms of heavier goods and feel that within the limits of budgeted amounts the school system has done well.

It appears that this category could be designed to be more specific in order to determine, "What is the relationship of building and equipment adequacy to achievement?"

6) The heavy weighting of the Combined Total Quality Score with teacher responses in effect provides a Teacher Quality Score. Since administrators and teachers perceive quality in the same way (this study) a large number of teacher respondents would seem unnecessary. For the purposes of economy of time and energy a smaller random or random stratified sample of teachers might contribute as much to measurement of quality as including all teachers in a school system.

7) The correlation between Teacher Total Quality Score and state equalized valuation is .35. Although this is not a significant correlation it might imply that teachers may be influenced by the material evidence of a community in perceiving the existence of quality education. Are appearances of ability to support education influencing teachers (and perhaps the public) into believing they have a quality community and a quality school?

Recommendations

In view of the conclusions and implications which have been discussed, the following recommendations are offered:

1) Although this study is based upon a small and positively skewed sample, it indicates the potential of the <u>Educational Characteristics Criterion</u> to predict school quality as validated by school achievement. Freedom of the <u>ECC</u> from the effects of cost factors when measuring achievement has been shown. A similar study based upon a more representative sample should be undertaken to further determine the ability of the <u>ECC</u> to measure achievement and to verify or refute the independence of the <u>ECC</u> from the combined effects of size, expenditure per pupil, millage, and state equalized valuation.

2) A study should be undertaken to determine if the <u>ECC</u> can determine differences in the perceptions of elementary and secondary teachers and administrators. This study could be part of an <u>ECC</u>-achievement-cost study. 3) Categories III, VI, and VII (Curriculum, Administration and Supervision, and The Teacher and Teaching Methods) because of their high correlation with achievement should be analyzed in the further development of the <u>ECC</u>. Items that could add more specificity to the category in terms of teacher-student classroom activities would seem desirable. This would permit this category to be more diagnostic or analytical in terms of the behavior which could be interpreted in terms of contributing to achievement.

4) A longitudinal study could be undertaken to determine the effects of treatments on the change of behavior and change in achievement levels. Such a study should allow for the time element between the change of behavior (treatment) and its effect upon achievement. One should not expect measures of achievement to reflect immediately the changes in behavior or treatment.

5) A study to determine the effect of psychological distance on the perceptions of administrators and teachers might provide information important in assessing the cause of differences in perceptions and the concurrent behavior differences.

6) A study of the relationships between achievement, class size, type of community and its values, and expenditure per pupil (defined in terms of <u>instructional</u> costs) could be made a part of an <u>ECC</u> study. The implication of the effect of class size on achievement and the non-instructional related costs in expenditure per pupil accounting make this study desirable.

7) An analysis of the construction of items in the <u>ECC</u> and the assignment of items to categories should be undertaken to make the scoring and statistical analysis of category scores more meaningful. Mueller's study¹¹⁷ and Appendix J of this study indicate the high intercorrelations of the various categories.

8) This study has defined educational quality in terms of school achievement scores with administrators and teachers as respondent groups. The <u>ECC</u> should be validated with other measures of quality with administrators and teachers as respondents or using other reference groups as respondents. Other measures of quality might include holding power, types of curricular offerings, adequacy of school plant, measures of local goals other than achievement, success of graduates after leaving school (at work or in college), or evaluations of the school program by experts or other measurements of quality. Other respondent groups might include school board members, parent-teacher groups, non-certificated

¹¹⁷Mueller, <u>op</u>. <u>cit</u>., pp. 164-168.

employees, civic or fraternal groups, representatives of business, labor leaders, major occupational groups in the community (agriculture, industry, small plants), and minority groups.

9) Future studies involving teacher and administrator perceptions should use a teacher mean score for the school system and an administrator mean score for the school system for the combined scores. This should be done in order to avoid weighting the combined scores with predominantly teacher scores.

10) A study should be undertaken to determine the effect that I.Q. has on the prediction of school achievement by the <u>ECC</u>. The relationships between I.Q. and school achevement and between I.Q. and socioeconomic conditions in the community should be considered.

Summary

1) Teachers and administrators perceive characteristics of quality of education as measured by the <u>ECC</u> in similar ways. Their scores may be combined into a Total Quality Score for measuring quality. There is a greater chance that they do not perceive the areas of administrator-teacher-student relationships or instructional or curricular areas in the same way. These areas are most closely related to achievement. 2) Not all correlations are significant but the trend to positive correlations and the high correlations between some scores and those categories most closely associated with administration, instructional practices, and interpersonal relations of administrators, teachers, and students indicates the potential of the <u>ECC</u> as a measure of school quality as measured by school achievement.

3) There is no significant relationship between achievement and size indicated in this exploratory study. The sample of this study reflects high financial and high achieving schools and thus may account for this slight relationship. The effects of expenditure per pupil, millage, and state equalized valuation upon large and small schools shows the relationship of achievement to these three cost factors.

4) Administrator perceptions of the characteristics of quality of education as measured by administrator Total Quality Score and Category Quality Scores are better predictors of school achievement (or achievement independent of cost factors) than teacher scores or combined scores.

5) The <u>ECC</u> may be used to predict achievement independent of cost factors. However, this study shows that the combined effect of the four cost factors frees the <u>ECC</u> from a cost bias when used to measure school achievement.

6) Cost-quality studies should consider the interrelationships of size, expenditure per pupil, millage, and state equalized valuation in assessing quality since one factor may contribute but may be affected positively or negatively by other cost factors.

7) Further studies of quality of education using the <u>Educational Characteristics Criterion</u> should be made using various criteria of quality and various reference groups as respondents. In terms of achievement studies consideration should be made of possible differences in elementary and secondary teachers' perceptions as a result of different perceptual fields.

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APPENDICES

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APPENDIX A

EDUCATIONAL CHARACTERISTICS CRITERION, (ECC)

EDUCATIONAL CHARACTERISTICS CRITERION

Herbert C. Rudman Michigan State University

.

	Factor	Most Characteristic	Somewhat Characteristic	Slightly Characteristic	Least Characteristic
l.	Teachers have intimate knowledge of children.	4	3	2	1
2.	Teaching practices reflect concern for individual differences.	4	3	2	l
3.	Teaching practices reflect a knowledge of individual differences	4	3	2	1
4.	Teachers perceive a coherent and coor- dinated structure to the educational program.	4	3	2	l
5.	Concensus exists among the staff con- cerning the goals of the educational program.	4	3	2	l
6.	A structure has been developed that permits continual curriculum improvement.	4	3	2	1
7.	Evidence exists of instructional and/or curricular experimentation.	4	3	2	1
8.	Students show a positive attitude toward scholastic work.	4	3	2	1
9.	Students evidence accurate knowledge of self.	4	3	2	1
10.	Professional staff of the school system are involved in in-service education.	4	3	2	1
11.	Teachers thoroughly understand the infor- mation gathered on students and use this information to make sound educational decisions.	4	3	2	1
12.	All teachers are certified to teach at the grade level or subject they are now teaching.	4	3	2	l
13.	Teachers have complete freedom to teach what they consider to be important.	4	3	2	1
14.	A great variety of instructional tech- niques are presently used in the class- rooms.	4	3	2	1
15.	A great variety of instructional mater- ials are presently used in the class- rooms.	4	3	2	l

	Factor	Most Characteristic	Somewhat Characteristic	Slightly Characteristic	Least Characteristic
16.	Students are knowledgeable about the educational and social opportunities available to them.	4	3	2	1
17.	A complete comprehensive testing program including intelligence and achievement testing is available in the schools.	4	3	2	l
18.	Teachers often avail themselves of professional help.	4	3	2	l
19.	Complete freedom is granted to students to investigate any local, state, national or international issue.	24	3	2	1
20.	Availability to students of materials that reflect all shades of political and sociological points of view.	4	3	2	l
21.	Parents and patrons (those residents of a school district without school- age children) are highly knowledgeable about education.	4	3	2	1
22.	Lay members of the community are highly involved in the planning of educational goals with the school staff.	4	3	2	1
23.	Regulations governing student conduct are highly explicit and detailed.	4	3	2	l
24.	High degree of teacher participation in social and political activities of the community.	4	3	2	l
25.	The social status of teachers is very high in this community.	4	3	2	l
26.	Regulations governing personnel policies are highly explicit and detailed.	4	3	2	l
27.	Citizens are highly organized to discuss school problems.	4	3	2	l
28.	The perceptions of parents and patrons concerning the purposes of education are consistent and clear.	4	3	2	1
29.	The local newspaper has shown a high interest in local school affairs.	4	3	2	l
30.	There is no lag between the values taught in the school and what is prac-ticed in the community.	4	3	2	1
31.	There exists a high level of cooperation among the teachers of the staff.	4	3	2	l

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	Factor	Most Characteristic	Somewhat Characteristic	Slightly Characteristic	Least Characteristic
32.	The physical facilities of the school system (buildings and equipment) are completely adequate.	4	3	2	l
33.	The community and its residents are used for instructional purposes.	4	3	2	l
34.	Cultural experiences are readily available in the community.	4	3	2	1
35.	Teachers' judgments are almost always used in the determination of education- al policies.	4	3	2	l
3 6.	A high percentage of the electorate in the community vote in school elections.	4	3	2	l
37.	There are outstanding community leaders in this community who exhibit great interest in school affairs.	4	3	2	l
38.	This is a highly stable community which does not have too many people leaving.	4	3	2	l
39.	The community exhibits a great concern for the development of aesthetic and artistic interests.	4	3	2	l
40.	A two-way communication channel readily exists between the home and the school.	Ц	3	2	l
41.	A high percentage of high school students own personal cars.	4	3	2	l
42.	A high percentage of homes own television sets.	4	3	2	l
43.	A great deal of homework is assigned to students.	4	3	2	l
44.	A high degree of ethnic, racial and religious homogeneity exists among the local population.	4	3	2	l
45.	The parents in this community expect their children to perform their share of family chores.	4	3	2	l
46.	This community is composed of people who are predominantly Protestant.	4	3	2	l
47.	This community is composed of people who are predominantly Catholic.	4	3	2	l
48.	This community is composed of people who are predominantly Jewish.	4	3	2	l

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	Factor	Most Characteristic	Somewhat Characteristic	Slightly Characteristic	Least Characteristic
49.	The population of this community is equally divided between Protestants and Catholics.	4	3	2	l
50.	One or two ethnic groups comprise the largest number of residents in the community.	4	3	2	1
51.	Pupils consider an academic grade of at least "B" to be the norm for academic achievement.	4	3	2	1
52.	The professional staff of the schools in the community consider an academic grade of at least "B" to be the norm for academic achievement.	4	3	2	1
53.	A high value is placed on education by the parents and patrons (those residents of a school district without school-age children) of the community.	4	3	2	1
54.	Parents and patrons in the community consider an academic grade of at least "B" to be the norm for academic achieve- ment.	4	3	2	1
55.	Parents condone or encourage early dating for their children.	4	3	2	1

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APPENDIX B

INSTRUCTIONS FOR RESPONDING TO THE EDUCATIONAL CHARACTERISTICS CRITERION, (ECC)

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INSTRUCTIONS FOR RESPONDING TO THE EDUCATIONAL CHARACTERISTICS CRITERION

- 1. Your participation as a respondent to the Educational Characteristics Criterion (ECC) within the national sample of cooperating school districts is greatly appreciated. This is a phase of a comprehensive research project which is being conducted by the College of Education, Michigan State University.
- 2. It is important that your responses to the ECC represent your own individual perceptions. therefore it is recommended that you complete the ECC without prior discussion with other faculty members, preferably in private and quiet surroundings. All information will be treated confidentially and anonymously. Approximate respondent time is thirty minutes, however there is no time limit.
- 3. Use pencil and mark with firm pressure ON the number representing the characteristic that you perceive. Relate the statements to your experience as follows:
 - (a) Teachers and Building Principals: Relate the statements to your building experience.
 - (b) Central Administrators and Supervisors: Relate the statements to your school system.
- 4. Example of marking one item:

Factor		Most	Somewhat	Slightly	Least
		Characteristic	Characteristic	Characteristic	Characteristic
1.	Teachers have intimate know- ledge of children.	24	3	×	1

(Note: The "X" ON the "2" will indicate that your perception of the statement is that it is "slightly characteristic" of your building situation (if you are a teacher or building principal); or that it is "slightly characteristic" of your school system (if you are a central administrator or supervisor).

- 5. Upon completion of your responses to all ECC items, place the ECC in the envelope and SEAL the envelope flap. Do not put your name or other markings on the ECC envelope.
- 6. Return the envelope with enclosed ECC to your building principal or to the collection point prescribed by the principal or the superintendent. It is highly desired that you complete the ECC at your very earliest opportunity and return it within 24 hours, and if delayed, within 48 hours.

APPENDIX C

EDUCATIONAL CHARACTERISTICS CRITERION, (ECC), CATEGORIES AND THE FACTORS IN EACH CATEGORY

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The seven categories of the <u>Educational Character</u>-<u>istics Criterion</u> are listed below. Those items which have been identified with each category are indicated with the number of the item in the <u>ECC</u> used in this study.

Category I. Student's Level of Knowledge and Attitudes.

- 8. Students show a positive attitude toward scholastic work.
- 9. Students evidence accurate knowledge of self.
- 16. Students are knowledgeable about the educational and social opportunities available to them.
- 51. Pupils consider an academic grade of at least "B" to be the norm for academic achievement.
- 52. The professional staff of the schools in the community consider an academic grade of at least "B" to be the norm for academic achievement.

Category II. Community Attitudes.

- 21. Parents and patrons (those residents of a school district without school-age children) are highly knowledgeable about education.
- 28. The perceptions of parents and patrons concerning the purposes of education are consistent and clear.
- 29. The local newspaper has shown a high interest in local school affairs.
- 30. There is no lag between the values taught in the school and what is practiced in the community.
- 36. A high percentage of the electorate in the community vote in school elections.

- 37. There are outstanding community leaders in this community who exhibit great interest in school affairs.
- 39. The community exhibits a great concern for the development of aesthetic and artistic interests.
- 40. A two-way communication channel readily exists between the home and the school.
- 45. The parents in this community expect their children to perform their share of family chores.
- 53. A high value is placed on education by the parents and patrons (those residents of a school district without school-age children) of the community.
- 55. Parents condone or encourage early dating for their children.

Category III. Curriculum.

- 4. Teachers perceive a coherent and coordinated structure to the educational program.
- 5. Concensus exists among the staff concerning the goals of the educational program.
- 6. A structure has been developed that permits continual curriculum improvement.
- 15. A great variety of instructional materials are presently used in the classrooms.
- 17. A complete comprehensive testing program including intelligence and achievement testing is available in the schools.

Category IV. Use of Facilities.

32. The physical facilities of the school system (buildings and equipment) are completely adequate.

- Category V. Socio-cultural Composition of the Community.
 - 25. The social status of teachers is very high in this community.
 - 34. Cultural experiences are readily available in the community.
 - 38. This is a highly stable community which does not have too many people leaving.
 - 41. A high percentage of high school students own personal cars.
 - 42. A high percentage of homes own television sets.
 - 44. A high degree of ethnic, racial and religious homogeneity exists among the local population.
 - 46. This community is composed of people who are predominantly Protestant.
 - 47. This community is composed of people who are predominantly Catholic.
 - 48. This community is composed of people who are predominantly Jewish.
 - 49. The population of this community is equally divided between Protestants and Catholics.
 - 50. One or two ethnic groups comprise the largest number of residents in the community.

Category VI. Administration and Supervision.

- 10. Professional staff of the school system are involved in in-service education.
- 22. Lay members of the community are highly involved in the planning of educational goals with the school staff.
- 23. Regulations governing student conduct are highly explicit and detailed.
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- 27. Citizens are highly organized to discuss school problems.
- 35. Teachers' judgments are almost always used in the determination of educational policies.

Category VII. The Teacher and Teaching Methods

- 1. Teachers have intimate knowledge of children.
- 2. Teaching practices reflect concern for individual differences.
- 3. Teaching practices reflect a knowledge of individual differences.
- 7. Evidence exists of instructional and/or curricular experimentation.
- 11. Teachers thoroughly understand the information gathered on students and use this information to make sound educational decisions.
- 12. All teachers are certified to teach at the grade level or subject they are now teach-ing.
- 13. Teachers have complete freedom to teach what they consider to be important.
- 14. A great variety of instructional techniques are presently used in the classrooms.
- 18. Teachers often avail themselves of professional help.
- 19. Complete freedom is granted to students to investigate any local, state, national or international issue.
- 20. Availability to students of materials that reflect all shades of political and socio-logical points of view.

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- 24. High degree of teacher participation in social and political activities of the community.
- 31. There exists a high level of cooperation among the teachers of the staff.
- 33. The community and its residents are used for instructional purposes.
- 43. A great deal of homework is assigned to students.

APPENDIX D

LETTER SENT TO SUPERINTENDENTS INVITING PARTICIPATION IN THE STUDY College of Education

I have been conducting, over the past three years, several national and state-wide studies which are concerned with identifying and measuring quality in educational programs. I need your help in continuing to carry out these projects since the only way to determine quality is to come to you who are involved in the daily operation of the public school program. I know how busy you and your staff are; I know how additional projects eat into your time; however, I hope that in spite of this you will consent to participate in a study of the perceptions that teachers and administrators have of their school and the school community. I have tried to keep the details of participation at a minimum so that you will not become too involved in time-consuming activities.

The <u>Educational Characteristics Criterion</u>, (ECC), has been developed to measure the perceptions that people have of their educational program. The <u>ECC</u> is a printed questionnaire containing fifty-five items and takes about thirty minutes for each person to complete. The study in which I hope you will agree to participate will investigate the relationships of the perceptions of school administrators and teachers, as measured by the <u>Educational</u> <u>Characteristics Criterion</u>, and school achievement, as measured by the <u>Stanford Achievement Test</u>. Your participation would involve two steps.

Step one involves the distribution of the ECC to each administrator and teacher in your system. Each person completes the ECC independently and at a time he chooses. Details for collecting and returning the completed ECC's as well as materials and reimbursement for mailing will be provided by me.

Step two rary shee grades wh tion will remain co schools of the inter it is int level of the distribute of as expendent the distribute of grade tes Details f of mailin I feel the measuring of assess sonnel. essist sc grams. I am enci Egg. So that the have your ing syste administ: 1964. I sincer ject and Cordiall Hertert Frolesso HCR:cs

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Step two involves supplying me with copies of your summary sheets of the Stanford Achievement Test for selected grades which you tested in 1961-62 or 1962-63. Information will be coded as soon as it is received and will remain confidential. At no time will comparisions between schools be made in any identifiable manner. It is not the intent of the study to compare achievement by schools; it is intended to determine if the ECC can indicate the level of achievement of a school system if such factors as expenditure per pupil, state equalized valuation of the district, school membership (size), and millage are held constant. If the achievement test summary sheets are not available, student profiles will be accepted. These will permit me to compute an average score for each grade tested. These materials will be returned to you. Details for submitting this information and reimbursement of mailing expenses will be provided by me.

I feel that this research may provide a new concept in measuring the quality of an educational program in terms of assessing values and perceptions of local school personnel. It is hoped that an analysis of the <u>ECC</u> would assist school systems in improving their educational programs.

I am enclosing an outline of the study and a copy of the ECC.

So that we may begin the study promptly, I would like to have your response by April 1, 1964. Decisions concerning systems selected for the sample must be made so that administration of the \underline{ECC} can be made about April 10, 1964.

I sincerely hope that you will join with me in this project and anticipate your early favorable response.

Cordially yours,

Herbert C. Rudman Professor of Education

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Enclosure: Educational Characteristics Criterion Summary of the research proposal Response to ECC inquiry APPENDIX E

SUMMARY OF PROPOSAL

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Summary of a Proposal To Study the Relationships of the Educational Characteristics Criterion and Stanford Achievement Test Scores

Rationale, Purposes, and Instrumentation of the Study:

Many research projects have been conducted which show the relationship of cost to the quality of education. Quality of education has been defined and assessed in various ways. The Educational Characteristics Criterion, (ECC), used in this study has been developed with the idea that people hold opinions or values about their schools and the community it serves. What people think or believe is real to them; in turn, they behave according to what is real or valued by them. Therefore, a school system has quality or lacks it according to how people view their schools. The ECC contains fifty-five statements which have been identified as contributing to quality education. The measurement of the degree to which persons in a school system think the school system possesses or does not possess these factors is its measure of quality. Previous studies involving the ECC have shown it to be highly reliable and able to discriminate among various groups of people.

This study intends to show the relationship of the perceptions of teachers and administrators, as measured by the ECC, and school achievement--one measure of quality--as measured by the Stanford Achievement Test. Other studies will relate other groups to different criteria of quality to determine the general ability of the ECC to measure the values and perceptions of persons influencing decisions about education and the various criteria of quality. If the ECC can be developed in this fashion as an instrument for analyzing what people think of their schools it can be used as an instrument to improve the school program.

The fifty-five statements in the ECC fall into Several categories. Scores are obtained on each of these categories as well as a Total Score. For each School district a mean score will be assigned to each Category and to the Total Score. A grade achievement Score will be assigned on the basis of achievement test data supplied by each district. Expenditure per pupil, State equalized valuation, size (membership), and millage of each school district will be determined from data available in a report from the Michigan Department of Public Instruction.

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Schools selected for the sample will be sent:

- a.) An envelope containing an <u>ECC</u> and instructions for completing it for each teacher and for each administrator in the system. Copies of the ECC for administrators will be stamped ADMINISTRATOR.
- b.) Supplies and postage for returning the completed ECC's.
- c.) A School District Information Sheet for reporting certain school-community data.

Envelopes containing <u>ECC's</u> are to be distributed to staff members in each participating school in such manner as the superintendent may prescribe. <u>ECC's</u> are to be completed and sealed in the envelope by the respondent within 24 hours. It takes about thirty minutes to complete the <u>ECC</u>. When all <u>ECC's</u> have been returned to the central collection point they will be mailed to the project director.

Each school system will be asked to submit <u>Stanford</u> <u>Achievement Test</u> summary sheets or student profiles for specific grades in order that a grade mean score may be established for purposes of analysis. These scores will be used ONLY to relate ECC scores. Identifying comparisons with other schools will NOT be made. These materials will be returned to each school system and reimbursement for postage will be made.

When the materials are received by the project director, a code number will be assigned to all materials related to that system. The key to this code will reside <u>ONLY</u> with the project director. Insuring the confidences of responses is important. Data will be punched on IBM cards for storage purposes and computations performed by Michigan State University computer equipment and personnel.

Abstracts of the study will be made available to those participating schools which indicate that they desire results of the study.

General Hypotheses to be Tested:

- I.) There is a correlation between certificated employees' perceptions of quality education (ECC), achievement test scores, and cost factors.
- II.) The ECC can reliably predict achievement test levels when cost factors are controlled.
 III.) The ECC will show ability to discriminate be-
- III.) The ECC will show ability to discriminate between the responses of teachers and administrators.
- IV.) Individual educational characteristics scores will correlate with Total Scores of respondents.

APPENDIX F

FORM FOR SUPERINTENDENT'S RESPONSE TO EDUCATIONAL CHARACTERISTICS CRITERION, (ECC), INQUIRY

RESPONSE TO ECC INQUIRY

.

Superintendent:

School District:

Correct Mailing Address:

We will participate in this stu	.dy					
We will not participate in this	We will not participate in this study					
Number of teachers in the school	ol system (K-12)					
Number of administrators (super supervisors) in the school s	rintendent, principals, ystem (K-12)					
Stanford Achievement Test data grades)	available for: (circle					
Grades 1,2,3,4,5,6,7,8	1961-62					
Grades 1,2,3,4,5,6,7,8	1962-63					
We desire results made availab:	le to us					

Comments:

Signed:_____

APPENDIX G

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GENERAL INSTRUCTIONS FOR ADMINISTERING AND MAILING THE EDUCATIONAL CHARACTERISTICS CRITERION, (ECC)

- TO: Superintendent of Cooperating School Districts in the Quality Research Project.
- FROM: Dr. Herbert C. Rudman, Project Director, College of Education, Michigan State University.
- SUBJECT: General Instructions for Administration and Mailing of the Educational Characteristics Criterion (ECC).
 - I. CONTENTS OF THE PACKAGE OF MATERIALS
 - A. _____ envelopes, each containing one copy of the ECC and an instruction sheet for teacher respondents, with two extra copies.
 - B. _____envelopes, stamped "ADMINISTRATOR," each containing one copy of the <u>ECC</u>, also stamped "ADMINISTRATOR," and an instruction sheet for <u>administrative</u> respondents (Superintendents, Principals, Supervisors), with one extra copy.
 - C. One business envelope containing:
 - 1) "Educational Materials" sticker for the return package
 - 2) Address sticker for returning test materials to Dr. Herbert C. Rudman, College of Education, Michigan State University.
 - D. One <u>Supplementary Information Form</u> to be completed by the Superintendent.

II. DISTRIBUTION

A. Please contact each principal to notify him of the participation of your school district in this research project which is concerned with the identification and measurement of quality in an educational program.

- B. Please give the principals instruction sheets, the ECC, and envelopes for each teacher he supervises (unless this can more easily be accomplished through your central office).
- C. Give the principals and other administrator and supervisor respondents their instruction sheets, the ECC, and envelopes (marked "ADMINISTRATOR").
- D. The Superintendent is requested to fill out the <u>Supplementary Information Form</u> in addition to responding to the <u>ECC</u> using materials marked "ADMINISTRATOR."
- E. In case there is only one administrator, a Superintendent who acts as Principal, it is desired that one "ADMINISTRATOR" <u>ECC</u> be given to the faculty individual who assists the Superintendent administratively more than any other faculty member. This individual would not fill out a teacher respondent <u>ECC</u> but would fill out only the "ADMINISTRATOR" ECC.

III. COLLECTION

- A. It is requested that the collection point of the ECC envelopes be clearly specified to all respondents. If the "Principal," "Principal's Secretary," etc. are assigned the duty of collection, the respondents should be notified as to place and time of collection.
- B. All envelopes, used or unused, with the enclosed ECC's should be collected and checked against the total sent (see I.A. and B., CONTENTS).
- C. Do not retain ECC's for absent teachers. All forms should be returned to your office within 48 hours at the latest. It is hoped that the 48 hour limit will result in better individual perceptions that may be less influenced by group discussion.

IV. MAILING

- A. The return package should include all the envelopes and the <u>Supplementary</u> <u>Information Form</u> completed by the <u>Superintendent</u>. There should be one package bound with cover paper, cord, and tape if necessary. Postage and stickers are in the business envelope. The <u>Supplementary Information Form</u> should be placed inside the package.
- B. Postage has been calculated at the "Educational Materials" rate. If reimbursement for additional postage is required, please contact Dr. Herbert C. Rudman, College of Education, Michigan State University, East Lansing, Michigan.

I wish to express my appreciation to you, your staff, and your teachers for the cooperation you have given in this project. An abstract of the results will be sent to you upon completion of the project.

> Herbert C. Rudman Project Director

APPENDIX H

SUPPLEMENTARY INFORMATION FORM

(То	be	completed	bv	the	Superintendent)
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SUPPLEMENTARY INFORMATION FORM

EDUCATIONAL CHARACTERISTICS CRITERION

Herbert C. Rudman Michigan State University

- 1. School District _____ 2. State _____
- 3. Type of Organization Pattern Followed in School District (Please check the most appropriate organizational Pattern).

a. 6-3-3_____ c. 6-6 _____ e. 6-2-4 ____ b. 8-4____ d. 5-3-4 ____ f. Other ____

- 4. Approximate average pupil-teacher ratio...ELEMENTARY (Please check appropriate response).
- 5. Approximate average pupil-teacher ratio...SECONDARY (Please check appropriate response).

a.	50-1	d.	35-1	g.	20-1
b.	45-1	e.	30-1	h.	Less than
c.	40-1	f.	25-1		20-1

- 6. Type of Population Center
 - a. Rural
 - b. City _____
 - 1. less than 2500 _____
 - 2. 2500 4999

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3. 5000 - 9999

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4. 10,000 - 24,999

5. 25,000 - 999,999 _____

- 6. 100,000 and over _____
- 7. Is your school program accredited by the state and/ or regional accrediting agencies?

Yes ____ No ____

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APPENDIX I

LETTER TO SUPERINTENDENTS OF SCHOOLS SELECTED TO PARTICIPATE IN THE STUDY

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April 15, 1964

Inside Address

Dear Mr. ____:

Thank you for consenting to participate in the study of the relationships of the <u>Educational Characteristics</u> <u>Criterion</u> and the <u>Stanford Achievement Test</u>. The materials indicated on the enclosed form are being mailed today under separate cover.

Enclosed are stamps for returning the ECC materials and <u>Stanford</u> <u>Achievement Test</u> materials. Should this estimate be insufficient I will reimburse you accordingly.

You may recall that step two of the study requires <u>Stanford Achievement Test</u> data. Would you please supply me with either the grade summary sheets (preferred) or the student profile sheets for the

SIXTH GRADE for 1962-63?

Your Stanford Achievement Test data will be returned to you and will be treated confidentially.

Your cooperation in returning the \underline{ECC} materials and your test data by May 1st will be appreciated.

Sincerely,

Herbert C. Rudman Professor of Education

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APPENDIX J

INTERCORRELATIONS OF ADMINISTRATOR, TEACHER, AND COMBINED CATEGORY QUALITY SCORES

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	Ad	minist	rator	Scores	3			
Categories	I	II	III	IV	V	VI	VII	Total
I II IV V VI VII Total	1.00	.35 1.00	•35 •56 1.00	.12 .54 .55 1.00	.15 .68 .45 .20 1.00	.49 .75 .82 .37 .63 1.00	.49 .65 .26 .48 .85 1.00	.56 .87 .79 .48 .70 .94 .88 1.00
		Teach	<u>er Sco</u>	res				
Categories	I	II	III	IV	V	VI	VII	Total
I II IV V VI VII Total	1.00	.84 1.00	.76 .69 1.00	.42 .62 .54 1.00	.65 .84 .54 .41 1.00	.83 .84 .86 .45 .70 1.00	.91 .84 .88 .55 .61 .87 1.00	.91 .95 .87 .60 .80 .93 .95 1.00
		Combi	ned Sc	ores				
Categories	I	II	III	IV	V	VI	VII	Total
I III IV V VI VII Total	1.00	.82 1.00	.69 .66 1.00	.38 .65 .56 1.00	.61 .83 .51 .41 1.00	.83 .85 .85 .47 .70 1.00	.90 .87 .85 .54 .61 .88 1.00	.89 .95 .84 .61 .78 .94 .96 1.00

INTERCORRELATIONS OF ADMINISTRATOR, TEACHER, AND COMBINED CATEGORY QUALITY SCORES WITH EACH CATEGORY

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APPENDIX K

CHARACTERISTICS OF PARTICIPATING SCHOOLS

APPENDIX K

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Characteristics	of	Participating	Schools

School Code	Type of Community	Elem. Enroll. per Teacher	Secondary Enroll. per Teacher	State Equalized Valuation ^d
1	City	25	25	\$13,700 (3)
15	Rural-Village	20	20	7,200 (1)
7	Rural	-20	-20	14,600 (3)
13	Rural-Village	25	25	12,300 (3)
14	City	30	30	13,200 (3)
6	Rural-Village	30	20	11,000 (3)
9	Rural-Village	25	-20	37,300 (4)
2	Rural-Village	30	30	9,700 (2)
10 ^b	Rural	-20	-20	14,500 (4)
16	Rural-Village	30	25	10,100 (2)
4	City	30	25	13,900 (3)
11	City	25	25	11,000 (3)
12	City	30	30	13,900 (3)
3	Rural	30	25	12,200 (3)
5	Rural-Village	30	25	7,000 (1)
8	City	30	25	15,100 (4)

^aSchools are ranked by level of achievement. Financial data has been rounded off to protect the identity of the participating schools.

^bThe only school without North Central or University of Michigan certificates of recognition.

^CMedian achievement.

^dNumerals in parentheses indicate the quartile of the Michigan population within which the school ranks on this factor.

APPENDIX K -- Continued

Size	1	Expenditure per Pupil ^a	e Millage	ed	School Mean Achievement
1400	(3)	350 (3)	\$12.00	(3)	8.6
1600	(3)	335 (3)	17.00	(4)	8.3
200	(1)	505 (4)	18.50	(4)	8.1
1950	(3)	420 (4)	18.00	(4)	8.1
2700	(4)	340 (3)	12.50	(3)	8.1
500	(1)	285 (1)	8.00	(1)	8.0
350	(1)	535 (4)	17.50	(4)	7.7
1400	(3)	285 (1)	9.50	(2)	7.6 ^c
100	(1)	475 (4)	23.00	(4)	7.6 [°]
800	(2)	350 (3)	12.00	(3)	7.6 ^c
1900	(3)	320 (3)	14.00	(4)	7.4
2500	(3)	335 (3)	12.00	(3)	7.4
3000	(4)	290 (1)	8.00	(1)	7.4
1000	(2)	275 (1)	8.00	(1)	7.2
500	(1)	285 (1)	11.50	(3)	7.2
1000	(2)	370 (4)	13.00	(3)	6.9

Characteristics of Participating Schools^a

^aSchools are ranked by level of achievement. Financial data has been rounded off to protect the identity of the participating schools.

^bThe only school without North Central or University of Michigan certificates of recognition.

^CMedian achievement.

^dNumerals in parentheses indicate the quartile of the Michigan population within which the school ranks on this factor.

