To the Graduate Council:

I am submitting herewith a dissertation written by John Killeffer, Jr. entitled "Effective Schools Correlates and Achievement Gain: A Relational Study." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Administration and Supervision.

Gerald C. Ubben, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Provost
and Dean of the Graduate School

EFFECTIVE SCHOOLS CORRELATES AND ACHIEVEMENT GAIN: A RELATIONAL STUDY

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

John Killeffer, Jr.

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DEDICATION

This dissertation is dedicated to my wife, Anita, and sons, Bill, David and Richard, who through sacrifice, love and understanding support made it possible.

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And thanks be to Jesus Christ, the friend who sustains one and sticketh closer than a brother.

ABSTRACT

This study was conducted to investigate the relationship between school effectiveness correlates identified in prior research and achievement gain in grades 4-6 in the schools of a medium sized southeastern city. These schools provided a reasonably representative sample and the achievement test records had student and school identification numbers making it possible to gather longitudinal achievement data.

The school sample was composed of all 23 schools in the system which included grades 4, 5 and 6. The Least Squares Means (LSMEANS) method under the General Linear Model Procedure (PROC GLM) of the Statistical Analysis System (SAS) was used to compute a gain estimate in total reading, total math, and total language for each school based on performance of approximately 1,000 students each in the 1985 and 1986 sixth-grade classes on the California and Stanford Achievement Tests which had been administered under the state testing program. All students for whom third, fourth, fifth and sixth grade test records were available were included in gain computation for a school if records indicated attendance in that school during fourth, fifth and sixth grades.

The Connecticut School Effective Questionnaire (CSEQ) was completed by 335 full-time faculty members of the schools and a school mean for each of the seven correlates was computed. These school means were used as independent variables in regression analysis

with school mean gain estimates as the dependent variable. Each subject (reading, arithmetic and language) was analyzed separately. None of the independent variables could meet the significance requirement for entry into the regression equation under the Statistical Program for the Social Sciences (SPSSX).

The seven correlates measured by the CSEQ were not related to school effectiveness (achievement) gain in this study.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Statement of the Problem	4
	The Purpose of the Study	4
	The Importance of the Study	5
	Assumptions	9
	Limitations and Delimitations	10
	Definitions	10
	Organization of the Study	12
II.	REVIEW OF RELATED LITERATURE	13
	Introduction	13
	Review of Effective Schools Literature	17
	Effective Schools Questionnaires	31
	Criticism of Extant Research	41
	Summary	46
III.	BACKGROUND INFORMATION AND INSTRUMENTATION	48
	Introduction	48
	Population	48
	Instrumentation	49
	Data Collection Procedures	58
	Data Analysis Methods	59
	Summary	60
IV.	FINDINGS AND DATA ANALYSIS	62
	Introduction	62
	School Average CSEQ Scores	63
	School Mean Gain Scores	66
	Summary	72
V.	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	73
	Introduction	73
	Summary of the Study	73
	Summary of Significant Findings	74
	Conclusions	75
	Recommendations for Further Research	76
BIBLIOGRAPHY		78
APPENDIX		88
VITA		95

LIST OF TABLES

TABLE		PAGE
I.	Achievement Test Scores Used in Gain Computation.	49
II.	Reliability of the CSEQ	54
III.	Multitrait-Multimethod Analyses: Seven School Effectiveness Variables Measured with the Connecticut School Effectiveness Questionnaire and the Connecticut School of Effectiveness Interview	55
IV.	Means on School Effectiveness Correlates.	64
V.	Number of Respondents and Percentage of Missing Responses	65
VI.	Mean Gain Scores by School.	67
VII.	School Rankings Across Subjects	68
VIII.	Gain Correlation.	69
IX.	Pearson Correlation	69
X.	Spearman Correlation.	71

CHAPTER I

INTRODUCTION

Education will play an increasingly vital role in the preparation of our country for the future as we approach the beginning of the 21st century. It is through education that the culture is passed to the new generation and a country's human capital is developed. The United States can ill afford to short-change its own future by failing to provide an education system which adequately prepares its youth for the challenging future which will evolve as the world community moves into the Information Age. Levine and Doyle (1986, p. 18) drew from the past to illustrate how education positively impacts society:

> . . . our economic system can be no better than the people that are its constituent parts. Human capital is not an empty term; it is the acquired skills and abilities of people that make the wheels of post-industrial society turn. Societies richly endowed with human capital enjoy unparalleled opportunity. The dramatic rebuilding of West Germany and Japan after their defeat in World War II is a vivid testament to the role of human capital in a free society. (Levine and Doyle, 1986, p. 18).

Drucker (1989, p. 18), the eminent American management theorist, said ". . . knowledge is rapidly becoming our true capital base and premier wealth-producing resource." A sound education system will be required to produce the "knowledge workers" this type of economy will need.

Periodically, American elementary and secondary education becomes the focal point of criticism which results in public demand

for improvement and numerous studies seeking ways to bring it about. Many educators remember how popular it was to criticize schools and prescribe remedies for their perceived shortcomings after the launching of Sputnik by the Soviet Union in 1957. Education seems to be in a similar position now that the American populace is becoming aware of growing global economic competition and its implications for the future of our country. Public criticism reached a crescendo with publication of reports such as A Nation at Risk.

Passow (1986) reviewed more than one dozen reports from groups investigating the state of United States education published between 1982 and 1984. The common thread he found was that our educational system must be improved or the country will become vulnerable to economic and military competition from other nations. This review showed that every state had commissions or task forces which focused on improving education by such means as increasing high school graduation requirements, mandating a core curriculum for all, increasing the length of the school day or year, improving textbooks and instructional materials, reforming teacher preparation programs, and implementing career ladder plans for teachers. Passow (1986, p. 215) found that the reports "do not address the what and how questions of curriculum and instruction." He said meaningful improvement will require investigation into factors which contribute to learning and teaching rather than simply mandating new requirements. The social system of the school with its intricate individual and group interactions of human beings exercises powerful influence on

learning and teaching. An understanding of this complex climate and environment is, according to Passow, essential if we are to make our schools more effective.

In recent years, a body of literature known as "effective schools" research has developed from studies which examined the internal social processes of individual schools and the relationships among the people involved in them. These studies have generally looked at urban schools with higher than predicted average achievement in an effort to discover how they differ from similar but lower achieving schools. This research, which focuses on the school experience of students and staff rather than more easily quantifiable variables, suggests that student achievement is strongly influenced by the social processes in schools (Purkey and Smith, 1985). Relatively few schools have been studied but nevertheless the results are encouraging because they strongly suggest that it is possible to improve student achievement at the school level by incorporating social processes and building a school culture in each school which fosters achievement and other desirable outcomes of schooling.

The effective schools literature is flawed in several respects. Purkey and Smith (1982) noted that studies have generally been based on small, restricted samples of urban elementary schools. Most studies have not included "average" schools and little research has attempted to evaluate school effectiveness over more than one school year. Stephenson and Levine (1987) reported that few schools had achievement scores above expectancy for two or more consecutive years.

Frechtling (1982) found little consistency when schools were ranked on achievement by different methods and over time when ranked by the same method. Rosenholtz (1985) observed that most studies do not control for student socioeconomic status. The result of the problems with the research, according to Rowan, Bossert and Dwyer (1983), is an uncertainty as to how applicable the characteristics identified by past research are to all schools. Fullan (1985) stated that additional research is needed in order to understand how school characteristics influence school effectiveness in a variety of contexts.

I. STATEMENT OF THE PROBLEM

Prior research has identified a number of characteristics of effective schools; however, most of these studies have not used: (1) samples which were representative or of adequate size (Ralph and Fennessey, 1983; Rowan et al., 1983; Fullan, 1985), (2) longitudinal data (Rowan et al., 1983, Hawley and Rosenholtz, 1984), control of student turnover (Good and Brophy, 1985; Vincenzi and Ayrer, 1985), or multi-variate analysis (Rowan et al., 1983; Hawley and Rosenholtz, 1985; Fullan, 1985); therefore, the present study incorporated these factors.

II. THE PURPOSE OF THE STUDY

This study was conducted to investigate the relationship between school effectiveness characteristics as perceived by staff members and achievement gain of students in the elementary schools

schools of a medium sized southern city. The goal was to determine which, if any, of seven school effectiveness characteristics are associated with achievement gain and the strength of these relationships. The characteristics are: safe, orderly environment; clear school mission; instructional leadership; high expectations; opportunity to learn and student time on task; frequent monitoring of student progress; and home/school relations.

The study focused on answering the following questions:

1. How strongly do teachers perceive the seven effective schools characteristics in their schools?
2. How do schools rank based on the mean gain scores earned by the students who attend them?
3. Is the strength with which the effective schools characteristics are perceived predictive of achievement gain in the total reading, total math and total language areas as measured by group achievement tests?

III. THE IMPORTANCE OF THE STUDY

Student achievement in American schools needs to be improved. John Naisbitt (1982), in his best-seller Megatrends, said today's students are the first group of Americans whose skills do not exceed those of their parents. The National Commission on Excellence in Education (1983, p. 5) in its report A Nation at Risk rocked our society with its assertion that the future of our country is in jeopardy because of ". . . a rising tide of mediocrity . . ." in our

educational system which would have been seen as ". . . an act of war . . ." had it been imposed on us by an adversary.

Walberg (1986) illustrated the severity of the problem clearly when he related that the top 5% of American high school seniors scored lower than 13 comparable groups from Japan, Europe, Scandinavia, Canada, and New Zealand on a test of algebra and calculus administered by the International Association for Evaluation of Educational Achievement. American eighth-graders placed twelfth out of 14 groups on a mathematics test in the same study. Walberg also noted that 24% of our students do not graduate while the dropout rate in Japan is only 5%.

Additionally, Elizabeth Ehrlich, in the September 19, 1988 issue of Business Week, pointed out that approximately 25% of the 2.4 million students graduating from our high schools each year are functionally illiterate (unable to read at eighth-grade level). Hare (1988, p. 413) expressed concern that unless we can adequately meet the instructional needs of our increasingly poor, immigrant, and minority pupil population, a permanent subclass will develop which may ". . . undermine American society economically, socially, politically, and militarily."

Clearly research needs to ferret out ways to make our schools more effective. Prior effective schools research suggests that achievement is fostered by certain changeable internal characteristics of schools. If achievement is related to these characteristics and they can be changed, student achievement can be improved

by positive, deliberate effort to develop or strengthen these characteristics in schools.

Many studies of schools have used samples which were selected by nomination rather than on any objective data; Ralph and Fennessey (1983) advised maintaining a healthy skepticism because administrative "self-puffery" can influence a nomination selection process and much of this literature is based on case studies rather than more rigorous methodology. Sirotnik (1985, p. 136) said studies which contrast high and low achieving schools confirm ". . . the best that conventional wisdom about schooling has to offer."

Several critics (Madaus, Kellaghan, Rakow, and King, 1979; Mackenzie, 1983; Rowan, Bossert, and Dwyer, 1983) have suggested use of multi-variate analysis to determine the relative influence of characteristics. Adequate controls for student turn-over and socio-economic status have also been suggested (Ralph and Fennessey, 1983; Fullan, 1985; Stedman, 1987). D'Amico (1982, p. 61) argued that studies not only identify a different number of characteristics, but writers prioritize similar characteristics differently. More significantly, he suggested there is ". . . quite a bit of interpretation . . ." in the process of deriving conclusions from the results of many studies. Cuban (1983) noted that researchers have not uniformly defined characteristics such as "leadership" or "climate."

More recently Stedman (1987) asserted that many schools identified as effective in these studies actually had below average achievement. Stephenson and Levine (1987), in evaluating some of their

earlier research, found coaching on tests and inaccurate measures of socioeconomic status (SES) had caused several schools to be inappropriately identified as achieving above expectancy. They also found that score differences between high and low achieving schools were typically small making the results of studies sensitive to data errors. The reliability of school rankings based on average achievement scores for one year has also been questioned (Frechtling, 1982; Stephenson and Levine, 1987).

The shortcomings of many earlier studies suggested a need for a study which addresses some of these concerns yet maintains conceptual linkage with previous research for comparative purposes. The study was designed to address that need.

Norm-referenced achievement tests and elementary schools were used since most earlier studients have used them. Achievement gain was used as a measure of effectiveness rather than the school average achievement scores normally used. The gain scores were based on data from three school years rather than the typical average achievement for one year. Use of gain as a measure of effectiveness tends to eliminate socioeconomic bias (McLean and Sanders, 1983) and using data from three school years rather than one should result in a more accurate ranking of schools on achievement. Additionally, only students for whom the required four sets of scores were available are included in gain computation so gain scores would not be adversely affected by student turnover.

Further, in order to obtain a more representative sample, all 23 schools in the school district which contain the upper elementary grades were used in contrast to the typically small samples of high and low achieving inner-city schools used in many previous studies. The sample included schools with a variety of achievement levels, racial groups and socioeconomic levels.

Departures from the methodology of earlier studies include use of: (1) longitudinal gain rather than yearly average achievement as a measure of effectiveness, (2) control of student turnover, (3) a survey of perceptions of all full-time certificated staff, (4) a school sample which has a variety of achievement, socioeconomic and racial groups, (5) a "blind" approach with ranking of schools on achievement unknown prior to administration of the surveys, and (6) multi-variate analysis to determine the relative importance of the variables in predicting achievement gain.

IV. ASSUMPTIONS

The following assumptions were made in this study: (1) Achievement gain of students is a school effect. (2) Standardized achievement tests are an adequate measure of school achievement. (3) The achievement tests utilized were selected by the State Department of Education for the purpose of evaluating student progress because they are adequately linked with the curriculum used in the state's schools. (4) The Connecticut School Effectiveness Questionnaire is a reliable and valid measure of the school effectiveness characteristics it was designed to measure.

V. LIMITATIONS AND DELIMITATIONS

This study was limited to the 23 elementary schools operated by the school district which include grades 4-6. Characteristics included were limited to the seven measured by the Connecticut School Effectiveness Questionnaire (CSEQ) (Villanova, Gauthier, Proctor and Shoemaker, 1982) and assessment of achievement was limited to the total reading, total math, and total language areas as measured by the state mandated Stanford and California Achievement Tests which were used. Additionally, the study focused on school-wide characteristics of schools rather than individual teachers, students or classrooms. Further, the study included only the test data from students completing the sixth grade in the years 1985 and 1986.

VI. DEFINITIONS

School culture. This consists of the values, beliefs, symbols, and shared meanings of parents, students, teachers, and others who make up the school family. School culture determines what is of worth in and to this group and how its members should think, feel, and behave. Culture includes customs, traditions, norms, common meanings, and shared assumptions. Culture may be strong or weak and support (functional) or obstruct (dysfunctional) progress toward the school's goals.

Effective school. Schooling has many desirable outcomes, but for the purpose of this study, effectiveness is determined by the

average achievement gain of the students in the school. The higher the gain, the more effective the school.

Standardized Achievement Tests. Tests such as the California and Stanford Achievement Tests are devised to measure student achievement in several academic areas. They include content which will be common to many school systems nationwide. A sample of children representative of the nation's students is used to standardize instruments of this type.

Analysis of variance--least square option. This statistical method was used to compute estimates of school mean gain scores which are free of the partial confounding effect of unequal cells in the ANOVA.

Percentage of students on free or reduced price lunch. The simple percentage of students receiving free or reduced price lunches was used as an indicator of the socioeconomic status of each school's student body. This is not a precise measure because it says nothing about the remainder of the students, but is the only measure readily available in this system. This percentage ranges from 9% to 100% in the target schools and the mean for elementary schools in the system is 51%. A uniform formula is applied to all students who apply for this benefit. Family income must be in the poverty range on federal guidelines when income and family size are considered in order to qualify.

VII. ORGANIZATION OF THE STUDY

The study consisted of five chapters. Chapter I contains the introduction, statement of the problem, the purpose of the study, the importance of the study, assumptions, limitations and delimitations, definitions, and organization of the study. The review of related literature is included in Chapter II. Chapter III contains the discussion of data collection and analysis, and Chapter IV reports the results. The conclusion, Chapter V, discusses the results, presents a summary and conclusions, and makes recommendations for further research.

CHAPTER II

REVIEW OF RELATED LITERATURE

I. INTRODUCTION

The study focused on determining the degree of relationship between staff perceptions of seven effective schools variables and student achievement gain in elementary schools. This chapter consists of: (1) an introduction, (2) a review of effective schools literature and the support in it of the seven characteristics measured by the CSEQ, (3) a review of effective schools questionnaires, (4) a discussion of the criticism of extant research, and (5) a summary.

A "legacy of doubt" about the ability of schools, regardless of their characteristics, to affect student learning resulted from the conclusions of several large studies which were completed in the late 1960s and early 1970s. Chief among these were the Equality of Educational Opportunity Survey, commonly known as the Coleman Report, and a similar English study, the Plowden Report. Both studies suggested that socioeconomic status (SES) and family background have substantially more impact on student achievement than school characteristics. Soon afterward, Arthur Jensen (1969) indicated that heredity is the most important determinant of achievement. The findings of these studies collectively indicated schools have little effect on student achievement (Schmuck, 1984).

Good and Brophy (1985) indicated that studies immediately following the Coleman Report and Plowden Report frequently sought to find a relationship between student achievement and school inputs such as expenditures, pupil-teacher ratio or physical facilities. The results did not consistently suggest a relationship between achievement and school resources. Research during this period generally did not investigate what transpires in school and how achievement may relate to it (Good and Brophy, 1985).

Reanalysis of data from the Coleman and Plowden studies and a number of others by Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns and Michelson (1972) resulted in the conclusion that schools do contribute to student educational attainment but the critical determinants are family, social background and cognitive skills. These authors also asserted ". . . that it is very difficult to identify specific characteristics of schools that influence student achievement" (p. 93). They did not look at values, attitudes, and the environment within the schools. Their research convinced them that this was wrong and that ". . . the internal life of the schools seems correspondingly more important" (Jencks et al., 1972, p. 13).

Educational research has, for many years, sought to determine how and to what extent student achievement is affected by schools. Waller (1965, originally printed in 1932) viewed schools as social organisms composed of an interacting network of personalities which are frequently ineffective because their social nature is poorly understood. Others (Weber, 1971; Brookover, Schweitzer, Schneider,

Beady, Flood and Wisenbaker, 1979; Edmonds, 1979; Rutter, Maughan, Mortimore, Ouston, and Smith, 1979; Coleman et al., 1982; Sergiovanni, 1984; Willower, 1984; Deal, 1985) have also suggested that there is a relationship between the social processes within the school and the achievement of its students. Sarason (1982) said many innovations which have been attempted in schools have failed because their promoters did not recognize that the culture of the school must be changed in order to change the behavior of the people in it. Fullan (1985) stated clearly that an understanding of the dynamic interaction between the people in the schools is essential in order to understand why one school is more effective than another.

Effective schools studies have frequently found indications that there is a relationship between achievement and culture or social processes in schools (Brookover et al., 1979; Rutter et al., 1979; Furtwengler, 1985; Hallinger and Murphy, 1986; Wimpelberg, 1986). The literature shows differences in school social environments do affect student achievement and these differences to a large degree are controllable by the staff (Rutter et al., 1979; Sergiovanni, 1984; Purkey and Smith, 1985; Mortimore and Sammons, 1987). Bloom (1980) argued that research should concentrate on these "alterable" variables in order to understand how they can be changed and how this affects teaching and learning in schools.

Much has been written in recent years regarding how the internal culture of an organization impacts its effectiveness. Schools have been the focus of some of this research.

What is school culture and how does it influence school and student performance? Thomas Sergiovanni (1984, p. 9) said "School culture includes values, symbols, beliefs, and shared meanings of parents, students, teachers, and others conceived of as a group or community." Culture determines what the group values and how the membership should behave and think. Strong, positive cultures are domesticated--deliberately nurtured and developed by their members. A strong culture guides its members in a common direction and its norms define what they should do and how, so it gives meaning and significance to all in the school. Building culture requires leadership to attend more closely to the informal, symbolic part of the school's milieu (Sergiovanni, 1984).

Effective schools have built a culture which gives meaning to the educational process and affects the productivity of learning and teaching (Deal, 1985). Willower (1984) said a school culture needs to have educational values which are appropriate to the population served so they will be widely shared. This will vary from setting to setting and should emphasize personal growth, effective instruction, and the value of educational and social goals. Culture, said Kilmann (1985, p. 67), is to the organization as personality is to a person, ". . . a hidden, yet unifying theme of meaning, direction and mobilization." Firestone and Wilson (1985) noted that comparatively little research has focused on the culture of schools. They suggested that further study of this area is needed in order to better understand the linkage between culture and school effects.

Charles Perrow (1965) said the influence of culture and social processes is more apparent and important in social organizations like schools than in industrial or business organizations. Weick (1982) and Deal (1985) concurred, stating that a strong, positive culture is more important to schools than to business organizations because schools have an intangible product, diversity of expectations and ambiguity of goals which tends to make common values and beliefs more critical to success. Schools also have difficulty prioritizing the multiple demands which are made on them making it difficult to develop a strong cultural belief about what they should accomplish (Firestone and Wilson, 1985).

A cause-effect relationship between school cultural characteristics and student achievement cannot be asserted at this time, but an association between these elements is strongly supported in the literature (Brookover et al., 1979; Madaus, Kellaghan, Rakow, and King, 1979; Rutter et al., 1979; Deal and Kennedy, 1983; Mackenzie, 1983; Edmonds, 1984; Firestone and Wilson, 1984; Sergiovanni, 1984; Fullan, 1985; Purkey and Smith, 1985; Furtwengler, 1985; Hallinger and Murphy, 1986; Wimpelberg, 1986). Good and Brophy (1985, p. 571) indicated "There is growing evidence . . . that social and instructional variables, rather than financial variables, account for important variations among schools."

II. REVIEW OF EFFECTIVE SCHOOLS LITERATURE

In one of the earlier studies linking internal characteristics of schools with achievement, Weber (1971) used four inner-city

elementary schools. His selection criteria required that each subject be a non-selective inner-city public school serving a low income population and having in its third grade a very low percentage of non-readers and average reading test scores above the 50th percentile of national norms. The schools were identified using a referral process in which 95 were nominated by various school personnel and publishers of school materials. Through screening, Weber determined that most nominees did not meet his criteria and some schools declined to participate, leaving only two New York City schools and one each in Missouri and California to include in the study. Weber visited each school and verified through his own tests that reading levels were high. After an on-site visit of several days to each school, he concluded from his observations that the schools had the following common characteristics: strong instructional leadership; high expectations for pupils; orderly, purposeful atmosphere; stress on reading using the phonetic approach and additional reading staff; instruction tailored to each child; and careful assessment of student progress. Achievement was not related to pupil-teacher ratio, availability of pre-school education, method of grouping, ethnic similarity of pupils and staff or age of the facility in this small sample. In summary, Weber selected some high achieving inner-city schools using achievement test scores, observed in them, interviewed staff, and identified characteristics common to them (and presumably not to lower achieving schools).

Weber's project was a multiple case study of similar schools. These schools were not directly compared to others of any type. The lack of comparison makes it less certain that achievement is closely linked with the observed characteristics. Weber is frequently mentioned in the literature, so his project did encourage others to research the relationship between achievement and the school milieu.

The late Ron Edmonds, another pioneer in school effects research, built on the findings of Weber and others. Edmonds (1979) believed it is essential that we provide effective schools for our children. He was especially concerned that we learn to obtain results with the children of the poor comparable to what we accomplish with middle class children. He firmly believed that all children are educable and that the internal process is critical to the effectiveness of the school.

Edmonds and his colleagues (1979) conducted several studies and utilized their results in the Search for Effective Schools Project. Their earliest study (Lezotte, Edmonds and Ratner, 1974) analyzed student performance in the 20 elementary schools in Detroit's Model Cities neighborhood. The student bodies of these schools were composed mainly of children from low income minority families. Test data from the 1973 system-wide administration of the Stanford Achievement Test (SAT) and the Iowa Test of Basic Skills (ITBS) were used to classify the schools as effective or ineffective based on standing relative to the city-wide mean on these tests. Schools which met or exceeded the grand mean were classed as effective and those which

fell below this criterion were designated ineffective. Using this method, eight schools were effective in teaching reading, nine were effective in math, and five were effective in both.

Two schools, one effective (A), and one ineffective (B), had virtually identical standing on percentage of low income students, percentage of minority enrollment and staff, daily attendance rate, pupil mobility, eligibility for compensatory programs, class size, average teacher tenure, and several other measures. This pair of schools, matched on the basis of student economic and social characteristics, was used to infer the contribution of school to student performance. School A students averaged about four months above the district mean in reading and math, while school B students as a group were three months below the mean in reading and 1.5 months below the mean in math.

The researchers recognized that firm conclusions could not be made because of the small number of schools, but they felt the study did provide evidence that ". . . in and of itself, pupil family background neither causes nor precludes elementary school instructional effectiveness" (p. 6). The study used achievement data from one school year to classify schools as effective (above average) or ineffective (below average). Effectiveness (average achievement) was the dependent variable and student social characteristics were the independent variables. A pair of schools (one effective and one ineffective) virtually identical on social background measures was found in the sample. This was considered evidence that achievement can be independent of family background.

The results and limitations of the 1974 Model Cities study spurred them into additional research. Their next step was a re-analysis of the 1966 Equal Educational Opportunity Survey (EEOS) data (Fredriksen, 1975). Again, the focus was to identify schools which were effective teaching low income children but with the additional purpose of studying how schools affect children from differing backgrounds. They also wished to critically evaluate earlier findings that student achievement is largely a function of family and background rather than the school the child attends.

In this study, students were divided into eight groups based on race and home characteristics as determined by responses to items in a questionnaire used in the original EEOS project. Mean achievement scores for each subgroup were the measure of effectiveness. By correlating subgroup means it could be determined if effectiveness extended to all groups regardless of background. Subgroups were also looked at separately to see how peers affected achievement. Patterns of teacher and principal responses to a questionnaire were used to develop a description which characterized the more or less effective schools.

Data for the reanalysis came from a file used in earlier studies; it contained data on 812 northern schools including scores earned by their sixth-graders on a verbal achievement test developed by Educational Testing Service and those children's responses to the EEOS student questionnaire which included a nine item home index scale to classify children by home background. Students were

classified into eight groups by race and four levels of SES based on the index of home characteristics. Schools were ranked on mean achievement of each of the eight groups of students. A school was classified as effective for a group if that group's mean score was above the 75th percentile of all students in that category and similarly, group standing below the 25th percentile of a category classified the school as ineffective for that type of student.

The study found large differences in mean performance between black and white children and middle class and poor children. Differences between socioeconomic groups were larger than those between racial groups. The results were considered evidence that schools can be differentially effective for various subgroups of children, especially groups that differ on SES.

Regression analysis was used to estimate the degree of relationship between social class characteristics and achievement in this study. The resulting regression weights tended to be unstable and were not discussed further in the article. Discriminant analysis was performed for each of the eight subgroups and correctly classified schools into effective or ineffective categories over 80% of the time for each type of student. The authors concluded that effective and ineffective schools differ and that school characteristics can be used to predict effectiveness with reasonable accuracy. In this study the instructionally effective schools could not be differentiated from the lower achieving schools using variables such as parental education and job status, percentage of white students, and

other social background differences. This was in direct contradiction to other studies using the EEOS data which had suggested a strong association between student performance and social background.

Edmonds (1979, p. 21) felt persistence of the belief that family background is the primary determinant of the level of student achievement ". . . has the effect of absolving educators of their professional responsibility to be instructionally effective." Edmonds believed that we know how to successfully teach all children; the fact that we do not is because we do not choose to do so.

The reanalysis classified schools as effective or ineffective based on scores on a single test of verbal aptitude. Children were classified into eight groups based on race and home background. A mean achievement score for each of the eight subgroups was computed for each school. The relationship between school social class variables, teacher variables, school characteristics (independent variables) and achievement (the dependent variable) was investigated using discriminant analysis. The discriminant analysis classified schools correctly 80% of the time regardless of racial or social group.

Edmonds (1979) identified the following as the essential characteristics of effective schools: (1) there is strong administrative leadership; (2) the level of expectation does not allow a child to fall below a minimum but effective level of achievement; (3) there is a quiet, orderly atmosphere which is conducive to teaching and learning without being rigid or oppressive; (4) the preeminent

activity is acquisition of basic skills by students; (5) pupil progress is frequently checked using teacher-made tests, system-wide criterion referenced tests, or other means by which the faculty can evaluate pupil progress in relation to objectives; and (6) resources can be reallocated from other pursuits to instruction if necessary. The last characteristic, resource reallocation, was not included in all of Edmonds' writing. The other five correlates became the ones most prominently mentioned in the literature to date. Edmonds, in an interview with Brandt (1982) described the method through which these characteristics were identified as a "discovery" made by studying how schools with the desired outcomes differed from their ineffective counterparts.

Edmonds' five correlates form the nucleus of the characteristics in the United States Department of Education's 1986 publication What Works. More recently, Steller (1988) listed these five factors as those which ". . . seem to be consistent across studies."

The characteristics identified by Weber and Edmonds are similar. Both mention instructional leadership, high expectations for pupils, orderly environment, close monitoring of pupil progress, and emphasis on basic skills.

Brookover and his associates (1979) indicated that research has frequently investigated the relationship between achievement and variables such as family background and socioeconomic status of students, or physical and financial characteristics of schools, while few studies have concentrated on the social system which makes up a school.

Brookover's (1979) study of 91 randomly selected Michigan elementary schools examined the influence of cultural differences between schools (such as expectations, norms, and roles) on educational outcomes. The sample included 68 schools of which 61 were predominately white, 7 majority black and 23 additional schools chosen from the remaining predominately black schools in the state.

The independent variables included two composition variables, mean socioeconomic status and percentage of white students, in addition to the 14 climate variables which related to the school's academic norms, expectations, and beliefs. The dependent variable was the proportion of fourth-grade students passing the objectives on the criterion referenced math and reading tests administered each year by the Michigan Department of Education. Questionnaires measuring the climate variables were administered to each principal, teacher and student in the target schools. Regression analyses were performed separately for the composition and climate variables so the specific contribution of each to accuracy of prediction of achievement could be determined. It was known that multicollinearity of the independent variables would have otherwise prevented clear determination of the impact of each.

Differences between the white, black, and state samples were found on climate variables. The climate variables explained 44% of the achievement variance in white schools, but over 72% in the black and state samples. Approximately 10% of the variance in mean achievement was explained by composition variables when climate variables

were entered in the regression first. Socioeconomic status added only 5% when entered after climate variables. Student sense of academic futility was the most powerful individual predictor of achievement of the climate variables; its impact was greater in black schools than others, however.

This study found that cultural and climate variables explained over 72% of the variance in the mean achievement scores between schools in the total sample. Addition of mean school socioeconomic status and percentage of white students (composition variables) added minimally to the explanation of variance. Brookover's group concluded that schools do impact student learning and that differences in student achievement are, to a significant degree, due to differences in the social system between schools.

This study used mean scores of fourth-graders on a criterion referenced test of reading and math skills as its dependent variable. The school characteristics which were used as independent variables had been identified in an earlier study (Brookover, Gigliotti, Henderson, and Schneider, 1973) as normative characteristics which differentiated between high and low achieving schools. One purpose of the 1979 study was to validate the findings of the 1973 study using a set of randomly selected schools stratified by social composition. Social variables explained much of the variance in achievement between schools in both studies (Brookover et al., 1979).

A recent four-year study of elementary schools in England (Mortimore and Sammons, 1987), while differing in methodology from

many American studies, identified many factors controllable by the faculty which differentiate effective from less effective schools. The sample in this study included 50 of the 636 elementary schools in the central area of London. The study focused on determining if some schools are more effective in teaching children than others when differences in background of the children are considered. Additionally, the researchers wanted to see if some schools are more effective with subgroups such as males or females or students from various economic or racial backgrounds. A final goal of the study was to identify school characteristics which seem to contribute to the differential effectiveness of schools.

Detailed information about the students was compiled including: family background; kindergarten experience; learning and development in reading, math, speaking, and writing; attendance; behavior; self-concept and attitude toward school. Also assembled was information about the characteristics and organization of the schools, and the environment in them as perceived by students. A baseline was developed for each child from which to measure progress during the four years of the study.

The study found that after controlling for entry differences, school made major contributions to student development. In cognitive areas such as reading, math and writing, the school accounted for six to ten times as much of the variance between children as background. Sizable differences were found between the highest and lowest schools. The highest school increased a child's reading by about 15 points

beyond expectancy based on the student's level at entry, while students in the least effective school were 10 points below expectancy. Fourteen of the 50 schools tended to positively affect cognitive and non-cognitive outcomes of all types of students, and five schools were generally ineffective with all.

In general, schools which positively affected attainment of one category of students were effective with all; likewise, schools which were ineffective with one type tended to be ineffective with all. The major differences in the schools were found to be internal policies and processes which are subject to control of the staff, so modification and improvement are possible. It was also determined that a classroom is affected by what transpires in the school as a whole.

Effective schools were found to have purposeful leadership from a principal who was actively involved in the school, understood its needs, and promoted close monitoring of student progress. Assistant principals who participated in policy decisions were also linked with effectiveness, as were teachers who were involved in curriculum planning, allocation of resources, and policy decisions. The degree of consistency (close or loose) with which teachers in a school followed policies and guidelines and the frequency with which a teacher communicated with individual pupils or the entire class also seemed to positively affect pupil progress.

A structured, work centered classroom situation with stimulating and challenging teaching of subject matter involving higher order

questioning and encouraging students to use imagination and problem solving skills was typically found in the more effective schools. Limiting the focus of a class to one curriculum area at a time, close monitoring of student progress, parent involvement, and a positive climate which emphasized praise and reward rather than punishment also typified effective schools.

Mortimore and Sammons' study is unusual in that achievement data from four school years were used and the sample was randomly selected from a large group of schools, albeit an inner-city group. The researchers collected information regarding characteristics of individual schools and their student population and then investigated how achievement related to the school and student characteristics. Achievement gain was the dependent variable and the various school and pupil characteristics were the independent variables in this longitudinal study which used a relatively representative group of schools.

Another effective schools study (Kijai, 1987) focused on 30 elementary and middle schools in South Carolina. Two sets of schools were used, 15 which had received South Carolina's School Incentive Award for two consecutive years (the effective group) and 15 schools selected from the group of schools which had never been nominated for the award. Kijai's goal was to determine how well effective schools correlates identified in prior research could discriminate between schools which had been categorized as effective and similar schools not rated effective.

The Connecticut School Effectiveness Questionnaire (CSEQ) (Villanova et al., 1982) was completed by 751 teachers in these schools. The CSEQ was developed to measure seven effective schools correlates: (1) safe, orderly environment; (2) clear mission; (3) instructional leadership; (4) high expectations; (5) opportunity to learn; (6) frequent monitoring of student progress; and (7) home/school relations. In this study, factor analysis derived only five important dimensions which Kijai named as follows: positive school climate; school mission; instructional leadership; mastery accountability; and home/school relations/high expectations. Effective schools differed from their less effective counterparts on four of the five factors. The two groups of schools did not differ significantly on home/school relations/high expectations.

Kijai concluded that effective and ineffective schools differ in regard to school climate, school mission, instructional leadership, and accountability for student mastery of material. Instructional leadership was the sole significant discriminator. Contrasting groups were used rather than a representative cross-section of schools. The dependent variable was effectiveness (based on achievement gain for two years) and the independent variables were the seven correlates measured by the CSEQ.

Purkey and Smith (1985) reviewed effective schools literature and concluded that school differences affect the achievement of pupils and that the important differences are under the school faculty's control. These important differences relate to the actions

and feelings of the people involved rather than to salaries, age of the building, or the number of items in the library. The culture of the school and its norms, roles and values have strong impact on student achievement by creating a climate which facilitates learning, according to Purkey and Smith.

Another reviewer, Fullan (1985) concurred that the effective schools literature contains "consistent, powerful messages" about factors related to the productivity of schools, but little in the way of specifics concerning how or why an effective school developed these characteristics. The complexity of the effective school limits our understanding of it, particularly how to create one in a different setting. Additional research is needed in order to understand how the characteristics influence school effectiveness in various contexts (Fullan, 1985).

III. EFFECTIVE SCHOOLS QUESTIONNAIRES

As the effective schools literature has grown researchers have developed a number of data collection instruments to assess school effectiveness, school climate, or other characteristics of schools. Typically, these instruments have persons involved in a school respond to multiple choice survey items which can be scored to categorize the school in relation to others. Five such instruments were examined for possible use in this study. A paragraph describing each instrument follows. These descriptions are based on the material in the manuals furnished with the instruments.

The Profile of a School (POS) (Likert and Likert, 1978) was designed to profile the human behavior in a school or schools at elementary or secondary level. It includes ten questionaires which were developed to obtain input from students, parents, board members, and various members of the professional and support staffs. POS is a diagnostic program which is used to plan and develop improvement programs to increase school performance. The research base of POS in schools dates to 1968; related research in business organizations by the principal author, Rensis Likert, began in 1947. An extensive revision and updating of POS was in progress at the time this study was initiated.

Furtwengler's (1983) Climate Effectiveness Inventory (CEI) is a teacher questionnaire which was designed for use in schools at elementary or secondary level to help improve those which perform poorly or to help maintain the performance of effective schools. CEI assesses school climate by measuring the discrepancy between the expectations and perceptions of teachers relative to what is done in the school and the manner in which it is done. The school climate is considered positive if the discrepancy is small and negative if it is large. The results may suggest topics for in-service programs to improve the school climate or the need for additional investigation to more clearly identify problem areas. Seven profiles are generated: (1) The School's Philosophy, (2) The Maturity of Behavior, (3) The Response to Misdeeds, (4) The Response to Good Deeds, (5) The Source of School Problems, (6) The Responsibility for Improvement and (7) The Openness to Problem Solving.

The Effective School Battery (ESB) (Gottfredson, 1984) was developed to monitor and describe school climate in secondary schools in order to maintain or improve school performance. ESB surveys both students and teachers in order to obtain feedback to help pinpoint strengths and weaknesses and encourage creation of a healthier school climate.

The School Assessment Survey (SAS) (Firestone and Wilson, 1985) can be used in schools at elementary or secondary level for measuring nine organizational dimensions: (1) Goal Consensus, (2) Facilitative Leadership, (3) Centralization of Influence--Classroom Instruction, (4) Centralization of influence--Curriculum and Resources, (5) Vertical Communications, (6) Horizontal Communications, (7) Staff Conflict, (8) Student Discipline and (9) Teaching Behavior. SAS can be used in needs assessment or to facilitate school improvement activities.

The Connecticut School Effectiveness Questionnaire (CSEQ) (Villanova, Gauthier, Proctor and Shoemaker, 1982) was devised by the Connecticut Department of Education to help schools which were involved in its School Effectiveness Project perform a self-study and formulate and implement strategies for improvement. It was intended for elementary or secondary schools and uses a 100-item teacher questionnaire to determine the degree to which these seven effective schools correlates are perceived by the staff in a school: (1) Safe and Orderly Environment, (2) Clear School Mission, (3) Instructional Leadership, (4) High Expectations, (5) Opportunity to Learn and

Student Time on Task, (6) Frequent Monitoring of Student Progress and (7) Home/School Relations.

The authors suggest having the entire instructional staff of the school complete the questionnaire. The seven characteristics measured by the CSEQ are among those most frequently mentioned in the literature as correlates of school effectiveness. The CSEQ was selected for use in this study because it was constructed and validated specifically for the purpose of measuring seven school characteristics frequently cited in the literature as correlates of high student achievement in elementary schools. There is a more complete description of the CSEQ in Chapter III.

Voluminous literature was reviewed by the authors of the Connecticut School Effectiveness Questionnaire (CSEQ) to determine the characteristics of effective schools to include on the CSEQ. Villanova (1986, p. 35) considered the seven characteristics to be ". . . neither independent nor mutually exclusive." He further characterized them ". . . as a gestalt phenomenon existing as part of the organizational framework" (p. 34). Clearly there is considerable evidence in the literature supporting the characteristics which were included on the CSEQ. The following paragraphs summarize some of that support.

Safe, Orderly Environment

There may be differences in the terminology used in different studies, but a school environment which is orderly and conducive to

teaching and learning is frequently cited in effective schools studies. Weber (1971), for example, identified a quiet, orderly and purposeful "climate" as one of the factors common to the successful schools he studied. Similarly, Edmonds (1979, p. 22) cited an orderly, quiet "atmosphere" which is conducive to teaching and learning but neither rigid nor oppressive as an ". . . indispensible characteristic of effective schools." Reviews of effective schools studies invariably include reference to the school environment. Wynne (1981) said the effective school has a coherent, vital environment in which everyone understands what is expected. Mackenzie (1983) included positive climate and overall atmosphere in his elements of effective schools. Murphy and his colleagues (1985), based on their own studies and a literature review, identified a safe, orderly environment as one attribute of effective schools. Structure and order were qualities of the effective schools studied by Furtwengler (1985), Purkey and Smith (1985), in one of the more frequently cited reviews, indicated that a building climate which is conducive to academic pursuits is an important contributor to the effectiveness of a school. Orderly, secure climate was also cited by Fullan (1985) in his review. More recently, Mortimore and Sammons (1987) and Andrews (Brandt, 1987) identified positive learning climate as an attribute of the effective schools in their studies. In short, the literature clearly indicates that the effectiveness of a school is related to its internal climate or environment.

Clear School Mission

Vaill (1982, p. 26) said high performing organizations ". . . know why they exist and what they are trying to do." Having a clear mission, goal, or emphasis on instruction is frequently identified as a characteristic of effective schools. Weber (1971) found a strong emphasis on teaching reading in the schools he studied. The pre-eminent purpose Edmonds (1979) identified in effective schools was an emphasis on acquisition of basic skills by students. Others (Wynne, 1981; Mackenzie, 1983; Clark, Lotto and Astuto, 1984; Fullan, 1985; Furtwengler, 1985; Murphy, Weil, Hallinger and Mitman, 1985; Purkey and Smith, 1985) have mentioned goal focus, emphasis on achievement or similar ideas as characteristic of successful schools. Goal clarity was identified as a characteristic of the "high profile" (effective) schools studied by Andrews (Brandt, 1987). Additionally, the study of high schools commonly called "Coleman II" (Coleman, Hoffer and Kilgore, 1982) identified academic emphasis and commitment as important correlates of higher achievement at this level.

Instructional Leadership

Vaill (1982, p. 26) noted that leadership in high performing organizations is ". . . strong and clear." Leaders in these organizations, he says, do not vacillate; they are ". . . reliable and predictable." Another characteristic which is virtually universally mentioned in effective schools studies and reviews of such studies is the role of leadership, especially over the instructional program.

Weber (1971) observed that strong leadership was a factor common to the schools he studied. Edmonds (1979) emphatically asserted that strong administrative leadership must exist in order to bring the elements of a good school together and maintain them. Wynne (1981), Purkey and Smith (1982), Clark et al. (1984), Fullan (1985), Murphy et al. (1985), Hallinger and Murphy (1986) and Levine (1985) also concurred that leadership plays an important role in the success of a school. Lightfoot (1983) in a portraiture of six excellent, but quite different high schools, noted that each had a leader with a strong sense of purpose who understood the institution and its goals. Bennis and Nanus (1985), in a study of 90 leaders from a variety of settings, said leadership is critical to the success of organizations by creating a vision or focus on the organization's purpose, communicating it to the people in the organization, and moving the organization toward accomplishment of its goals. Kijai (1987) found instructional leadership to be a significant discriminator between effective and less effective schools.

High Expectations

Rosenthal and Jacobson (1968) categorized expectations as "self-fulfilling prophecies" after a study in which they manipulated teacher expectancy by giving false information about the ability of certain students. Many studies have found high expectations to be a characteristic of effective schools. Weber (1971) discovered high expectations for students were common to the schools he studied. Edmonds (1979) stated that effective schools have a level of

expectation which does not permit students to fall below a minimum, but effective level of achievement. Reviewers (Anderson, 1982; Mackenzie, 1983; Clark et al., 1984; Fullan, 1985; Murphy et al., 1985; Purkey and Smith, 1985) all mentioned strong support for expectations in all the effective schools in their study. Brookover and his colleagues (1979) and Madaus and his associates (1979) also linked achievement with high expectations. Coleman's high school study (Coleman et al., 1982) found high expectations contributed to the success of these schools. Andrews also found high expectations were characteristic of the high gaining schools in the group of 100 schools he studied (Brandt, 1987).

Opportunity to Learn/Student Time on Task

Mackenzie (1983) reviewed effective schools studies and identified effective use of instructional time as typical of effective schools. Others (Clark et al., 1984; Murphy et al., 1985; Purkey and Smith, 1985; Hallinger and Murphy, 1986) also found student achievement is related to appropriate use of time. Mortimore and Sammons (1987) talked of "structured sessions" and "work centered environment," both of which relate to effective use of time during the school day to concentrate on academic pursuits. Madaus and his associates (1979, p. 225) said the ". . . amount of time spent on study and homework . . ." had an important effect on achievement in their study. When no mention of time usage is made, perhaps it is neglected because it is obvious that it is overlooked.

Frequent Monitoring of Student Progress

Evaluation of student progress has been cited as a characteristic of effective schools in many studies. Weber (1971) included "careful evaluation of student progress" in his list of the common factors in the inner-city schools he studied which were unusually effective in teaching reading. Ron Edmonds (1979) argued that effective schools must have a mechanism through which to evaluate students frequently. Mackenzie (1983) concluded, after reviewing many studies and articles, that "continuous diagnosis, evalution and feedback" is necessary in order to promote learning. Other reviews (Fullan, 1985; Murphy et al., 1985; Levine, 1985) have also identified monitoring of pupil performance as a correlate of effective schools. More recently, Mortimore and Sammons (1987) found the keeping of student records, using them to assess student progress, and providing feedback to the students had positive impact. An obvious benefit to frequent monitoring is the feedback it provides to both teacher and student. The teacher can use it to evaluate instruction and the student can assess his/her progress. Frequent assessment provides reinforcement to the student and helps the teacher in planning future activities.

Home/School Relations

A conversation with teachers inevitably leads to a remark that lack of parental support in the school is one of the major reasons many children do not perform or conform well. Mortimore and Sammons found parent involvement positively affected academic progress of

children in school. Positive effects resulted from a variety of parent activities. Helping in the school, discussing pupil progress with the staff and helping children with learning activities at home were all found beneficial in the study. Brookover and his associates (1979) found parent involvement contributed to higher achievement in all the schools they studied except high SES majority white schools. They felt this indicated that parents in the middle class white schools usually become involved with the school only if a student is not performing satisfactorily. Fullan (1985) included "parental involvement and support" in the eight organizational factors characterizing effective schools which he gleaned from his review of literature. Murphy and his colleagues (1985) found that effectiveness of schools is related to the degree parents and staff collaborate to promote student progress. Murphy's group identified several components of parent involvement: (1) the school must inform parents how they can help the school progress toward its goals, (2) parents should have opportunity to be involved in school activities and to participate in planning school goals and (3) the school should help parents develop skills to help their children with academic work at home and to improve their parenting skills. Parent involvement is considered of secondary importance to such climate variables as high expectations and safe, orderly environment (Murphy et al., 1985). A later study (Hallinger and Murphy, 1986) found SES differences on this variable with high SES parents more involved and expected to be more involved by the staff.

IV. CRITICISM OF EXTANT RESEARCH

This body of literature is not without its critics. Criticism is usually based on methodology, sample selection, the definition of effectiveness, or sample size. Rowan, Bossert, and Dwyer (1983) observed that many studies have used a "contrasted groups" research design in which schools are designated as effective or ineffective based on how their average standardized test scores compare to other schools. Rowan and his colleagues indicated that test scores may be used in the following ways to define school effectiveness: (1) the percentage of students scoring above the national mean, (2) trend analysis (are scores increasing or decreasing), (3) group gain scores, or (4) procedures which determine how scores relate to expectancy based on composition of the student body. Reliability between these methods is poor. Classification based on absolute scores or trend analysis tends to correlate closely with SES. Gain scores or residual analysis are not biased in regard to student background but they may classify a low achieving school as effective. All of these methods may lack consistency over time. Typically, studies have measured performance of only part of the students in a school and there have been indications that the impact of a school may vary according to age, ability level, and socioeconomic status of the students (Rowan et al., 1983).

Frechtling (1982) evaluated five methods of assessing school effectiveness: (1) trend analysis, (2) expert opinion, (3) school level residuals, (4) individual level residuals and (5) traditional

ranking. She found little consistency of rankings over time using these methods. Standardized scores on the Iowa Test of Basic Skills (reading comprehension section) were used as the metric and schools whose mean scores ranked in the upper and lower 10% were selected as outliers. Expert opinion was based on the reading specialist's assessment of the school's effectiveness in teaching reading. Overall, 40% of the schools were considered effective using one or more of these methods. Only 9% met the criteria for more than one method. Correlations between rankings by school residuals (the method identified as best in the study) over two years was .24 for reading and .32 for math leaving the author to conclude that either schools are inconsistent in effect from year to year or the test is suspect. The findings of the study caused Frechtling (1982, p. 16) to regard current school effectiveness research with ". . . some degree of skepticism."

In order to better understand the relationship between achievement and various school characteristics, Rowan and his associates suggest using multiple regression procedures which will permit concurrent estimation of the contribution of a number of variables to school effectiveness. Additionally, a cross section of schools from small to large and highly effective through average to ineffective should be used. A longitudinal perspective should be used and urban, suburban and rural schools should be included (Rowan et al., 1983).

The type of test used to measure the effect of school on students is another major source of criticism, particularly the linkage

between the test and the school curriculum. Madaus et al. (1979, p. 209) argued that the tests used ". . . should tap specific rather than general achievement." They based this assertion on the results of a unique study in which both curriculum based tests and general achievement tests were administered to the students for comparative purposes. These researchers were of the opinion that use of conventional norm referenced achievement tests was one reason why Coleman and others did not identify a strong school effect on achievement. They acknowledged home environment and social background may more strongly affect a child's general verbal ability than school characteristics would but they theorized learning of material in the school curriculum would more likely be affected by school factors.

Rutter (1983) acknowledged that Madaus' criticism of using standardized norm-referenced tests to measure school effectiveness is applicable to secondary schools, but he contended that such tests are appropriate for evaluating effectiveness of elementary schools because elementary school curriculum concentrates on basic skills. Elementary schools as a group are, therefore, more broadly comparable than secondary schools.

Rutter (1983) also indicated that the magnitude of school effects is underestimated in studies which assign a single school aggregate score to all children in a school since they do not have identical experiences. Madaus' group (1979) also noted that aggregating data to compare schools assumes uniformity of classes within each school. Madaus feels that class is a more appropriate unit of

analysis than school since it is known that all children in a school are not subject to identical influences.

Sirotnik (1985) asserted that one problem with Coleman's and similar studies is the internal processes in the school are overlooked. Ralph and Fennessey (1983) noted that many studies do not adequately identify the socioeconomic status of the students and include neither a representative sample of schools, precise measurement, nor adequate statistical controls. In many cases studies are mainly impressionistic or observational which results in little consistency from one study to the next as to characteristics and their relative importance (Ralph and Fennessey, 1983).

Good and Brophy (1985) argued that test data on students who have received little instruction in the school with which they are identified are frequently included. Vincenzi and Ayrer (1985) suggested that school average scores of schools with a high absence rate could be inflated in some cases because low achievers (who are frequent truants) usually do not take the tests at all.

Average schools are rarely included in these studies according to Fullan (1985). Most studies utilize small samples of urban schools and compare high scoring to low scoring schools. Studies should include schools with different levels of effectiveness and use statistical methods which assess the strength of relationships and the relative contribution of the various characteristics (Fullan, 1985).

Cuban (1983) said the language in the effective schools literature is fuzzy and the characteristics such as "leadership" or "climate" are not clearly defined. He also said higher level outcomes such as improved self confidence, analytic and decision making skills, and aesthetic appreciation are overlooked. Many inner-city children may have benefitted, however, because the prevailing belief about their inability to learn has been changed (Cuban, 1983).

Hawley and Rosenholtz (1984) indicated that most studies have utilized elementary schools and few are faultless. Concerns they had about generalizability of findings include: (1) most studies have focused on low SES schools, (2) small samples were used; (3) few studies are longitudinal; (4) most studies do not look at interaction between variables or their relative predictive power; (5) subgroups (grade levels, SES, ability levels, curriculum areas) need to be analyzed to determine if characteristics have differential effects; and (6) independent variables are not clearly specified.

McLean and Sanders (1983) cautioned that achievement scores are subject to the influence of many factors other than school effects because students are not randomly assigned to schools. In order to accurately determine the influence of schooling on students, school effects must be partitioned from these other factors. Gain scores can be used to eliminate the effects of some of these biasing influences when course content is sequential according to McLean and Sanders. In effect, gain scores enable each student to act as his or her own "control," thereby tending to eliminate bias due to

heredity, home environment, classroom differences, and other influences if both pre- and post-test measures are reflective of the school's curriculum and scaled to measure sequential progress. These authors indicate that linear modeling techniques can eliminate bias due to student differences in educational research. In a study which involved 240 teachers and 6,800 students, McLean and Sanders found no relationship between class gain scores and prior achievement levels of the classes. They concluded that using gain scores eliminated most of the influence of nonrandom student assignment in this study.

V. SUMMARY

Previous effective schools research has been criticized on a number of counts. Many studies have used samples which were either not representative or not of adequate size (Purkey and Smith, 1982; Ralph and Fennessey, 1983; Rowan et al., 1983; Hawley and Rosenholtz, 1984; Fullan, 1985).

Methodology is another point of criticism. Some researchers have used simple case studies and others have contrasted high and low achieving schools while omitting average schools (Purkey and Smith, 1982; Ralph and Fennessey, 1983; Rowan et al., 1983). The definition of effectiveness or method of deriving it is another concern critics have had (Frechtling, 1982; Cuban, 1983; Ralph and Fennessey, 1983; Rowan et al., 1983; Fullan, 1985).

The suitability of the standardized tests which are frequently used to assess school effectiveness has also been questioned (Madaus

et al., 1979). Rutter (1983) and Good and Brophy (1985), however, have contended that this criticism is more applicable to using such tests in secondary schools than elementary schools.

Studies have rarely been longitudinal in focus (Purkey and Smith, 1982; Ralph and Fennessey, 1983; Rowan et al., 1983) and use of statistical methodology which assesses the relative contribution of each characteristic to school effectiveness has been infrequent (Rowan et al., 1983; Rosenholtz, 1985). Additionally, the effect of student turnover (Vincenzi and Ayrer, 1985; Good and Brophy, 1985) has been largely ignored and many studies have failed to adequately identify SES of students (Ralph and Fennessey, 1983; Rosenholtz, 1985; Mortimore and Sammons, 1987; Stedman, 1987; Stephenson and Levine, 1987).

As a result of flaws in earlier studies, there is concern about the generalizability and validity of the effective schools correlates which have been identified (Purkey and Smith, 1982; Ralph and Fennessey, 1983; Rowan et al., 1983; Rosenholtz, 1985; Sirotnik, 1985; Good and Brophy, 1985; Stedman, 1987; Stephenson and Levine, 1987). Given these widespread concerns, it is clear that additional research is needed and that future studies should avoid the errors of past studies.

CHAPTER III

BACKGROUND INFORMATION AND INSTRUMENTATION

I. INTRODUCTION

The two previous chapters outlined the purpose of the study and reviewed the literature related to school effectiveness research. This chapter describes the methods and procedures used in the study and includes: (1) Introduction, (2) Population, (3) Instrumentation, (4) Data Collection Procedures, (5) Data Analysis Methods and (6) Summary. The study focused on determining the degree of relationship between seven effective schools correlates and achievement gain of students during the intermediate grades. It differs from most earlier studies by considering school effectiveness as value added, i.e., achievement gain, controlling the effect of student turnover, using longitudinal achievement data, including schools serving students from a variety of racial and socioeconomic backgrounds and utilizing a relatively large sample.

II. POPULATION

This study involved all 23 elementary school in the school district which serve grades 4-6. Enrollment in these schools ranges from about 130 to about 900. The student population included the 1985 and 1986 sixth-grade classes, each of which consisted of approximately 1,400 children for a total student group of about 2,800.

Table I illustrates the two student groups and the achievement data used to calculate the gain scores on each. All students, including gifted and special education pupils, for whom test data indicated continuous enrollment for three years in a school were included in the calculation of gain for that school. Others were excluded leaving slightly more than 1,000 students in each group in the gain calculation (see Table I).

TABLE I

ACHIEVEMENT TEST SCORES USED IN GAIN COMPUTATION

School Year	1985 Sixth Grade (N = 1048)	1986 Sixth Grade (N = 1093)
1981-1982	3rd (baseline)	
1982-1983	4th	3rd (baseline)
1983-1984	5th	4th
1984-1985	6th	5th
1985-1986		6th

Faculties ranged from 9 to 39 in proportion to enrollment. Each full-time certificated staff member (n = 450) in the schools was asked to complete the survey instrument (CSEQ) used in the study. A total of 335 staff members completed the survey.

III. INSTRUMENTATION

Questionnaire

The Connecticut School Effectiveness Questionnaire (CSEQ), (Villanova, Gauthier, Proctor and Shoemaker, 1982), an instrument

constructed and validated by the Connecticut State Department of Education (CSDE), was used in the study to measure staff perceptions of effective schools characteristics. The CSEQ was selected because it was closely linked with specific school effectiveness characteristics and the study focused on the relationship between these characteristics and achievement in schools. The CSEQ, a Likert style questionnaire of 100 items, assesses the respondent's perception of the degree of presence of seven research based characteristics of school effectiveness. The CSEQ was developed for use in CSDE's school improvement project. Miles and Kaufman (1985) reported that the CSEQ has also been used in assessing schools in San Diego, Detroit, 13 districts around Battle Creek, Michigan and 35 districts in Ohio.

The seven characteristics the CSEQ was developed to measure were identified through a staff review of educational research published during the last 10 years which had identified correlates of school effectiveness. The CSEQ Handbook (Proctor and Villanova, 1984) describes the seven characteristics as follows:

1. Safe and Orderly Environment (10 items)

   The school environment is purposeful, orderly, and free from the threat of physical harm. It is conducive to teaching and learning and not oppressive.

2. Clear School Mission (14 items)

   The mission of the school is clearly articulated and the staff shares an understanding of and commitment to instructional goals, priorities, assessment procedures and accountability.

3. Instructional Leadership (25 items)

   The principal is an instructional leader who effectively communicates the mission of the school to staff, parents, and students and understands and applies the characteristics of instructional effectiveness in the management of the school's instructional program.

4. High Expectations (12 items)

   The school displays a climate of expectation in which the staff believes and demonstrates that students can attain mastery of basic skills and that they (the staff) have the capability to help students achieve such mastery.

5. Opportunity to Learn/Student Time on Task (12 items)

   Teachers allocate a significant amount of classroom time to instruction in basic skill areas. Students are engaged in planned learning activities for a high percentage of that allocated time.

6. Frequent Monitoring of Student Progress (12 items)

   Feedback on student academic progress is obtained frequently. Multiple assessment methods such as teacher-made tests, samples of student work, mastery skills checklists, and criterion-referenced tests are used. The results of testing are used to improve the instructional program.

7. Home/School Relations (15 items)

   Parents understand and support the basic mission of the school and are made to feel that they have an important role in achieving this mission.

The CSEQ Handbook describes development of the instruments in detail. First, lists of specific behaviors and/or observable activities connected with each characteristic were compiled from the literature review and responses of principals and staff who were participating in the school improvement project. The lists were carefully scrutinized to ensure that each statement was congruent with the characteristic with which it was identified. A survey item was developed from each statement and a panel of CSDE officials and local school district personnel who were familiar with the school effectiveness literature examined each item for clarity and fit with a characteristic. A five statement descriptive continuum of possible responses was devised for each item with the far right descriptor corresponding with the optimal response suggested by research. The resulting items were reviewed by the panel to ensure clarity, congruence with the identified characteristic, and appropriate representation of all major areas of the literature. Items were then Q-sorted into seven categories. Any item associated with its source characteristic less than 80% of the time was discarded. The surviving items were field tested in five schools. Following the field test, some items were revised and a second Q-sort and discard were performed. The Connecticut School Effectiveness Interview (CSEI) was constructed from the remaining items.

Most Connecticut School Effectiveness Questionnaire (CSEQ) items were devised from far right descriptors in CSEI items. Items included in the CSEQ were closely evaluated for clarity and congruence

with the associated characteristic. A panel of experts Q-sorted the items and retained only those meeting the 80% association requirement. The remaining items were field tested with six teachers and items were retained, revised or discarded based on the results. The resulting items became the CSEQ. Each item has five possible responses: (A) strongly disagree, (B) disagree, (C) undecided, (D) agree and (E) strongly agree. Scoring assigned one point for strongly disagree, two points for disagree, three points for undecided, four points for agree, and five points for strongly agree. Scoring for the 21 negatively worded items was reversed so strongly agree received one point, agree two points, undecided three points, disagree four points, and strongly disagree five points.

Reliability

Reliability studies reported in the CSEQ Handbook (Proctor and Villanova, 1984) resulted in the coefficients listed in Table II. The test-retest reliabilities are based on data collected in one school 10 days apart.

Validity

The CSEQ Handbook (Proctor and Villanova, 1984) describes the methods used to insure that the instrument would be a valid measure. Construct validity of both CSEI and CSEQ has been investigated through multitrait-multimethod (MTMM) analysis (Campbell and Fiske, 1959; Marsh, Smith and Barnes, 1983). This analysis demonstrated that school effectiveness is multi-dimensional and provided a measure of the convergent and discriminant validity of each of the seven effective school characteristics. Convergent validity is established

TABLE II

RELIABILITY OF THE CSEQ

Category	N of Items	Alpha Internal Reliabilities*	Test-Retest Reliabilities**
Safe and Orderly Environment	15	.87	.85
Clear School Mission	14	.90	.90
Instructional Leadership	25	.93	.83
Expectations	12	.55	.69
Opportunity to Learn	12	.66	.74
Monitoring Student Progress	12	.77	.67
Home/School Relations	10	.89	.82

*N = 423 and **N = 60.

Source: Copied by permission. C. Patrick Proctor and Robert M. Villanova. "Handbook for Use of the Connective School Effectiveness Interview and Questionnaire." Hartford: Connecticut Department of Education, 1984. (Mimeographed.) Page 27.

when measurement of a trait by different methods results in similar outcomes, while discriminant validity is inferred when correlations between traits are relatively weak in comparison to the convergent coefficients. The table on page 29 in the CSEQ Handbook shows the results of MTMM analysis of the CSEI and CSEQ. This table is reproduced as Table III. The text accompanying this table in the CSEQ Handbook (Proctor and Villanova, 1984) makes the following points relative to MTMM analysis of the instruments.

1. Convergent validity figures in the diagonal of the heterotrait/heteromethod (block) section are substantial and support convergent validity.
2. Most of the convergent validity figures exceed the correlation between a given variable and any other variable

TABLE III

MULTITRAIT-MULTIMETHOD ANALYSIS: SEVEN SCHOOL EFFECTIVENESS VARIABLES MEASURED WITH THE CONNECTICUT SCHOOL EFFECTIVENESS QUESTIONNAIRE AND THE CONNECTICUT SCHOOL EFFECTIVENESS INTERVIEW

		(N = 247) Questionnaire							Interview						
		A_1	B_1	C_1	D_1	E_1	F_1	G_1	A_2	B_2	C_2	D_2	E_2	F_2	G_2
Questionnaire															
Safe and Orderly Environment	A_1	(.87)													
Clear School Mission	B_1	.67	(.90)												
Instructional Leadership	C_1	.51	.51	(.93)											
High Expectations	D_1	.44	.46	.35	(.55)										
Opportunity to Learn	E_1	.67	.65	.40	.49	(.66)									
Monitoring Student Progress	F_1	.54	.70	.45	.45	.62	(.77)								
Home/School Relations	G_1	.72	.66	.36	.58	.69	.57	(.89)							
Interview															
Safe and Orderly Environment	A_2	.75	.56	.48	.38	.57	.47	.61	(.66)						
Clear School Mission	B_2	.37	.52	.28	.30	.46	.36	.39	.37	(.93)					
Instructional Leadership	C_2	.39	.47	.71	.30	.37	.38	.32	.44	.40	(.81)				
High Expectations	D_2	.43	.42	.28	.59	.42	.35	.50	.44	.47	.36	(.69)			
Opportunity to Learn	E_2	.53	.41	.25	.36	.56	.39	.52	.57	.47	.29	.54	(.78)		
Monitoring Student Progress	F_2	.29	.30	.21	.19	.32	.36	.32	.30	.47	.32	.38	.36	(.86)	
Home/School Relations	G_2	.58	.48	.26	.53	.56	.42	.77	.56	.47	.37	.60	.54	.41	(.66)

NOTE: Values in the main diagonal are coefficient alpha reliabilities (Hull and Nie, 1981). Underlined values are convergent validities relating responses on the questionnaire to responses on the interview.

SOURCE: Copied by permission. C. Patrick Proctor and Robert M. Villanova. "Handbook for Use of the Connecticut School Effectiveness Interview and Questionnaire." Hartford: Connecticut Department of Education, 1984. (Mimeographed.). Page 29.

which has neither trait nor method in common.

3. The correlations in the heterotrait/monomethod section (upper left triangle) show more overlap and relationship among characteristics assessed with the CSEQ. The greatest four convergent validity figures exceed more than one-half the correlations in this sub-matrix area which suggests a degree of discriminant validity between measurements of a trait by the different methods are higher than measurement of two traits by the same method.
4. Similar correlations among the two measures were obtained in the triangles (monomethod) and the block (heteromethod).

CSDE analysis suggests that the CSEQ has adequate convergent and discriminant validity and that it is a reliable instrument when used for its designed purpose (Villanova, Gauthier, Proctor, and Shoemaker, 1982). Villanova (1986) reported additional support for the reliability and validity of the CSEQ. Profiles of individual schools where both CSEQ and CSEI were administered revealed that the two instruments obtained essentially identical rankings on the seven characteristics. Villanova submits that content and face validity of the CSEQ was insured by the method used to develop the items and is supported by the results of pilot administration and field testing of the instrument. Critical review of the instrument at a training session which focused on assessment of school effectiveness and the results of multimethod-multitrait analysis of the CSEQ and CSEI also suggested that the CSEQ is a valid measure of the seven school effectiveness characteristics.

Villanova (1986) indicated that an exploratory factor analysis identified four factors which closely approximate four of the judgmentally derived characteristics as evidence of the construct validity of the CSEQ. These four were Safe, Orderly Environment; Instructional Leadership; Clear School Mission; and Positive Home/School Relations. The remaining three CSEQ variables, High Expectations, Opportunity to Learn/Student Time on Task, and Frequent Monitoring of Student Progress were not supported by the factor analytic study but this should not be considered an indication that these constructs are not important or valid qualities of effective schools, according to Villanova. He observed that all three of these areas involve self-report on the part of the respondent and this may be responsible for the relatively low reliability (both alpha and test-retest) of these scales. Villanova suggests that additional research may improve these scales. He further urges considering data from the CSEQ as suggestive rather than prescriptive.

Achievement Measures

Achievement test data used in this study were from the California Achievement Test (CAT) and the Stanford Achievement Test (SAT), both of which were administered as part of the testing program required by the State Department of Education. The CAT was used from 1983-1985, and the SAT was adopted beginning with the 1986 testing cycle. Both tests are nationally standardized multiple choice achievement tests which are widely used to assess student performance. Additionally, the fact that these tests were selected by the State

Department of Education for measuring student progress in the state's schools suggests that they are adequately linked with the curriculum in these schools.

IV. DATA COLLECTION PROCEDURES

Questionnaire

The Connecticut School Effectiveness Questionnaire (CSEQ) was administered to the full-time faculty members of each school during the months of December 1986 and January 1987. Arrangements were made with each principal to do this in conjunction with a faculty meeting or as otherwise directed by the principal. All participants were given uniform printed instructions with the survey form. The researcher or a substitute distributed and collected materials and answered procedural questions. Each faculty's responses to the CSEQ were tabulated and a school mean score for each of the seven characteristics was calculated. The resulting 23 sets of scores comprised the data for the independent variables in the study.

Achievement Test

Computer tapes containing the achievement test data for the 2,800 plus potential students in the study were obtained from the State Testing and Evaluation Center with permission from the host school district. The district has consistently used student and school identification numbers on achievement test records, so it was possible to identify all test records for each individual in the two sixth-grade classes who had been enrolled in the school district

during the 1981-1986 period and prepare a data file by school which included all 2,141 students for whom the required sets of scores were available. Students whose prior achievement scores were not available were eliminated from the study. Since only students who had been subject to school effects for an entire three-year period were included in gain computation, ranking of schools on effectiveness (achievement gain) should be more accurate. Most test data used in this study were from the California Achievement Test (CAT). The Stanford Achievement Test (SAT) was adopted in 1986. A "cross-walk" program supplied by the State Testing and Evaluation Center was used to convert the SAT scores of the 1986 sixth-graders to the same scale used on the CAT so they could be used in the analysis of the data.

Percentage of Free or Reduced Price Lunch

The percentage of students on free or reduced price lunch in each school was obtained from the Central Office.

V. DATA ANALYSIS METHODS

Computation of Achievement Gain

The general linear model procedure (PROC GLM) of the Statistical Analysis System (SAS) was used to compute the gain scores. The estimates of mean gain for each school over year, grade, and subject were obtained using the least squares mean option (LSMEANS) under PROC GLM of SAS. These least squares means are estimates of each school's

mean gain which are free of the partial confounding effects of the unavoidable unequal cells which result from variation in the size of the student groups over year, grade, subject and school.

Determination of Relationship Between Achievement Gain and Effective Schools Characteristics

The composite school mean gain scores were used as the dependent variable in a multiple linear regression analysis in which the mean school scores for the seven CSEQ variables were used as independent variables. This analysis was performed in order to determine the strength of school characteristics (the seven CSEQ variables) as predictors of achievement gain in reading, language, and math, with each subject analyzed separately. The STEPWISE method under the REGRESSION procedure of the Statistical Package for the Social Sciences (SPSSX) was used in this analysis. No predictive model could be constructed because of the weak correlation between gain and the seven variables measured by the CSEQ. The correlation between the SES indicator, the seven variables and gain in all three subjects was so weak that further analysis would not produce meaningful results. None of the variables could meet the test of significance for entry into the regression equation using the default value in SPSSX.

VI. SUMMARY

This chapter outlined the methods and procedures used in the study. It has also provided a detailed description of the seven

school effectiveness characteristics, the instrument (CSEQ) used to measure them and the evidence of the survey's reliability and validity cited by its principal author. The following chapter will present the results of data analysis and discuss their pertinence to research on school effectiveness.

CHAPTER IV

FINDINGS AND DATA ANALYSIS

I. INTRODUCTION

This chapter presents the results of data analysis and how they relate to the three questions the study focused on answering: (1) How strongly do teachers perceive the seven effective schools characteristics in their schools? (2) How do schools rank based on the mean gain scores earned by the students who attend them? and (3) Is the strength with which the effective schools characteristics are perceived predictive of achievement gain in the total reading, total math, and total language areas as measured by group achievement tests? The following areas are covered in this chapter: (1) Introduction, (2) The school mean scores on the seven CSEQ variables, (3) The school mean achievement gain scores, (4) Regression analysis of the relationship between school gain and school means on the CSEQ variables, and (5) Summary.

The data set was based on achievement gain during fourth, fifth and sixth grades of the students in the 1985 and 1986 sixth-grade classes of 23 elementary schools in the host school district and the responses of 335 full-time faculty members of those schools to the CSEQ. This chapter presents the resulting data and the procedures used in their analysis.

II. SCHOOL AVERAGE CSEQ SCORES

An average score for each school on the seven CSEQ variables was calculated. A high percentage of eligible staff responded to the CSEQ; in the total sample, 335 (73%) of the potential 450 staff members completed the questionnaire. Missing responses totaled 501, or about 1.5% of the possible 33,500 responses to individual items. Table IV contains the school means for each of the seven CSEQ variables. Table V shows the number of respondents in each school, the percentage responding, and the percentage of missing responses. The number of respondents ranged from 7 to 31, and the percentage responding ranged from 35% to 100%; only 2 of the 23 schools had a response rate below 50%. The percentage of missing responses in the total group was 1.5% with a range in individual schools from 0.29% to 3.0%.

Findings Related to Research Question 1

Research Question 1 asked: How strongly do teachers perceive the seven effective schools characteristics in their schools? Table IV has 161 (23 x 7) entries. In 108 of these entries (about 65%) the average response was 3.5 or greater. Faculties rarely unequivocally said that a characteristic was not present. Only Home/School Relations and Expectations were not scored 3.5 or greater by 65% or more of the faculties.

TABLE IV

MEANS ON SCHOOL EFFECTIVENESS CORRELATES

SCH	ENV	MIS	LEA	EXP	TIM	MON	HSR
A	3.014	3.524	3.627	3.012	3.504	3.679	2.784
B	4.127	4.169	4.345	3.348	4.068	4.114	3.273
C	3.267	3.804	3.130	3.000	3.458	3.632	3.050
D	3.231	3.879	3.791	2.987	3.712	3.897	2.826
E	4.037	3.866	3.653	3.297	3.766	3.776	3.633
F	4.293	4.057	4.088	3.300	4.083	4.117	4.031
G	3.368	3.797	3.739	3.048	3.526	3.746	2.895
H	3.536	3.909	3.869	3.333	3.659	3.864	3.091
I	3.000	3.133	2.440	3.155	3.571	3.381	3.381
J	3.337	3.902	3.705	3.035	3.816	3.680	2.940
K	4.026	4.270	4.157	3.597	4.124	4.110	4.191
L	3.558	3.732	3.420	3.354	3.583	3.653	2.778
M	3.800	3.776	3.991	3.186	3.568	3.667	3.142
N	3.322	4.151	4.213	3.074	3.944	3.981	3.111
O	2.936	3.587	2.991	3.107	3.458	3.405	2.457
P	3.675	3.848	3.500	3.083	3.719	3.750	2.983
Q	4.156	4.270	4.449	3.435	4.463	4.222	3.370
R	4.271	4.199	3.920	3.744	3.917	4.107	4.152
S	3.950	4.339	4.305	3.208	3.781	4.115	3.508
T	4.043	4.062	3.609	3.333	3.870	3.975	3.748
U	4.093	3.898	3.734	3.464	3.869	3.827	3.829
V	4.123	4.236	3.858	3.455	4.064	4.006	4.041
W	3.843	3.760	4.011	3.149	3.821	4.012	3.214

SCH = school, ENV = environment, MIS = mission, LEA = leadership, EXP = expectations, TIM = time on task, MON = monitoring, HSR = home/school relations.

TABLE V

NUMBER OF RESPONDENTS AND PERCENTAGE OF MISSING RESPONSES

School	Number of Faculty Responding	Percent of Faculty Responding	Percent of Responses Missing
A	21	67.74	2.48
B	23	85.19	1.26
C	11	57.89	0.45
D	31	79.49	0.81
E	12	75.00	1.42
F	19	90.48	1.42
G	19	100.00	2.32
H	13	35.14	0.85
I	16	66.67	2.62
J	14	48.28	0.71
K	22	95.62	3.00
L	11	73.33	0.18
M	9	47.32	0.56
N	13	92.86	1.69
O	14	93.33	1.21
P	15	68.18	0.47
Q	12	100.00	2.42
R	14	93.33	1.21
S	7	77.78	0.29
T	8	80.00	1.25
U	14	93.33	2.57
V	8	66.67	1.38
W	9	81.82	1.67
Total	335	74.44	1.50%

III. SCHOOL MEAN GAIN SCORES

PROC GLM of SAS (LSMEANS method) was used to develop estimates of school gain scores which were unbiased by the unequal cells in the data set. A gain estimate was computed per subject per school based on student gains over fourth, fifth, and sixth grades. Student identification numbers were used to collate test records for individual students. Slightly more than 1,000 students in each of the two sixth-grade classes met the criteria for inclusion in the study. These requirements were to have been enrolled in the school district for four consecutive years and in the same school for three consecutive years.

Table VI lists the mean gain scores for each subject by school. The percentage of free and reduced price lunch recipients is also in the table. The percentage of students in each school receiving free or reduced price lunches was gathered as an approximate indicator of the socioeconomic status of the student population of the schools. Mean gain scores in the group had an insignificant correlation (in the range of -.071 to -.186) with the socioeconomic indicator. Table VII lists the rankings of schools on gain by subject. Table VIII shows the inter-correlations between gains on the three subjects. Table IX contains inter-correlations between gain in each subject, each of the seven CSEQ variables and the socioeconomic indicator.

TABLE VI

MEAN GAIN SCORES BY SCHOOL

School	Math	Reading	Language	Percent Free Lunch
A	40.9809025	38.7774029	26.7873018	78.5
B	34.7298124	29.3234885	14.3783233	82.5
C	34.6563711	33.4481979	14.4004264	33.5
D	54.9915455	51.9757259	38.3993382	80.5
E	38.8714486	37.1125715	24.0843734	28.0
F	34.3759374	37.8355314	29.9551877	10.0
G	34.3027554	34.7440894	23.6402305	72.0
H	37.0062191	37.0209433	28.4090747	51.0
I	33.5861000	29.0868408	20.7492740	26.0
J	28.3354007	25.8900985	18.2672795	99.5
K	36.6293912	30.5674874	17.8116879	09.0
L	33.5068173	40.5302759	24.1639599	89.0
M	37.1487376	35.0400445	28.3664985	38.0
N	29.1758034	33.2953424	22.6048042	82.5
O	37.3988229	41.8255888	30.8332216	90.5
P	30.4809238	33.2087229	30.0912805	32.0
Q	29.9763928	32.7397900	23.8127065	90.0
R	38.9706242	37.6188795	22.7336398	10.0
S	34.7740107	33.1096755	25.1827689	41.0
T	45.2917315	40.9795429	30.5249239	09.0
U	42.6299833	42.4857087	28.4081233	13.0
V	33.7945466	39.2719894	26.2473296	09.0
W	39.0134972	41.3769380	29.9262745	32.0

TABLE VII

SCHOOL RANKINGS ACROSS SUBJECTS

School	Reading Gain	Language Gain	Math Gain
A	8	10	4
B	21	23	13
C	15	22	14
D	1	1	1
E	12	14	7
F	9	5	15
G	14	16	16
H	12	8	10
I	22	19	18
J	23	20	23
K	20	21	11
L	6	13	19
M	13	9	9
N	16	18	22
O	3	2	8
P	17	4	20
Q	19	15	21
R	10	17	6
S	18	12	12
T	5	3	2
U	2	7	3
V	7	11	17
W	4	6	5

TABLE VIII

GAIN CORRELATION

Gain	Reading	Language	Math
Reading	1.000	.801	.801
Language	.801	1.000	.592
Math	.801	.592	1.000

All correlations are significant at p = .05.

TABLE IX

PEARSON CORRELATION

	Reading Gain	Language Gain	Math Gain
Percent Free Lunch	-.071	-.075	-.186
Environment	-.030	-.042	-.020
Mission	-.095	-.132	-.110
Leadership	-.063	-.009	-.065
Expectations	-.022	-.164	.002
Time on Task	-.187	-.139	-.198
Monitoring	0.000	-.019	.024
Home/School Relations	-.094	-.145	.040

None of the above correlations are significant at p = .05.

Findings Related to Research Question 2

Research Question 2 asked: How do schools rank based on the mean gain scores earned by their students? Table VII shows each school's rank-order based on gain in each subject. Table VIII shows how subject gains correlated. Gains across subjects were significantly correlated. School gains tended to be consistently low or high across the three subjects.

Correlations between the means on the seven CSEQ variables and the gain scores were insignificant in all three subject areas. All correlations fell in the range between +.040 and -.198. Correlations were so weak that none of the variables could meet the significance test for entry into the regression equation for any of the three subjects using the default option under SPSSX. Overriding the default value ($p = .05$) for entry would not have been of any value because of the weak correlations. Faculty responses to the questionnaire (CSEQ) were not predictive of achievement gain in this study. The correlations are listed in Table IX. Spearman rank-order correlations between gain in each subject and school average CSEQ responses were also computed. This analysis also indicated no relationship between dependent and independent variables in this study. The resulting coefficients are reported in Table X. None were significant.

Findings Related to Research Question 3

Research Question 3 asked: Is the strength with which the effective schools characteristics are perceived predictive of achievement gain in the total reading, total math and total language

TABLE X

SPEARMAN CORRELATION

	Reading Gain	Language Gain	Math Gain
Percent Free Lunch	-.166	-.103	-.329
Environment	.002	-.046	.053
Mission	-.284	-.231	-.134
Leadership	-.258	-.189	-.080
Expectations	.030	-.119	.062
Time on Task	-.186	-.175	-.158
Monitoring	-.095	-.025	.029
Home/School Relations	-.115	-.184	.130

None of the above correlations are significant at p = .05.

areas as measured by group achievement tests? Table IX shows the Pearson correlations between the seven effective schools correlates and achievement gain in all three subjects. None of these correlations were significant. Correlations were so weak that none of the variables could meet the significance test for entry into the regression equation. There was no relationship between gain and the seven variables measured by the CSEQ.

Spearman rank-order correlations were also computed. These are reported in Table X. None of these correlations were significant. This confirms the Pearson correlations and substantiates that gain and the CSEQ variables were not related.

IV. SUMMARY

The focus of this study was upon determining whether there were differences in staff perceptions of effective schools characteristics between schools and whether these perceptions were predictive of achievement gain in schools. The results of the study indicate that there was little variance in teacher perceptions of the seven characteristics among schools. These perceptions did not relate significantly with achievement gain. It was not possible to determine the relative power of these variables to predict achievement gain because there was essentially no relationship between them and gain. There was no relationship between staff perceptions of school effectiveness characteristics and achievement gain of students in this study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. INTRODUCTION

This chapter summarizes the data and how they relate to the three questions the study focused on answering: (1) How strongly do teachers perceive the seven effective schools characteristics in their schools? (2) How do schools rank based on the mean gain scores earned by the students who attend them? and (3) Is the strength with which the effective schools characteristics are perceived predictive of achievement gain in the total reading, total math and total language areas as measured by group achievement tests? Conclusions resulting from the study will be presented and recommendations for future research will be outlined.

II. SUMMARY OF THE STUDY

The literature reviewed in Chapter II indicated that prior research has linked school effectiveness with various school characteristics. The number of characteristics cited as differentiating effective from ineffective schools has varied widely, with from 5 to 20 or more building level characteristics listed in different studies and reviews of studies. A major criticism of this literature has been that characteristics are neither precisely nor uniformly defined by different authors. Methodology used in these

studies has also been soundly criticized. Many studies have used small or restricted samples of schools. Frequently school average achievement scores, a measure which usually correlates strongly with SES, have been used as a measure of effectiveness. Relatively few studies have used a longitudinal perspective or controlled the influence of student turnover. Chapter II contains a section covering the criticism of earlier research in greater detail.

The purpose of this study was to investigate the relationship between the staff perceptions of seven effective schools variables measured by the CSEQ and school effectiveness, which in this study was defined as the achievement gain of the students, a "value added" concept. The study was designed to avoid many of the criticisms of prior reearch without losing conceptual linkage with earlier studies.

The CSEQ was developed by the Connecticut State Department of Education for use in assessing school effectiveness. During its development both reliability and validity checks were performed. Chapter III contains greater detail about the construction and testing of the CSEQ.

III. SUMMARY OF SIGNIFICANT FINDINGS

Listed below are the significant findings of the study:

1. There was no relationship between effective schools correlates as measured by the CSEQ and achievement gain of the students.

2. Achievement gain was not significantly correlated with the SES measure--percentage of free lunch recipients. Gain was relatively independent of SES in this study.

3. Teachers perceived the effective schools characteristics relatively strongly in their schools. Only Expectations and Home/ School Relations were not scored 3.5 or above on a 5 point scale by 65% or more of the faculties. The result was relatively low variance in the scores among schools.

4. Gain across subjects was strongly correlated. School gains were consistently low or high across subjects. There was a wide range of gain scores with an approximately two to one difference between lowest and highest gaining schools in reading and mathematics. Language gain was more variable with almost a three to one difference between lowest and highest scoring schools.

IV. CONCLUSIONS

The findings of this study differ from those of most earlier studies and must call into question the results of previous research or some part of the design of this study. The study was designed to avoid most of the criticisms of similar studies. The intent was refinement, not a total departure, so comparability of results could be preserved. The study found no relationship between seven effective schools characteristics and school effectiveness (achievement gain).

Flaws in previous studies may have caused them to identify a spurious relationship. Sirotnik (1985) said contrasting schools at the extremes of effectiveness simply confirms the best of conventional wisdom about school effectiveness. This study included a reasonably

representative sample of schools and tested the relationship between seven effective schools correlates and mean achievement gain over three years and found no relationship between the correlates and achievement gain.

The results of this study may have been influenced by coverage of the effective schools literature in the media and professional publications. This would tend to increase the sophistication of the respondents vis a vis the items on the CSEQ, resulting in response patterns which are different from those of a group which is unfamiliar with the effective schools research. As a result, the CSEQ may have lost its ability to discriminate between effective and ineffective schools over the seven years since it was developed. In this study, the CSEQ did not produce the wide range of responses which Rutter (1983) said is necessary to explain a high percentage of the variance in a dependent variable.

This study was unable to determine whether or not schools which are shown to have a high level of effective schools correlates produce higher student gains than schools which do not have high levels of the correlates. The inability of the CSEQ to differentiate between high and low gaining schools appears to be a major contributor to the inconclusive results of the study.

V. RECOMMENDATIONS FOR FURTHER RESEARCH

1. This study should be replicated. Many of the schools which were used have been closed. It may be better to do the new study in

a different school system or to use schools from several districts in order to get a larger and more diverse sample.

2. A study using a different survey instrument which is otherwise methodologically similar to the current study is suggested. The school sample should include both inner-city and suburban schools. Addition of some rural schools is also desirable.

3. A methodologically similar study in which faculties complete both the CSEQ and a similar survey instrument is indicated. Comparison of the results from the two instruments could help evaluate the findings of the current study and the suitability of the CSEQ for continued use.

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APPENDIX

STATE OF CONNECTICUT

DEPARTMENT OF EDUCATION

August 7, 1986

Mr. John Killeffer
318 Guild Drive
Chattanooga, Tenn. 37421

Dear Mr. Killeffer:

In accordance with your recent request, this letter will serve as written permission for you to use all forms of the Connecticut School Effectiveness Instruments. Please be sure to give credit to me and the Connecticut State Department of Education.

Sincerely,

William J. Gauthier, Jr.
Chief
Bureau of School and Program
Development

WJG:rm

Box 2219 • Hartford, Connecticut 06145
An Equal Opportunity Employer

FACULTY QUESTIONNAIRE

Dear Colleague:

Thank you for taking time from a busy day to complete this questionnaire. Its purpose is to survey your perceptions based on your experiences in this school. You should select the response to each item which in your opinion typifies this school.

Sincerely,

John Killeffer

INSTRUCTIONS

1. Write the name of the school and circle the grade you teach on the survey form.

2. Each item has five possible responses. Record your responses by circling your choice on the survey form. This survey enables you to indicate both agreement or disagreement and the strength of your feelings as follows:
   - SD. Strongly disagree
   - D. Disagree
   - U. Uncertain, undecided (please avoid using this response unless you have no feeling of agreement or disagreement)
   - A. Agree
   - SA. Strongly agree

3. Remember, your perceptions based on your experiences in this school are important and should be the basis of your responses.

4. Completion of this questionnaire is your implied consent to participate in the study.

5. Please read each item carefully.

6. Thank you again for your help.

SCHOOL_____

GRADE K 1 2 3 4 5 6

1. This school is a safe and secure place to work.....	SD	D	U	A	SA
2. In reading,written sequential objectives exist up through all grades.....	SD	D	U	A	SA
3. In this school low-achieving students present more discipline problems than other students.....	SD	D	U	A	SA
4. Most problems facing this school can be solved by the principal and faculty without a great deal of outside help.....	SD	D	U	A	SA
5. Most students in this school are eager and enthusiastic about learning.....	SD	D	U	A	SA
6. The principal makes several formal classroom observations each year.....	SD	D	U	A	SA
7. Discussions with the principal often result in some aspect of improved instructional practice.....	SD	D	U	A	SA
8. The physical condition of this school building is generally unpleasant and unkempt.....	SD	D	U	A	SA
9. Most parents would rate this school as superior.....	SD	D	U	A	SA
10. The principal reviews and interprets test results with and for the faculty.....	SD	D	U	A	SA
11. School-wide objectives are the focal point of reading instruction in this school.....	SD	D	U	A	SA
12. In reading, initial skill instruction is often presented to a heterogeneous group of students.....	SD	D	U	A	SA
13. Instructional issues are seldom the focus of faculty meetings.....	SD	D	U	A	SA
14. Pull-out programs (e.g. Chapter I, Special Ed., Gifted, etc.) often disrupt and interfere with basic skills instruction.....	SD	D	U	A	SA
15. Mathematics objectives are <u>not</u> coordinated and monitored up through all grades in this school.....	SD	D	U	A	SA
16. The principal uses test results to recommend modifications or changes in the instructional program.....	SD	D	U	A	SA
17. There is clear, strong centralized instructional leadership from the principal in this school.....	SD	D	U	A	SA
18. Ninety-five to one hundred percent of the students in this school can be expected to complete high school.....	SD	D	U	A	SA
19. The principal regularly gives feedback to teachers concerning lesson plans.....	SD	D	U	A	SA
20. Criterion-referenced tests are <u>not</u> used to assess basic skills throughout the school.....	SD	D	U	A	SA
21. At the principal's initiative, teachers work together to effectively coordinate the instructional program within and between grades.....	SD	D	U	A	SA
22. In basic skills instruction in this school, reteaching and specific skill remediation are important parts of the teaching process.....	SD	D	U	A	SA
23. A positive feeling permeates the school.....	SD	D	U	A	SA
24. All materials and supplies necessary for instruction in basic skills are available.....	SD	D	U	A	SA
25. Staff and students do not view security as an issue in this school.....	SD	D	U	A	SA

26. In reading, an identified set of objectives or skills that all students must master exists at each grade level.....SD D U A SA
27. Teachers in this school do <u>not</u> hold consistently high expectations for all students.....SD D U A SA
28. When students are assigned seatwork, teachers monitor it closely.....SD D U A SA
29. In mathematics there is an identified set of objectives or skills that all students must master at each grade level.....SD D U A SA
30. There are few student interruptions during class time.....SD D U A SA
31. Homework is monitored at home and in school with follow-up.....SD D U A SA
32. A written statement of purpose that is the driving force behind most important decisions does <u>not</u> exist in this school.....SD D U A SA
33. Outside interruptions do <u>not</u> often interfere with basic skill instruction in this school.....SD D U A SA
34. During parent-teacher conferences there is a focus on factors directly related to student achievement and basic skill mastery.....SD D U A SA
35. Almost all students complete assigned homework before coming to school.....SD D U A SA
36. Ninety to one hundred percent of your students' parents attend scheduled parent-teacher conferences.....SD D U A SA
37. The standardized testing program is an accurate and valid measure of the basic skills curriculum in this school.....SD D U A SA
38. Almost all students are expected to master basic skills at each grade level..... SD D U A SA
39. In Language Arts, an identified set of objectives or skills that all students must master exists at each grade level.....SD D U A SA
40. Teachers and the principal thoroughly review and analyze test results to plan instructional program modifications.....SD D U A SA
41. In Language Arts, school-wide objectives are the focus of instruction in this school. .....SD D U A SA
42. Standardized test results are not available or are <u>not</u> used to evaluate program objectives..... SD D U A SA
43. Multiple assessment methods are used to assess student progress in basic skills (e.g. criterion-referenced tests, work samples, mastery check lists ,etc.) .....SD D U A SA
44. Teachers, administrators, and parents assume responsibility for discipline in this school.....SD D U A SA
45. The principal requires and regularly reviews lesson plans.....SD D U A SA
46. The principal is very active in securing resources, arranging opportunities and promoting staff development activities for the faculty.....SD D U A SA
47. There is little cooperation with regard to homework monitoring between parents and teachers in this school....SD D U A SA
48. The principal leads frequent formal discussions concerning instruction and student achievement.....SD D U A SA
49. Parent-teacher conferences seldom result in specific plans for home-school cooperation aimed at improving student classroom achievement.....SD D U A SA

50. Reading objectives are coordinated and monitored through all grades.....SD D U A SA
51. In mathematics, instruction is often presented to homogeneous ability groups. .....SD D U A SA
52. Two hours or more are allocated for reading/language arts each day throughout this school.....SD D U A SA
53. Specific feedback on daily assignments is given regularly and followed up by the teacher.....SD D U A SA
54. In Language Arts, written, sequential objectives do not exist at each grade level..... SD D U A SA
55. Individual teachers determine allocated time for basic skill instruction without guidelines or discussion with the administration.....SD D U A SA
56. The school building is neat, bright, clean and comfortable .....SD D U A SA
57. Formal observations by the principal are regularly followed by a post-observation conference.....SD D U A SA
58. There is no systematic, regular assessment of students' basic skills in most classrooms.....SD D U A SA
59. Language Arts objectives are coordinated and monitored through all grades.....SD D U A SA
60. The principal frequently communicates to individual teachers their responsibility in relation to student achievement.....SD D U A SA
61. Student assessment information (such as criterion referenced tests , skills checklists, etc.) is regularly used to give specific student feedback and plan appropriate instruction.....SD D U A SA
62. Special instructional programs for individual students are integrated with classroom instruction and the school curriculum.....SD D U A SA
63. The principal does not put much emphasis on the meaning and use of standardized test results.....SD D U A SA
64. Very few parents of students in your class visit the school to observe the instructional program..... SD D U A SA
65. Typical daily lessons in this school follow this sequence: teacher presentation,student practice, specific feedback, evaluation of student performance.....SD D U A SA
66. The principal regularly brings instructional issues to the faculty for discussion.....SD D U A SA
67. Most parents understand and promote the school's instructional program.....SD D U A SA
68. There is an active parent/school group in this school that involves many parents.....SD D U A SA
69. Many parents are involved in an overall home and school support network.... .....SD D U A SA
70. Supervision is directed at instruction.....SD D U A SA
71. Teachers and parents are aware of the homework policy in this school.....SD D U A SA
72. Fifty minutes or more is allocated for mathematics instruction each day throughout this school.....SD D U A SA
73. Student assignments in basic skills areas are corrected daily.....SD D U A SA
74. Teachers believe that all students in this school can master basic skills as a direct result of the instructional program.....SD D U A SA
75. The principal is highly visible throughout the school.....SD D U A SA

76. Teachers in this school expect and plan assignments so that students will be highly successful during practice work following direct instruction.....SD D U A SA
77. Teachers in this school believe they are responsible for all students mastering all basic skills at each grade level.....SD D U A SA
78. The principal is accessible to discuss matters dealing with instruction.....SD D U A SA
79. Many parents initiate many contacts with the school each month.....SD D U A SA
80. Low-achieving students answer questions as often as other students in my classroom.....SD D U A SA
81. Student behavior is generally positive in this school.....SD D U A SA
82. The principal is an important instructional resource person in this school.....SD D U A SA
83. The number of low-income children retained in grade is proportionately equivalent to other children retained in grade.....SD D U A SA
84. Home visits, phone calls, newsletters, regular notes, etc. are all ways that most teachers frequently communicate with parents in this school.....SD D U A SA
85. Teachers believe that a student's home background is <u>not</u> the primary factor that determines individual student achievement in this school.....SD D U A SA
86. During follow-up to formal observations a plan for improvement frequently results.....SD D U A SA
87. Students in this school abide by school rules.....SD D U A SA
88. Teachers in this school do <u>not</u> turn to the principal with instructional concerns or problems.....SD D U A SA
89. Class atmosphere in this school is generally very conducive to learning for all students.....SD D U A SA
90. During follow-up to formal observations the principal's main emphasis is on instructional improvement.....SD D U A SA
91. In mathematics, school-wide objectives are the focal point of instruction.....SD D U A SA
92. In this school, there is annual standardized testing at each grade level.....SD D U A SA
93. The principal rarely makes informal contacts with students and teachers around the school.....SD D U A SA
94. Criterion-referenced tests are used to give specific student feedback in basic skills throughout the school....SD D U A SA
95. Generally, discipline is not an issue in this school.....SD D U A SA
96. Beyond parent conferences and report cards, teachers in this school have several other ways for communicating student progress to parents.....SD D U A SA
97. Individual teachers and the principal do <u>not</u> meet regularly to discuss what the principal will observe during a classroom observation.....SD D U A SA
98. During basic skills instruction students are working independently on seatwork for the majority of the allocated time.....SD D U A SA
99. In mathematics, written sequential objectives exist up through all grades.....SD D U A SA
100. Students not mastering basic skills are frequently retained in grade.....SD D U A SA

VITA

John Killeffer, Jr. was born in Jacksonville, Florida, on February 5, 1942. He grew up in Chattanooga, Tennessee, where he graduated from Chattanooga High School. He earned a Bachelor of Science degree in Psychology from The University of Chattanooga in June 1966. In August 1973, he received a Master of Education degree in Secondary School Counseling from The University of Tennessee at Chattanooga.

He was employed as an elementary teacher by the Chattanooga Public Schools in September 1968. Subsequently, he became a high school guidance counselor and for the last fifteen years he has served as a school psychologist.

In June 1981 he entered the Graduate School of The University of Tennessee, Knoxville, and received the Doctor of Education degree with a major in Educational Administration and Supervision in August 1989.

Mr. Killeffer is a member of the National, Tennessee, and Chattanooga Education Associations. He is also a member of Phi Delta Kappa and the Tennessee Association of Psychological Examiners.

Mr. Killeffer and his wife, the former Anita Kelley, have three sons, Bill, David and Richard.