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## A Study of the Correlation Between Per Pupil Funding and Student Achievement in the State of Michigan

Douglas Harold Snyder  
*Western Michigan University*

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**A STUDY OF THE CORRELATION BETWEEN PER PUPIL  
FUNDING AND STUDENT ACHIEVEMENT  
IN THE STATE OF MICHIGAN**

**by**

**Douglas Harold Snyder**

**A Dissertation  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
requirements for the  
Degree of Doctor of Education  
Department of Educational Leadership**

**Western Michigan University  
Kalamazoo, Michigan  
April 1995**

**A STUDY OF THE CORRELATION BETWEEN PER PUPIL  
FUNDING AND STUDENT ACHIEVEMENT  
IN THE STATE OF MICHIGAN**

**Douglas Harold Snyder, Ed.D.**

**Western Michigan University, 1995**

The purpose of this study was to investigate if a relationship existed between per pupil funding levels and achievement levels of students in the state of Michigan. The study sought to apply objective, systematic research techniques to a question which receives much emotional, unscientific discussion. To that end, the study asked the question whether a connection existed between student achievement as measured by Michigan Educational Assessment Program (MEAP) tests and the amount of per pupil funding in the student's school district.

In an attempt to address these concerns this study examined two sets of variables. One set represented educational effectiveness and the second represented educational costs. The dependent variables were measures of educational effectiveness. Michigan Educational Assessment Program (MEAP) test scores represented the measures of effectiveness. Twelve sets of test scores were selected at different grade levels and content areas. The independent variables were measures of educational cost. Three variables were selected and consisted of average teacher salaries, per pupil expenditures in operating, and per pupil spending in instructional categories.

The findings of this investigation indicated little, if any, correlation existed between the sets of variables studied. Interpretational guidelines suggest that Pearson ( $r$ ) values between  $-.30$  and  $.30$  are indicative of little if any relationship. Correlation

coefficients between current operating expenses and MEAP scores varied between -.054 and .198. Correlation coefficients between instructional spending and MEAP scores varied between -.031 and .216. Correlation coefficients between average teacher salaries and MEAP scores varied between -.032 and .256. While mostly positive, these correlation coefficients were weak enough to suggest that little, if any, correlation existed between MEAP scores and the level of per pupil funding in the categories of Current Operating Expenses or Instructional Spending or MEAP scores and average teacher salaries. Based on these findings, the null hypothesis that there was no correlation between student academic achievement and the amount of per pupil funding in the student's school district in the State of Michigan was accepted in this study.

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Douglas Harold Snyder



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## **CHAPTER I**

### **INTRODUCTION**

#### **Background of the Problem**

**“The 24th Annual Gallup Phi Delta Kappa Poll of the Public’s Attitudes Toward the Public Schools” (Elam, Rose & Gallup, 1992) found that “lack of proper financial support” shared top place with “use of drugs” as the most important problem facing America’s schools. The problem of financial support has not headed the list since 1971. While this public concern for better funding of public schools may be encouraging to educators, it seems to contradict the national mood as expressed by the “taxpayer revolt” (Bennett, 1988). As disillusionment with government grows, citizens often view education as another overly expensive governmental service. A contradiction exists between the acknowledgement of a funding problem and the willingness to address it.**

**A contradiction seems to exist, as well, in the perceptions people hold about the quality of their own schools as compared to other schools. In “The 24th Annual Gallup Phi Delta Kappa Poll of the Public’s Attitudes Toward the Public Schools” (Elam, Rose & Gallup, 1992), 18% of Americans gave “grades” of A or B to the nation’s schools. On the other hand, 40% of the same group gave a grade of A or B to the public school which their children attended. These high approval ratings were more frequent among people with higher incomes, raising the question of whether there is a relationship between money and school quality. Among people living in suburbs, the approval rating of local schools was 46% while among those living in inner cities, the**

approval rating was 28%. Among the inferences which could be drawn from this data is that people seem to think the problem with public education exists in other people's schools, but not their own.

The American tradition of local control of schools may be partially responsible for the different view people hold toward the quality of their local district compared to that of the nation's schools in general. Close affiliation with, and responsibility for the institution may enhance the way in which the performance of a local school is perceived. This perception may or may not be warranted. People may be making assessments based on emotional rather than objective data, giving their local district "a break" because of their closeness to it. On the other, people may be better informed about their local districts and drawing their conclusions using more accurate information than what they receive regarding the nation's schools in general.

In spite of the differences between local and national perspectives of school quality, a perception exists that schools are not succeeding in their mission (Kantrowitz, 1993). This perception is real and possible factors in its cause must be investigated if schools hope to gain the credibility needed to garner additional public support.

### **Purpose of the Study**

The purpose of this study was to determine if a relationship existed between the amount of funding provided for public education and the achievement levels of the students within the educational system. Specifically, per pupil funding levels of school districts in the state of Michigan were correlated with district achievement levels as measured by the Michigan Educational Assessment Program (MEAP) tests. MEAP tests are a battery of criterion reference tests which are administered annually to all

students in the public school system in the state of Michigan (Michigan Department of Education, 1993). The tests measure student achievement in reading, mathematics and science. The reading test consists of two subtests which assess informational and story reading skills. The mathematics and reading tests are given in the 4th, 7th and 10th grades. The science test is given in the 5th, 8th, and 11th grades. MEAP scores receive a great deal of media attention each year when they are released, because they are one of the main standards by which school districts are compared and rated within Michigan. This study of correlation was used to determine if school districts with higher levels of per pupil funding reflect significantly higher levels of pupil achievement.

#### Statement of the Problem

The degree that financial support for education affects educational quality is an important question in the school reform debate (Kozol, 1991). During the 1980's, the public's concern about the quality of the American educational system grew dramatically. In 1983, the publication of A Nation At Risk began a series of debates and studies regarding the quality of the American system of public education. The findings and conclusions of these studies increased the concern regarding the quality of the system. The American public thinks the state of its education system is not satisfactory (Kantrowitz, 1993).

One aspect of the numerous solutions proposed to America's problem with education is additional funding (Baker, 1991). The public's perception of the need for additional financial support will determine its willingness to provide those resources (West, 1984). If citizens are to be asked to provide additional funding for the current educational system, they must be reasonably certain that additional money will improve



the system (Hildebrand, 1977). If a case can be made that students, whose educations are subject to higher levels of financial support, achieve at significantly higher levels, then the appeal for additional funding of education can be justified. If not, educators must reconsider their requests for additional funding.

### **Rationale for the Study**

One element of the debate upon which all parties agree is the importance that a strong system of public education plays in America's economic future (Harris, 1992). A well-educated work force is cited as the key to a prosperous American future. The public is beginning to recognize that as the world moves toward a global economy and technology becomes increasingly advanced, being well trained and educated will be the key to a secure future (Daggett, 1993).

As trade-barriers around the world come down, an increasingly international economy is emerging. American business is moving its unskilled labor operations to less developed countries where the cost of labor is lower than in the United States. American workers must have better skills if they hope to survive in this new economic order (Odden, 1992). The public school system is faced with the challenge of delivering to its students the skills necessary to be flexible, productive members of this rapidly changing world (Daggett, 1993).

While there is wide-spread unhappiness with the current system of American education and wide-spread agreement on the importance of education, there is disagreement over the reasons for the perceived inadequacies of the current system (Vedder, 1988). The quality and commitment of the professionals who carry out the task is sometimes questioned (West, 1984).

The changes in the American family structure through the last half of the twentieth century are often cited as a cause for the breakdown of many parts of American culture. The vast majority of today's students no longer come from a "traditional" nuclear family (Foren, 1993). The stress and seeming dysfunction associated with this sociological change is cited as a reason for educator's inability to teach a large segment of the students in America's public schools.

The structure of the current system, developed at the beginning of the twentieth century, is criticized as antiquated and no longer functional (Daggett, 1993). Large, departmentalized high schools based on the American concept of mass production are blamed for offering impersonal, disjointed learning experiences with little relevance for today's students. The school calendar is a remnant of an agrarian society and became obsolete many decades ago.

The major concern that drug use poses in American society is also present in schools. For the years 1986-90, drug use has topped the Gallup poll as the public's number one concern regarding public schools (Elam, Rose & Gallup, 1992). Fighting, violence, and gangs follow this theme and are also cited as a major concern by those polled.

The amount and nature of television viewed by the average American young person are often mentioned as a reason for the decline of the American student (Williams, 1982). Fundamentalist religious groups blame the exclusion of religion from public schools for the current demise of education (Nathan, 1989). The list of causes is seemingly endless with nearly everyone having his or her own reason why the system is failing. One thing seems certain, the problem is many-faceted and solutions will be complex and expensive (Brodinsky, 1989).

As would be expected, the proposed solutions to the problem are nearly as numerous as the perceived causes. The issue of professional competency is being addressed through licensing laws and teacher testing (Hallinger, 1991). The reevaluation of teacher tenure laws is gaining attention as is the privatization of schooling through various forms of vouchers and choice (Nathan, 1989). The changing family structure is being addressed through additional services offered by school districts (Frymier, 1989). The concept of cradle to grave educational services is gaining popularity as schools take on more of the roles previously filled by the family. Some schools are experimenting with innovative restructuring plans to better fill the needs of students entering an entirely different workplace than what schools were originally preparing students to enter (Hallinger, 1991). Drug programs are a regular part of all schools' curricula and security is a normal part of schools' personnel needs (Frymier, 1989). These initiatives are all aimed at improving the quality of the American educational system.

All of the plans being discussed have several elements in common. First, they will require a great deal of energy and creativity on the part of professionals in the education field. It will be a monumental task to turn a large institution which holds a virtual monopoly on its market in a new and different direction (Hallinger, 1991). Secondly, these plans will be expensive. Most of the plans require additional services from some aspect of the educational community. Providing these services will mean additional staffing in planning and implementing programs. Education is a labor intensive endeavor and providing additional services means more financial resources will be needed (Vedder, 1988).

### Significance of the Study

The degree to which the level of funding affects the quality of an educational program is an important question if quality and equity are to be addressed in the debate surrounding the American educational system (Connors, 1982). If higher funding levels correlate to higher learning levels, then additional financial support is part of the solution to the problem with American education (McCarty, 1990). Additionally, if higher funding levels correlate to higher learning levels, then the great disparities in funding levels, as they exist throughout the United States, are causing inequities in the learning opportunities offered to children (Kozol, 1991). If great differences exist in the learning opportunities offered to students in different school districts, then the basic tenet of a free and equal education for all is not being met by America's schools (Renchler, 1992).

### Broad Research Question

This study sought to apply objective, systematic research techniques to a question which receives much emotional, unscientific discussion. To that end, the following broad research question was proposed: Does a correlation exist between student academic achievement and the amount of per pupil funding in the student's school district?

The broad research question was addressed by considering three more specific questions incorporating the operational aspects of the study. The answers to these questions would provide the answer to the broad research question. The three questions used to address the broad research question were:

1. Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the current operating expenditures category?
2. Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the total instruction category?
3. Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the average teacher salary category?

### **Definitions of Variables and Terms**

**Independent Variables** - The independent variables in this study were the amount of per pupil spending of the sample school districts in the 1991-92 school year in the categories of Current Operating Expenses, Total Instruction, and Average Teacher Salary (Michigan Department of Education, 1993).

**Dependent Variables** - The dependent variables in this study were MEAP scores of students in the twelve levels and areas tested by the MEAP during the 1991-92 school year. Those levels and areas were: 4th grade reading - informational selection, 4th grade reading - story selection, 4th grade mathematics, 5th grade science, 7th grade reading - informational selection, 7th grade reading - story selection, 7th grade mathematics, 8th grade science, 10th grade reading - informational selection, 10th grade reading - story selection, 10th grade mathematics, and 11th grade science (Michigan Department of Education, 1993).

**Level of Achievement** - Level of achievement was the percentage of students receiving satisfactory scores on MEAP tests as reported by the state of Michigan (Michigan Department of Education, 1993).

Amount of Per Pupil Funding - Amount of per pupil funding was the figure reported by Bulletin 1014 for the 1991-92 school year as available through the Michigan Department of Education (Michigan Department of Education, 1993).

### Overview of Methodology

Two basic sets of data were collected from the Michigan Department of Education to carry out this research: financial data for each district in the state as reported in Bulletin 1014, and scores from the Michigan Educational Assessment Program tests available through a report titled MEAP District Results by I.S.D. This data is available annually from the Michigan Department of Education. Both sets of data were requested and provided under the Freedom of Information Act. The data was ordered on ASCII formatted computer diskettes as well as in printed form.

The data was used to measure correlation between the various levels of funding and MEAP scores for all schools in the state of Michigan. Data from the diskettes were imported into spreadsheets on a MacIntosh computer. Pearson Product-Moment Correlation Coefficients were calculated from this data. With 12 sets of test data and 3 categories of funding, 36 correlation coefficients resulted.

### Summary

As the debate over educational reform continues, financial support remains one of the key components of the discussion. A credible link between additional financial support and better student academic performance is critical if reformers within the profession hope to justify their requests for additional funding. The intention of this study is to investigate if a relationship exists between the level of funding in school districts in the state of Michigan and the achievement of the students within those

districts as measured by MEAP tests. Chapter II will present a review of the literature associated with student achievement and financial support for education. Chapter III will outline the methods used in the study. Chapter IV will summarize the findings of the study. Chapter V will interpret the findings and draw conclusions regarding the relationship between student achievement and per pupil finding in the state of Michigan.

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE**

The purpose of this study was to investigate the existence and degree of relationship between per pupil funding of education in the state of Michigan and student achievement as measured by the Michigan Educational Assessment Program (MEAP).

This chapter provides a review of literature related to school finance and school quality. A number questions arise when considering the relationship between school finance and school quality. First, how did the current vehicle for funding schools in the United States originate? Second, does funding affect the quality of a student's education? Third, is the current vehicle treating students in the United States fairly and equitably? This chapter will address these three questions with: (1) a brief history of school finance, (2) a review of research on school finance and student achievement, and (3) a review of school funding equity in the United States.

#### **The History of School Finance**

The issue of equity in public education has a historical perspective which can be traced to the beginning of the American experience (Alexander, 1985). The tradition of state and local control has led to much of the controversy which surrounds the different methods and levels of support used to finance public education (LaMorte, 1989).



## The Concept of Free Public Education for All Citizens

### Education for the Welfare of the State

The concept of a system of free public education is uniquely American in origin (Alexander & Alexander, 1985). It is rooted in 18th century colonial America and developed along the same philosophical, political and social traditions which led to the formation of the United States. Previous to this time, the colonies adopted the same sort of class-oriented educational system they brought from England. There was no thought of a free or universal educational system. Children of poor and lower class families received their education at home or through apprenticeships. A Massachusetts statute in 1642 was the first formal governmental recognition of the benefits of education. It charged all parents with “seeing to the education of their children” (Alexander & Alexander, 1985, p. 21). Another Massachusetts statute, in 1647, required certain towns to appoint a teacher and allowed for the collection of taxes to support the endeavor. The primary purpose of the statute was to teach reading so that the scriptures would be studied and citizens could “avoid falling prey to the old deluder, Satan” (Alexander & Alexander, 1985, p. 21).

During the 1700’s a new political philosophy regarding education emerged in the American colonies (Alexander & Alexander, 1985). The value of an education was deemed essential to the welfare of the state. Previous to this time, education was seen to primarily benefit the individual. There was little societal value recognized by the old, English based concept of education. As Americans became obsessed with the idea of freedom, schools were seen as the vehicle through which this freedom could be won and held.

### A Free and Uniform Education

During the second half of the 18th century, Benjamin Rush envisioned a system of education coordinated from the primary grades through the university (Alexander & Alexander, 1985). He again stressed the importance of universal access to this schooling by all citizens. Rush argued that a free and uniform system would “render the mass of the people more homogeneous and thereby fit them more easily for uniform and peaceable government” (Alexander & Alexander, 1985, p. 22). Thomas Jefferson, in 1786, wrote a position letter in which he expounded on the importance of a bill for general education:

I think by far the most important bill in our whole code is that for the diffusion of knowledge among the people, No other sure foundation can be devised for the preservation of freedom and happiness. Preach, my dear sir, a crusade against ignorance; establish and improve the law for educating the common people. Let our countrymen know that the tax which will be paid for this purpose is not more than the thousandth part of what will be paid to kings, priests and nobles who will rise up among us if we leave the people in ignorance (Alexander & Alexander, 1985, p. 22).

During this era, free access generally meant those who could afford schooling paid a tuition while those who could not were allowed access by declaring themselves indigent. There were “pauper laws” which then qualified these poor families to send their children to school at no cost.

During the first part of the 19th century, under the leadership of Horace Mann of Massachusetts, the concept of an educational system free of cost to everyone emerged (Alexander & Alexander, 1985). Conflicts with religious leaders also characterized this phase of the development of public education. Through much of that century the financing of public schools was a potent political issue. In 1845, a state legislator in Rhode Island told a reformer of the day that if a bill providing a small state tax for school were to pass the legislature, it could not be enforced in Rhode Island even “at the point of the bayonet.” Horace Mann and the other reformers of this era are viewed by many as

the first advocates of our modern educational system. They helped create a free, secular public school system supported by both local and state general taxation.

### The Development of Free Public High Schools

#### Growth of “Common Schools”

Most affluent parents of the mid 19th century opted to send their children to private schools and academies (Alexander & Alexander, 1985). “Common Schools”, as free schools were referred to, were viewed as inferior and intended only for the lower class. These common schools only taught through the elementary grades so that a high school education required attending a private academy. As the middle class grew in number during this period, so did the need for better free schooling. The idea of a free public high school arose and was a development which was unique to the United States at the time. The viability of these “common high schools” was viewed with skepticism by many in the field of education. The president of Yale University observed in 1874 that “the expenditure of money for [public] high schools to prepare boys and girls for college was a doubtful experiment” (Alexander & Alexander, 1985, p. 33). In 1872, 30 percent of the students entering colleges were from public high schools while the remaining 70 percent were graduates of private academies. By 1920, 90 percent of the students entering college were from public high schools. This ever-increasing need for public schooling, required an increased commitment of public funds.

#### Legal Basis for the Modern High School

Opposition to public high schools during the 19th century generally came from taxpayers who did not want to bear the increased financial burden and advocates of academies and sectarian schools who were fearful high schools would deplete their

constituency (Alexander & Alexander, 1985). A court case in 1874, in Kalamazoo, Michigan, is credited with opening the doors to public high schools as they are known today. In 1858, the superintendent of the Kalamazoo village school district created a union high school after a model used in several other Michigan communities. The high school grew dramatically amid controversy raised by taxpayers who objected to paying for it and proprietors of Kalamazoo College who lost students to it. In 1873, a group of prominent citizens filed suit against the school. The case was eventually heard and the suit dismissed by the Michigan Supreme Court.

The philosophical basis of the Kalamazoo case is credited with expanding other aspects of the public school system (Alexander & Alexander, 1985). Courts, at the time, were hesitant to give authority to spend public funds unless there was clear statutory language. The Kalamazoo school district based its legal authority on legislation of 1817 and the state constitution of 1835, neither of which was explicit regarding high schools. This judicial recognition of the importance of public schools aided both legislatures and courts to broaden educational opportunities. The introduction of kindergartens, vocational programs, special education, and compensatory education are legacies of this case.

### The Legal Foundation of School Finance and State Control

#### The Tenth Amendment to the U.S. Constitution

Over the years, the federal government has expressed great interest in the development of schooling in the United States (Alexander & Alexander, 1985). In spite of this involvement, authority for the administration and support of education is a state function. This tenet of state control is based on the Tenth Amendment to the Constitution of the United States. This amendment states that “The powers not

delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively or to the people” (Alexander & Alexander, 1985, p. 57). Because no mention is made of education in the Constitution, authority over it is reserved for the states.

### Historic Sources of Revenue

With the authority for education, states find themselves charged with the responsibility for financing education (Alexander & Alexander, 1985). As with most other functions reserved for states, methods of executing this responsibility vary among states, while maintaining certain similarities. The system of financing schools evolved with the development of municipal taxation methods.

In early colonial days, governments relied on voluntary payments, subsidies from abroad, rents, and occasional fees and fines (Alexander & Alexander, 1985). As the need for more substantial and consistent income grew, compulsory tax systems developed. These systems tended to evolve in accordance with the nature of the community.

In the New England colonies, where nearly everyone owned land, and distribution of property was relatively equal, a produce tax was instituted (Alexander & Alexander, 1985). This tax eventually developed into a general property tax. In order to reach artisans and those who subsisted through labor, rather than property ownership, a “faculty tax” was instituted. Although somewhat arbitrary, this tax attempted to assess based on the value of the trade performed. As the tax structure grew, large businesses and the newly developing corporations were taxed. These institutions were assessed based on the net income they generated. This was the precursor to the modern corporate tax system.

In the southern colonies, land was distributed in a far less democratic fashion (Alexander & Alexander, 1985). Large, aristocratic holdings of land made the property tax an unpopular method of taxation among the people of power. Because of the influence of the large property owners, excise taxes, especially on imports and exports, were the primary form of revenue. As the need for revenue grew, taxes were expanded to include license and privilege taxes on small businesses (saloon keepers, horse traders, slave traders, operators of ferries, turnpikes, and toll bridges); in short, all occupations carried on outside of farms.

In the middle colonies, dominated by the influence of Dutch immigrants, a third method of tax assessment developed (Alexander & Alexander, 1985). This method was borrowed from Holland, where all trade was taxed. The primary difference between this system and that used by the southern colonies, was that domestic trade as well as foreign trade was targeted.

#### Property Tax as the Major Form of Support for Education

The 19th century saw the spread and refinement of the property tax as the primary method of generating local governmental income (Alexander & Alexander, 1985). As new states entered the union, the general property tax, as it was evolving in the northern states, was the method generally adopted. The structure grew in complexity addressing three factors of equity: general taxation of all property rather than specific types; appraisal of property rather than a fixed rate per piece of property; and the principle of uniformity whereby all properties were taxed at the same rate. This taxation method is still the cornerstone of school funding.

## The Connection Between School Funding and Quality

A review of the research on the effect of financial support of education on academic achievement offers varied findings. Researchers are as divided on the issue as the politicians who argue it in the public forum (Connors, 1982). The political interest in the topic is a natural extension of the political function. A major responsibility of the political process is the allocation of public resources (Harp, 1992). Considering the large investment being made in public education, it would be irresponsible if politicians did not question the return from this investment (Bennett, 1988).

Two major concerns arose regarding education in America during the 1980's. They were a seeming decline in quality coupled with an increasing cost. This trend left many taxpayers with "an uneasy feeling that they are paying more for less" (p. 6-7), according to journalist John Hildebrand (1977). This "uneasy feeling" brought the issue of cost vs. quality out of the educational domain and into the political arena.

### Opposing Conclusions From the Same Research

Secretary of Education, William Bennett, used this trend and public sentiment, to support the Reagan administration position that there was already plenty of money for schools. The problem, according to Bennett, was that the money was being spent poorly. Secretary Bennett cited 147 studies at the Department of Education (Hanushek, 1986) which, he claimed, "did not show a strong, positive correlation between spending more and getting a better result" (p. 3). He further asserted, that "in only two or three do we find even a weak correlation between spending and achievement" (USA Today, 1988, p. 3). This position represents one end of the spectrum of opinion on the issue of spending for education.

The same data referred to by Secretary Bennett, re-analyzed, leads another author to just the opposite conclusion (Baker, 1991). Bennett's assertion was based on work done by Eric Hanushek (1986). Baker reevaluated the work done by Hanushek and concluded that, using different statistical techniques, the studies show "the level of spending may be the most powerful of all the variables affecting achievement" (p. 629). This assertion contradicts that made by Secretary Bennett and is based on the same data. These contradictory conclusions point to the wide degree of disagreement over the issue and the difficulty caused by the political nature of school funding.

In Baker's review of Hanushek's work, he is critical of the way in which Hanushek reviews the 147 studies. By using the traditional "vote counting" method, Hanushek does not judge the studies, according to Baker. All studies, regardless of significance, are given equal weight in the assessment. Baker asserts that meta-analysis is a more current and appropriate method of assessing the available work (Baker, 1991). Meta-analysis is a method of analyzing a set of analyses so as to bring different studies together in an integrated set of findings.

#### A Meta-Analytic Approach

Childs and Shakeshaft (1987) conducted a meta-analysis of literature on the relationship between educational expenditures and student achievement. Their search led them to 467 studies published between 1928 and 1980. Sixty-seven of these were dissertations and 400 were other publications. They set standards by which to determine what studies were appropriate for inclusion in their analysis. Studies selected possessed the following 4 qualities: they used an  $r$  statistic (correlation coefficient) or a statistic which was convertible to an  $r$  statistic; all of the statistics used in the study were available for examination; actual students scores on achievement tests



were used to determine the relationship between educational expenditures and student achievement; and the samples in the studies consisted of individuals, school districts, or schools. Forty-five studies met the requirements (29 dissertations and 16 other publications).

The 45 studies included 417 different correlation coefficients (Childs and Shakeshaft, 1987). This was because each study usually produced more than one case for examination. In some cases, several grades were correlated. Sometimes more than one test was used to assess student achievement. The method of determining financial support varied and in some studies used more than one formula. In all, 37 types of achievement were measured. The most numerous correlations were in reading (142), composite (74), and mathematics (32). Twenty-six different tests were used with the most frequent being: Minimum Basic Skills Test (96); Stanford Achievement Test (51); Iowa Test of Basic Skills (36); Iowa Test of Educational Development (35); and California Achievement Test (35). Of the 15 grade levels for which data existed, the most numerous were: 9th (65), 6th (61), 12th (57), 5th (57), 11th (55), and 3rd (51). Sample sizes ranged from 87 to over 2 million.

The results of the meta-analysis showed a small degree of correlation (Childs and Shakeshaft, 1987). In 400 of the cases, which used mean correlation, 1.04% of the variance was attributed to educational expenditures. The studies which used variables for direct instructional costs and direct instructional costs divided by weighted average daily attendance, produced the largest amount of variance among the educational expenditures (6% and 9% respectively). Of the 17 studies involving median correlations, the amount of variance was somewhat higher (5%). Correlation coefficients in this group varied from .0400 to .4631 with an overall correlation of .2301.

A possibly important trend was noticed among the studies with relationship to the dates over which they were carried out (Childs and Shakeshaft, 1987). There was a decline in correlation as the studies became more recent. Studies before 1960 had a mean  $r$  of .2528. Studies conducted during the 1960's had a mean  $r$  of .1593. Studies conducted during the 1970's produced a mean  $r$  of -.0413.

#### Virginia Studies Offer Contradictory Results

Two studies conducted in Virginia in the early 1980's added additional contradictory findings to the body of literature surrounding financial support for education. In 1981 Eugene Connors conducted a study for the Virginia State Department of Education at the request of a group of school superintendents hoping to justify a request for additional funding. His findings indicated a rather strong negative correlation between funding and student achievement. The surprise results caused Connor to review his methodology. In response to perceived flaws in the study, Connor repeated the research and found moderate positive correlation between the variables.

Connor's first study (1981) examined reading, mathematics, science, social studies, and language arts achievement at the 4th, 8th and 11th grades as measured by Science Research Associates (SRA) test scores. The research included 10 schools and found negative correlation with  $r$  values that varied between -.3279 and -.6929. The results seemed to indicate that additional spending for education was detrimental to student achievement (Connor, 1982).

"In the best interest of public education," Connor (1982) felt he could not let the findings of 1981 stand unchallenged. He identified two problems with his previous study. First, the selection of the 10 school districts was not done in accordance with

accepted procedures for sampling. The 10 districts were chosen on the basis of their willingness to participate. There was no way of knowing if they represented typical schools in Virginia. Second, there was no attempt to analyze a “delay effect.” The test scores were for the same year in which the money was spent, giving no time for the benefit of the funding to show results.

In 1982, Connors undertook a second, broader and more carefully conceived study of SRA scores and per pupil funding in Virginia. A stratified random sampling technique was used which included 30 school districts. In order to compensate for the “delay effect,” test scores for the years 1972-82 were used. The data was analyzed using linear multiple regression. In this study, Connor (1982) found positive correlation between funding and achievement in all subjects at all grade levels. The  $r$  values for the correlation coefficients varied between .29 and .50, with an  $r$  value for the total mean score of .43 (Connor, 1982).

Connor’s position following his first study represents the dilemma faced by researchers who pursue investigations of this nature (McCarty, 1992). The question of correlation between funding and achievement has potentially self-serving or self-damaging ramifications to educators. The results of the first study did not serve the education profession well. Connor therefore undertook a second study to refute his first. Because statistics are notorious for the various viewpoints they can serve, a case could be made that Connor’s purpose was to reach a conclusion which supported the views of his sponsors. The connection between degree of funding and quality of education makes such good common sense to experienced educators, that it seems inconceivable for any other conclusion to be drawn (Connor, 1982).

This “common sense” point is pursued by Childs (1987) in the discussion of his meta-analysis findings. He makes the argument that if no formal schooling was

offered to a group of students (that is, no money was spent), little achievement would occur. If, on the other hand, unlimited funding was available for certain students, they would achieve better, on the whole, than those with no formal schooling. From this basis he offers the suggestion that money makes a difference, we just haven't spread the continuum of spending far enough to determine where the difference begins to show itself.

### The Influence of Family Socioeconomic Level

An issue closely related to the question of school spending and student achievement is the issue of family socio-economic level and student achievement (Ornstein, 1989). In the state of Michigan, the Michigan League for Human Services conducted research comparing MEAP scores and indicators of family wealth (Foren, 1992.) The findings showed that students from districts with lower percentages of satisfactory MEAP scores were far more likely to participate in government subsidized free lunch programs. These lower scoring districts also tended to have lower average state equalized valuations which is a reflection of family wealth. The effect of family wealth is difficult to separate from district wealth, since wealthy families tend to live in wealthy districts. It is important to view these two types of wealth separately, because family wealth is not easily changed, while district wealth is usually subject to a funding formula of some sort and, therefore, relatively easy to change.

### The Importance of How Money is Spent

Another issue which rises out of the discussion of funding for education concerns the targeting of effective strategies. This point was raised by William Bennett in his tenure as Secretary of Education when he indicated that there was sufficient

money, but that it was being misspent (Bennett, 1988). The types of expenses which are cited as non-productive with regard to learning vary from administrative and bureaucratic, to transportation, insurance and new buildings (Rutters, 1981). Although hard research on each of these categories is scant, conclusions seem to indicate that money is best spent as close to the classroom as possible (Childs, 1987).

The one exception to this is class size. In fact, lowering class size may be one of the least productive ways to spend money in education (Vedder, 1988). The cost to lower class size by one student in every classroom in America was estimated in 1986 dollars at \$5 billion. Based on research regarding the minor impact this would have on learning, there are far better ways to spend this amount of money, according to Vedder (1988).

#### Productivity in Public Schools

A decline of labor productivity is also cited as a factor adding to the cost of our current educational system. A study by Michael Rutter (1981) indicated that a set of variables related to personnel behaviors had significant effect on student achievement. Rutter (1981) found that students learned better when teachers prepared lessons in advance, arrived on time at the start of class, taught by directing attention to the class as a whole, and regularly sat and graded homework.

Rutter's study (1981) draws no conclusions regarding the presence or lack of these qualities in public schools; however, Vedder (1988) cites three reasons why he feels productivity is falling off in public schools with regard to teacher behaviors. First, monopoly power has been shown, over time, to have an adverse effect on an industry's productivity and competitiveness. With no competition, except from relatively expensive private schools, the education industry has been exempt from the

efficiency pressures felt by other American industries. Second, consumers do not pay directly for the service they receive from their public schools. Bills are typically paid through a third party governmental agency thus removing the direct contact between the paying customer and the school. Third, teacher unions have long engaged in “rent seeking behavior” (getting something for nothing). In negotiating contracts, according to Vedder (1988), teacher unions seek to increase their compensation without a commensurate increase in workload.

### The Effective Schools Research

The body of literature known as The Effective Schools Research (Lezotte, 1985) has delved rigorously into the question of what aspects of the school environment relate to student achievement. This research was led by Larry Lezotte and Ron Edmonds (1985) and sought to identify the components common to all effective schools. It outlined the seven characteristics of an effective school as being: (1) a clear and focused mission, (2) strong instructional leadership, (3) effective teachers, (4) high expectations for students, (5) frequent monitoring of student progress, (6) a safe and orderly environment, and (7) good home school relations.

Clearly there are numerous factors which affect the quality of education. Many of these factors have little direct relation to the level of spending. There remains, however, an intuitive sense among educators with experience in the profession that “money makes a difference.” The contradictory nature of past studies and this “intuitive sense” make additional investigation germane.

## **The Equity and School Funding in the United States**

Researchers usually approach the funding and achievement question from one of two perspectives (Verstegen, 1990). One line of research focuses on quality, which concerns itself with the adequacy of funding, while another focuses on equity, which addresses the fair distribution of existing funding. Funding inequities have been as much a part of the school funding question as adequacy.

### **The Fourteenth Amendment to the U.S. Constitution**

The 20th century saw the rise of the question of equitable distribution of school funds (Alexander & Alexander, 1985). The first such case arose in 1912 and was based on the Equal Protection Clause of the Fourteenth Amendment. In the latter part of the 1900's such cases grew in number and political complexity. An education was interpreted to be a constitutionally protected right rather than a state provided privilege. As a protected right, the argument went, "the state that gives fewer dollars for the child in a poorer school district may be held to deny equal protection rights" (Alexander & Alexander, 1985, p. 723).

### **The Rodriguez Case**

A number of law suits in various states pursued this course with seeming success (Alexander & Alexander, 1985). Several cases also claimed discrimination under the Civil Rights Act. In 1973, the Supreme Court of the United States brought all of the federally directed litigation to a halt by its reversal of the Rodriguez case which originated in Texas. The court ruled that an education was not a fundamental constitutional right protected under the Fourteenth Amendment. This returned the equity issue to individual states where various courses are being pursued on a state by state basis.

### Sources of Inequity

The lack of a strong relationship between school funding and student achievement has made the cause more difficult for proponents of school funding equity. Jonathan Kozol (1991), in his book Savage Inequalities, takes a less scientific approach to the problem. While using statistics to cite the gross inequities which exist in funding levels, he uses case studies to describe the conditions which prevail as a result of the different levels of support. The graphic descriptions of inner-city schools and the conditions under which they function are contrasted with the conditions in affluent suburban districts and the benefits enjoyed by their students. Much of Kozol's case is based on the emotional impact that his descriptions have on the reader. Although a case for student achievement is not made, a strong case for basic fairness and the feelings that come from studying in a pleasant environment is effectively made by Kozol.

The magnitude of school funding inequities is evidenced by the fact that in most states, wealthy districts outspend poor districts by a factor of two to five times (Harp, 1992). In Texas, in 1989-90, the poorest district spent \$2150 per pupil while the wealthiest spent \$14,514. In New York, for 1989-90, funding levels varied from \$3127 to \$19,238 per pupil. The same disparity exists between states. Arkansas spent an average of \$2423 per student in 1989-90, while Alaska spent \$7411. Although some of the disparities can be explained by cost-of-living variations in different parts of the country, the degree of difference is dramatic.

The situation in Michigan is similar to that in other states (Michigan Department of Education, 1993). For the 1991-92 school year, per pupil funding levels varied from a high of \$10,749 in Bloomfield Hills to a low of \$3291 in Kingsley. While



differing by a factor of nearly 3.3, these two per pupil funding levels were based on local millage rates of 24.83 in Bloomfield Hills and 25.53 in Kingsley. Because of local property value, which is often based on commercial or industrial property, many districts are provided with funding levels out of line with the degree of local property tax they pay. This disparity in local taxation effort and resultant tax revenue is seen in the cases of the Mackinac Island school district which levies an operating millage of 8.37 mills with a resulting per pupil funding level of \$9394 and the Wayne-Westland school district which levies an operating millage of 47.2 mills with a resultant per pupil funding level of \$5466. While the funding mechanism in Michigan was changed dramatically in 1993, inequities still remain and will likely remain for the foreseeable future.

#### Quality vs. Equity

A positive correlation between learning and spending would have different implications to the advocates of quality and equity. The resulting efforts of these two advocacy groups could likely be different and adversarial (Odden, 1992). Their separate efforts could potentially divide the educational community.

Proponents of the quality issue could use the correlation as a call for more money spent on education. Their point would be that if Americans are serious about their concern for a well educated populous, they must show their commitment with their pocketbooks (Baker, 1991). A call for more money would serve the causes of quality as well as equity, so would not likely be divisive.

Advocates of the equity issue, on the other hand, could use the findings to support efforts to reallocate current financial resources (Kozol, 1991). Because of the nature of local control and resultant feeling of ownership, poorer school districts could

find themselves in adversarial relationships with their wealthier neighbors. The potential for the educational community doing itself harm through conflict within the institution is a concern which would have to be addressed (Odden, 1984).

Should a positive correlation exist between the level of financial support and student achievement, the widely disparate degrees of funding among schools is cause for concern. The growing breach between the poor and the affluent in America is largely attributed to level of education (Omstein & Levine, 1989). If society hopes to stem this growing polarization, education must be a major agent of change.

### Summary

Historically, school finance has remained a local issue (Alexander & Alexander, 1985). The funding mechanism of American schools is firmly rooted in tradition and law. The Bill of Rights reserved it as a right of the states. Because of the traditional reliance on local tax sources, in most states school finance is relegated to local units of governance.

A clear relationship between financial support for education and student achievement does not emerge from the literature. Much of the discussion is clouded with political agendas. Those whose agendas are advanced by a lack of correlation seem able to show that none exists. Those whose agendas are advanced by positive correlation seem able to show that one does exist.

The discussion of school finance and effectiveness has two focal points. One is quality and the other is equity (Verstegen, 1990). The quality issue could be summarized with the statement: If a positive correlation exists between funding and learning, then more money may mean better learning. The equity issue is summarized with a statement having a different conclusion: If a positive correlation exists between

funding and learning, then equal opportunity to a quality education may mean equal distribution of the resources available to schools. The quality debate considers the need for additional funding within the current framework, while the equity debate argues the need to redistribute the funding currently available. While differing in purpose, both perspectives are dependent on an answer to the question of whether there is a correlation between the amount of financial support for education and student achievement.

Chapter III describes the methodology by which this study investigated whether a relationship existed between per pupil spending in the state of Michigan and student achievement as measured by the Michigan Educational Assessment Program (MEAP). Chapter IV reports the findings of the study described in Chapter III. Chapter V discusses the findings from Chapter IV with an interpretive emphasis, looking for conclusions and implications suggested by the findings.

## CHAPTER III

### METHODOLOGY

The purpose of this study was to investigate if a relationship existed between per pupil funding levels and achievement levels of students in the state of Michigan. The magnitude of correlation between these two groups of variables is useful in the debate surrounding school finance in the state of Michigan during the 1990's. The amount of funding and the method of allocation are receiving a great deal of political and media attention. As in most states, there is a debate in Michigan between those calling for more funding for education and those who contend that no more money can be afforded. There is also pressure to balance the great disparity which exists between wealthy and poor school districts.

This chapter includes a description of the process used to carry out the research project. The research questions are restated along with a description of the sample used in the study. Detailed explanation is provided of each group of data and the process used to secure that data. The method used to analyze the data is outlined with a statement of the hypothesis and possible limitations of the findings from this study.

The study used the correlational method of research. Correlational research is a method which attempts to discover or clarify relationships between variables through the use of correlation coefficients (Borg & Gall, 1979). This method was chosen because a measure of the relationship between two sets of variables was being sought. While unable to establish causality, this method is able to provide a numerical measure with predictive value (Borg & Gall, 1979).

### **Research Questions**

To help determine the degree to which quality and equity are dependent on the level of funding, a correlational study was carried out. To that end, the following broad research question is restated from Chapter I: Does correlation exist between student academic achievement and the amount of per pupil funding in the student's school district?

This broad research question was addressed through three more specific questions which are stated below:

1. Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the current operating expenditures category?
2. Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the total instruction category?
3. Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the average teacher salary category?

### **Hypothesis**

Based on a review of the literature associated with this topic, the following conceptual hypothesis was offered: There will be no correlation between student academic achievement and the amount of per pupil funding in the student's school district in the State of Michigan.

In order to test this hypothesis, three operational hypotheses were presented in null form for testing:

1. MEAP scores in the twelve subject areas and levels measured will show no correlation with the amount of per pupil funding reported in the current operating expenditures category.
2. MEAP scores in the twelve subject areas and levels measured will show no correlation with the amount of per pupil funding reported in the total instruction category.
3. MEAP scores in the twelve subject areas and levels measured will show no correlation with the amount of per pupil funding reported in the average teacher salary category.

### Sample

The population for this study was all public school districts in the state of Michigan. All school districts in the state are required to administer Michigan Educational Assessment Program (MEAP) tests at the 4th, 5th, 7th, 8th, 10th, and 11th grades annually. Data for this population was available upon request through the Michigan Department of Education in Lansing, Michigan. Because of the accessibility of this information, the data from all 523 school districts was analyzed.

University Policy requires all research projects be approved by the Human Subjects Institutional Review Board (HSIRB). The HSIRB's five primary areas of concern are: (1) the competence of the investigator, (2) the design of the research, (3) the balance of harm and benefit, (4) the process of informed consent, and (5) the equitable selection of subjects (M. Burnette, personal communication, 1993). The research plan was submitted to the board and approval received on August 8, 1994. The approved duration of the study is until August 8, 1995. (See Appendix)

## Research Design

### Description of Data

MEAP data is reported in a different format for each of the subject areas tested (Michigan Department of Education, 1992). For the sake of interpretation, each test has a “satisfactory” standard by which to judge individual district results. These results are reported as percentages of students falling into each category of achievement. The scores used for each district were the percentage of students who scored in the satisfactory category on each of the tests and grade level groups.

### Reading Data

Reading is assessed using two tests (Michigan Department of Education, 1992). One of the tests measures a student’s ability to read a passage for informational purposes, while the other measures a student’s ability to read and understand a story selection. Student raw scores on these tests fell between 210 and 357 in 1991-92. A score of 300 is considered “satisfactory” on these tests. For the purpose of data analysis, district reading scores were interpreted to be the percentage of students who scored in the satisfactory range in each of the two reading tests.

### Math Data

Mathematics proficiency is assessed using 3 sub tests in the areas of mental arithmetic, computation, and problem solving (Michigan Department of Education, 1992). These sub tests produce a single score. The State reports these district scores in raw mean, raw median, and percentage of students who have attained a satisfactory level of achievement. For the purpose of data analysis, district mathematics scores

were interpreted to be the percentage of students in the satisfactory achievement category.

#### Science Data

Science proficiency is assessed using a single 96 item test (Michigan Department of Education, 1992). Student results are broken into 4 categories of achievement. Students in the 4th category are considered to possess “satisfactory” skills. For the purpose of data analysis, district science scores were interpreted to be the percentage of students who are in category 4.

#### Financial Data

Bulletin 1014, which reports educational funding in the state of Michigan, delineates per pupil funding levels for numerous categories of educational spending (Michigan Department of Education, 1993). For the purpose of this study, MEAP scores were correlated with three of the categories of per pupil expenditures reported in Bulletin 1014. Those three categories were: current operating expenditures, total instructional expenditures, and average teacher salaries. The categories of expenditures vary because they include different data. Current operating expenditures contain all of the basic operating costs of a school including instructional costs and various support services. Total instructional expenditures include all costs associated with classroom instruction, including fringe benefits and salaries associated with instructional personnel. Average teacher salary expenditures include fringe benefits and are based on the full-time and prorated portions of regular teachers’ salaries for teaching services provided to pupils.



By examining current operating costs, total instructional costs, and the average teacher salary, the study moved from the most general to a more focused inspection of a relationship between spending and learning. Average teacher salary costs are the most focused of the three and constitute a subset of instructional costs. Instructional costs are in turn more focused than current operating expenditures and are a subset of that group of costs.

The review of the literature suggested that spending is more effective if it is spent closer to the instructional setting (Rutters, 1981). This three tiered examination of spending will allow the study of achievement and spending at each of three different levels of proximity to the instructional setting.

#### Collection of Data

Data from the MEAP tests is published annually by the Michigan State Board of Education through the Michigan Department of Education in Lansing, Michigan (Michigan Department of Education, 1992). Tests are mandated for all public school students in Michigan at the following grade levels and in the following subjects: 4th grade reading (story and informational) and mathematics; 5th grade science; 7th grade reading (story and informational) and mathematics; 8th grade science; 10th grade reading (story and informational) and mathematics; and 11th grade science. The results from these tests are reported on a district basis. Individual student scores are subject to the restriction of the Family Educational Rights and Privacy Act (FERPA)(Alexander & Alexander, 1985).

MEAP tests were first given in the 1969-70 school year in the areas of reading and mathematics (Michigan Department of Education, 1992). The intent of the program was to provide the State Board of Education with feedback on the extent to

which students in each local school district are learning basic skills. The tests are objective referenced and developed by groups of educators from across the state in conjunction with members of the Michigan Department of Education. Validity of the tests has been assessed by specialists from the Michigan Reading Association, the Michigan Council of Teachers of Mathematics, and the Michigan Science Teachers Association (Michigan Department of Education, 1991). Science was added to the test battery in 1986-87.

Financial data for all school districts in Michigan is available through the Financial Management Services Office of the Department of Education in Lansing, Michigan. This information is published annually in Bulletin 1014 (Michigan Department of Education, 1993). Because of the collection process, the form is available approximately one year after the conclusion of the fiscal year for which it reports.

Bulletin 1014 reports per pupil expenditures in 13 different categories (Michigan Department of Education, 1993). The categories include various breakouts which specify costs for such services as administration and business, operations, teacher salaries, support services, added cost programs and instruction. Some categories are subcategories of each other while others overlap. The data within these categories varies considerably as different types of expenditures include substantially different data. This study will focus on three successively more specific areas of spending: current operating expenditures, total instructional costs, and average teacher salaries.

### Analysis of Data

Both the MEAP data and Bulletin 1014 data were secured by writing the appropriate department and formulating the request as outlined by the Freedom of Information Act (See Appendix A). The information was available in printed form and on a 3.5 computer diskette. The computer diskette was formatted for the Micro Soft Disk Operating System (MS-DOS). For the purpose of this study the data was translated to the MacIntosh Operating System using Claris Works translators. Using the field descriptors provided with the diskettes (See Appendices D & E), appropriate field delimiters were added so the data could be imported into Claris Works spreadsheets. The necessary calculations were carried out using a MacIntosh Powerbook 160 and Claris Works software.

The study was a descriptive correlational study. Correlation coefficients were calculated for 36 pairs of variables. Each of the twelve test variables were correlated with each of the three categories of spending. Because both sets of variables are measured on continuous interval/ratio scales the Pearson Product-Moment Coefficient ( $r$ ) was used to measure correlation (Hinkle, Wiersman, & Jurs, 1979).

### Possible Limitations on the Variables

The use of MEAP tests as a measure of student achievement raised several concerns. District achievement has become a public relations issue with strong implications in some districts. In many areas of the state MEAP scores are the most public form of comparison among districts. The scores are highlighted by local newspapers as a measure of growth within districts and as a means of comparison among districts. Some districts take the scores very seriously, while others question their importance and validity. The resultant pressure on educators within districts to do

well, can vary widely from district to district. This difference of priority among districts can bring about widely varying behaviors among building administrators as they react to the adage “what gets measured gets done.”

When MEAP scores are given high priority, curriculum usually conforms to this emphasis. Some schools spend the weeks preceding MEAP testing reviewing the concepts which will be tested. Competition among schools and pressure on building administrators can be intense. The nature of preparation for MEAP has raised ethical questions in some districts with regard to what is proper. Often, preparation goes beyond instruction and takes the form of coaching with parallel tests. While clearly defined as improper in the MEAP instructions, such behavior occurs in response to public pressure to do well.

For various reasons, some districts have not felt pressure to improve MEAP scores. For these districts, the pre-MEAP preparation may not take place. Students from these districts will enter the testing with a decidedly different degree of preparation and motivation to do well. The wide degree of importance assigned to and resultant preparation for MEAP tests offered a possible source of contamination of data.

Another possible source of contamination involved testing conditions. Tests are given in thousands of different settings. Although there are suggested guidelines for test administration, it is usually left to a classroom teacher or building administrator to carry out the testing. Some students are tested in classrooms with well controlled conditions while others may be tested in large settings with hundreds of students under poorly controlled conditions. The attitude and helpfulness of proctors varies widely. There are surely as many variations in testing conditions as there are testing settings.

A final source of concern was the accounting practices of the school districts in the sample. Although the State of Michigan uses a uniform accounting procedure for all school districts, individual school business officials may interpret the rules differently. One financial officer's idea of what constitutes an instructional expense may not be the same as another's. These differences in interpretation may cause differences in the category in which different districts report their expenses.

Although each of these limitations on the variables may have affected the results in individual districts, they should not have had a serious detrimental effect on the overall results of the study. The size of the sample should have ameliorated any effect, thus preventing these limitations from having caused systematic contamination of the results.

### Summary

In order to determine the degree of correlation between school funding and student achievement, MEAP scores for all school districts in the State of Michigan for the 1991-92 were correlated with the per pupil funding levels in three categories of funding. MEAP scores were used from the three levels and four subject areas tested. The three categories of funding used were current operating fund expenditures, total instructional costs, and average teacher salaries. The correlation was measured using the Pearson Product-Moment technique.

The results of the study are reported in Chapter IV with a summary of the research design, the collection of data, and analysis of data. Each of the data sets is examined. The three research questions and associated hypotheses are addressed using the correlation coefficients which were calculated. In Chapter V, the purpose of the study and review of the literature are summarized. Limitations of the study are

discussed with implications arising from the study. Recommendations are presented for future research into the relationship between student achievement and financial support for education.

## **CHAPTER IV**

### **RESULTS**

The purpose of this study was to investigate if a relationship existed between per pupil funding levels and achievement levels of students in the state of Michigan. Financial data and student achievement data from the Michigan Department of Education was correlated for the academic year of 1991-92.

Chapter IV reports the results of this correlation study designed to investigate the degree of relationship between funding levels of school districts in Michigan and the student achievement levels of those districts. In this chapter, the research design will be reviewed from Chapter III. Characteristics of the population will be summarized and the process used to collect data will be described. The data for each research question and associated hypotheses will be examined and analyzed.

#### **Summary of Research Design**

The study used the correlational research method. Correlational research is a method which attempts to discover or clarify relationships between variables through the use of correlation coefficients (Borg & Gall, 1979). This method was chosen because a measure of the relationship between two sets of variables was being sought. While unable to establish causality, this method is able to provide a numerical measure with predictive value (Borg & Gall, 1979).

Financial data from all schools in the State of Michigan were collected for the fiscal year starting July 1, 1991 and ending June 30, 1992. Selected parts of this data were correlated with Michigan Educational Assessment Program (MEAP) test results

for the same schools from the tests given in the fall of 1991. The correlation coefficients were studied to determine what degree of correlation existed between these two sets of variables.

The financial data for school districts in the state of Michigan is reported in Form 1014 using 51 different categories. The information for the report is collected from individual school districts by the Michigan Department of Education Office of Financial Management Services. The information is available approximately one year after the conclusion of the fiscal year for which the data applies. The 3 categories of interest for this study were current operating expenses, total instructional expenditures, and average teacher salaries.

The MEAP test results are used by the state of Michigan as an annual measure of student achievement. The tests are criterion referenced and reported in 4 achievement areas at 3 grade levels. The tests are given in the fall of the year with results available several months after completion of the tests. The 4 areas which are tested by MEAP are reading a story selection for meaning, reading an informational selection for understanding, mathematics, and science knowledge. The 2 reading tests and the mathematics tests are given at grades 4, 7, and 10, while the science tests are given at grades 5, 8, and 11. Twelve categories of achievement were assessed for each district in the state of Michigan.

The 12 achievement variables were correlated with the 3 funding variables to arrive at 36 different correlation coefficients. Because both sets of data were measured on continuous interval/ratio scales, the Pearson-Product Moment technique was used to calculate the correlation coefficients between the pairs of variables.



### Collection of Data

All of the data used in the study were collected through the Michigan Department of Education in Lansing, Michigan. Financial data were secured through the Financial Management Services and MEAP data were ordered from the MEAP offices. Letters requesting the information under the Freedom of Information Act were required in both cases. Copies of both letters are included as Appendix A.

Both sets of data were available on electronic media in ASCII format. The diskettes available from the state were formatted using the Micro Soft Disk Operating System (MS-DOS) (Micro Soft Corporation, 1992). A MacIntosh Powerbook computer and Claris Works software package (Claris Corporation, 1992) were used to analyze the data. Because MS-DOS is incompatible with the MacIntosh operating system, the data from the state were converted to the MacIntosh operating system format. This data transfer was carried out using Apple File Exchange software and several problem specific macros to allow the data to fit the Claris Works data specifications. Appropriate spreadsheets were created and the data was analyzed.

### Analysis of Data

#### Overview of the Individual Data Sets

The sample, which consisted of all school districts in the state of Michigan, represented a wide spectrum of school characteristics. The largest and most urban of the school districts in the study was Detroit Public Schools with a student population in excess of 182,000. The smallest district was Whitefish Schools in Chippewa County in the state's upper peninsula with a population of 72 students. Because of the wide range of subject characteristics, a brief examination of the distribution of the data is included.

The range of the financial variables was wide. Table 1 shows the diversity which exists among school districts in the state in each of the 3 categories of spending under study. The spending varies by a factor of 3.2 in the case of current operating expenses, a factor of 3.0 in the case of instructional spending, and a factor of 2.4 in the case of average teacher salaries. The size of the standard deviation in each case indicates that there is substantial spread across the spectrum with regard to the levels of spending in school districts in the state.

The MEAP scores for the individual districts in the state spanned a wide range as shown in Tables 2-5. The scores represent the percentages of students who attained a satisfactory level of performance as determined by state set criteria. Tables 2-5 describe the distribution of scores for the 4 sets of tests administered in the fall of 1991. While the mean scores in the different tests and grade levels varied appreciably, standard deviations were consistent enough that no great disparity of distribution occurred within any particular set of tests. The mathematics scores for 1991 reflect the first year that a new and substantially different form of tests were used at all 3 grade levels.

The data in Tables 1-5, while not pertaining directly to the correlational study, offer a view of the nature of the data being studied. None of the groups of data bear characteristics which would raise concerns regarding anomalies which may occasionally occur in such data.

### Broad Research Question

The original research question posed in Chapter I is restated at this point. Does correlation exist between student academic achievement and the amount of per pupil funding in the student's school district?

Table 1

Levels of Spending for School Districts in Michigan  
During the 1991-92 Fiscal Year for the Three  
Financial Variables Under Study

Category of Spending	Low	High	Mean $\mu$	Standard Deviation $s$
Current Operating	\$2815	\$9040	\$4229	914
Instructional	\$1885	\$5736	\$2665	493
Teacher Salary	\$23437	\$55397	\$37701	5728

Note. Dollar figures are figured on per pupil basis.

Table 2

MEAP Scores in the Reading for Information  
Category for Schools in Michigan  
for the 1991-92 School Year

	Low	High	Mean $\mu$	Standard Deviation $s$
4th Grade	0%	88.9%	38.7%	10.5
7th Grade	6.5%	71.4%	37.0%	11.0
10th Grade	7.8%	75.0%	40.0%	11.4

Table 3

MEAP Scores in the Reading for Meaning  
(Story Selection) Category for  
Schools in Michigan for the  
1991-92 School Year

	Low	High	Mean $\mu$	Standard Deviation $s$
4th Grade	0%	94.3%	71.1%	10.9
7th Grade	26.3%	85.7%	58.3%	9.5
10th Grade	0%	93.3%	71.6%	10.9

Table 4

MEAP Scores in the Mathematics Category for  
Schools in Michigan for the  
1991-92 School Year

	Low	High	Mean $\mu$	Standard Deviation $s$
4th Grade	5.9%	86.2%	36.7%	13.0
7th Grade	2.2%	76.6%	33.9%	13.1
10th Grade	0%	52.4%	18.6%	9.8

Table 5  
MEAP Scores in the Science Category for  
Schools in Michigan for the  
1991-92 School Year

	Low	High	Mean $\mu$	Standard Deviation $s$
5th Grade	0%	97.7%	72.0%	12.4
8th Grade	14.9%	95.2%	57.2%	13.8
11th Grade	1.5%	90.0%	42.1%	13.1

### Conceptual Hypothesis

To answer the research question posed in Chapter I, a general hypothesis was offered for testing in Chapter III. There will be no correlation between student academic achievement and the amount of per pupil funding in the student's school district in the State of Michigan.

In order to answer the general research question posed above, 3 more specific research questions were considered. Three operational hypotheses were offered in null form with each of the specific questions. Each of the 3 specific research questions and associated null hypotheses will be addressed separately.

Correlation coefficients were calculated using the Pearson Product-Moment method. The correlation coefficient ( $r$ ) is returned as a value between -1 and 1. The interpretation of this value is somewhat arbitrary (Hinkle, Wiersma, & Jurs, 1979). Table 6 provides the scale suggested for interpretation of correlation coefficients by Hinkle, Wiersma and Jurs.

Table 6  
Scale for Interpretation of Correlation Coefficients

Value of $r$		Degree of Correlation
.90 to 1.00	(-.90 to -1.00)	Very high positive (negative)
.70 to .90	(-.70 to -.90)	High positive (negative)
.50 to .70	(-.50 to -.70)	Moderate positive (negative)
.30 to .50	(-.30 to -.50)	Low positive (negative)
.00 to .30	(.00 to -.30)	Little if any correlation

### Research Question 1

Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the current operating expenditures category?

### Hypothesis 1

MEAP scores in the twelve subject areas and levels measured will show no correlation with the amount of per pupil funding reported in the current operating expenditures category.

Table 7 represents the correlation coefficients which describe the degree of relationship between the level of current operating expenses for a school district and the percentage of students who score in the satisfactory category on MEAP tests. As the values for  $r$  show, there is little if any correlation between these variables. Based on these values, the null hypothesis is accepted supporting the assertion that the level of current operating expenses for a school district has little or no bearing on the district's MEAP test scores.

**Table 7**  
**Correlation Coefficients ( $r$ ) for Current Operating**  
**Expenses and MEAP Scores at Each Grade**  
**Level Tested**

Subject Tested	4th	5th	7th	8th	10th	11th
Reading (Information)	.121		.189		.172	
Reading (Story)	.040		.073		-.054	
Mathematics	.198		.136		.105	
Science		.000		-.031		-.024

( $-.30 < r < .30$  indicates little if any correlation)

### Research Question 2

Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the total instruction category?

### Hypothesis 2

MEAP scores in the twelve subject areas and levels measured will show no correlation with the amount of per pupil funding reported in the total instruction category.

Table 8 represents the correlation coefficients for the level of spending in the instructional category and the percentage of students who scored in the satisfactory level of MEAP tests. While in nearly every case the correlation coefficients are higher than for current operating expenses, they still remain in the range which would indicate little or no correlation exists. This would again support the null hypothesis that no correlation exists between the level of instructional spending for a district and that district's MEAP test results.

**Table 8**  
**Correlation Coefficients ( $r$ ) for Instructional**  
**Spending and MEAP Scores at Each Grade**  
**Level Tested**

Subject Tested	4th	5th	7th	8th	10th	11th
Reading (Information)	.114		.216		.184	
Reading (Story)	.073		.104		-.031	
Mathematics	.213		.172		.143	
Science		.014		-.005		.013

( $-.30 < r < .30$  indicates little if any correlation)

### Research Question 3

Will MEAP scores in the twelve subject areas and levels tested correlate with the amount of per pupil funding reported in the average teacher salary category?

### Hypothesis 3

MEAP scores in the twelve subject areas and levels measured will show no correlation with the amount of per pupil funding reported in the average teacher salary category.

Table 9 shows the degree of relationship between the level of the average teacher salary for a district and the percentage of students who scored at a satisfactory level on the MEAP tests. While these figures show the first signs of any consistency with the 4th grade scores all near .2 or above, the figures again support hypothesis 3 that no correlation exists between the average



Table 9  
Correlation Coefficients ( $r$ ) for Average Teacher  
Salaries and MEAP Scores at Each Grade  
Level Tested

Subject Tested	4th	5th	7th	8th	10th	11th
Reading (Information)	.199		.155		.160	
Reading (Story)	.220		.037		.101	
Mathematics	.256		.118		.137	
Science		.078		.007		-.032

( $-.30 < r < .30$  indicates little if any correlation)

teacher salary in a district and the percentage of students who score in the satisfactory range on MEAP tests.

The examination of the data in Tables 7-9 and the acceptance of the 3 working hypotheses would in turn support the general hypothesis that there will be no correlation between student academic achievement and the amount of per pupil funding in the student's school district. In applying the hypotheses to the research questions posed in Chapter I and restated in Chapter IV, the answer would be negative to all of the questions. That is, for the three specific questions: (1) MEAP scores in the twelve subject areas and levels tested show little or no correlation with the amount of per pupil funding reported in the current operating expenditures category, (2) MEAP scores in the twelve subject areas and levels tested show little or no correlation with the amount of per pupil funding reported in the total instruction category, and (3) MEAP scores in the twelve subject areas and levels tested show little or no correlation with the average teacher salary. The answer to the 3 specific research questions would in turn support

the conclusion that little or no correlation exists between student academic achievement and the amount of funding in the student's school district.

### Summary

In Chapter I, the problem of financing public education in the United States was discussed with emphasis on the perceived lack of quality and equity within the current system. Chapter II presented a review of research investigating the relationship between financial support and degree of achievement with a review of the evolution of the current system of financial support. Chapter III presented the methods used in this study to determine if a correlation existed between financial support and student achievement in Michigan.

In this chapter, the correlation data for student achievement and school funding were examined. The conceptual hypothesis was accepted based on the acceptance of the three operational hypotheses. The data indicated there was little or no correlation between current operating expenditures expressed in per pupil form and student achievement as measured by MEAP scores; there was little or no correlation between instructional expenditures expressed in per pupil form and student achievement as measured by MEAP scores; and there was little or no correlation between average teacher salaries and student achievement as measured by MEAP scores. The acceptance of the three operational hypotheses led to the acceptance of the conceptual hypothesis that there is little or no correlation between the level of funding within a school district and the level of student achievement.

In Chapter V, the purpose of the study and review of the literature are summarized. Limitations of the study are discussed with implications arising from the

**study. Recommendations are presented for future research into the relationship between student achievement and financial support for education.**

## **CHAPTER V**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

**This study was designed to investigate the degree of relationship between the level of spending and student achievement in school districts in the State of Michigan. In this chapter, the the problem and purpose of the study will be briefly reviewed for the reader. The literature will be summarized and the findings of the study reviewed. Limitations of the study will be discussed and implications that may arise from the study will be presented. And, finally, recommendations will be made for future study in this area of research.**

#### **The Problem and Purpose**

**Education has long been seen as an important part of the American way of life. The founding fathers recognized that in order for a democracy to survive, an educated populous was imperative. America is credited with being the first society to make education of all of its people, not just the nobility, of critical importance (Alexander & Alexander, 1985). Throughout its history, America has pursued this ideal with relative success. As America faces the challenges of the 21st century, the significance of education will increase. As technological advances in communication and transportation make the world smaller, the interdependence of national economies leads to an increasingly complex and competitive worksetting (Daggett, 1993). The United States' position in this world is seen to be increasingly dependent on the educational level of its people (National Commission on Excellence, 1983).**

While an educated populous is important to the national welfare, an individual's educational level is important to that individual's welfare (Brodinsky, 1989). Equal opportunity is an American ideal also rooted in the democratic principles underlying the founding of the United States as a nation. Much of the work of pioneers in public education focused on making the educational system truly accessible and equitable to all members of the American society (Alexander & Alexander, 1985). The tie between quality of life and educational status is well established. The relationship between an individual's level of education and earning potential is thoroughly documented. Educational level is viewed by sociologists as the best predictor of a family's socio-economic status (Foren, 1993).

Addressing the concerns of overall educational quality (Kantrowitz, 1993) and accessibility to equitable educational opportunity (Kozol, 1991) occupies much of the public debate surrounding education. While the publication of A Nation at Risk (1983) may have set off the current round of debate, the issues of quality and equity have always held major focus in the public debate over education. These two concerns address some of the most basic tenets of the American democratic ideal (Alexander & Alexander, 1985). Much time and attention has been given to these issues by individuals both inside and outside of the profession. A major concern of those trying to improve the system is how to finance the necessary changes (Baker, 1991). Politicians and the public, while recognizing the need for change, remain skeptical of the profession's ability to carry out necessary change. This doubt leads to a reluctance to finance the system. Without some assurance that additional financial resources will lead to an improved system, the public is rightfully reluctant to provide additional resources (Bennett, 1988).

A common thread of America's drive to remain competitive in today's business climate is the the emphasis on cost control and "downsizing." As politicians and citizens wrestle with the problem of public education, this theme is being applied to the business of education (Vedder, 1988). While the public seems to understand the need for adequate funding, it is increasingly asking educators to justify their requests (Rutters, 1981). Because the product of education is human in nature, it is inherently an elusive commodity to measure. A "bottom-line" form of evaluation is difficult to apply, yet some sort of accountability is being called for.

If a relationship can be established between educational funding and student achievement, the findings would have direct bearing on the issues of educational quality and equity. Should quality be related to funding level, then additional funding should be one of the aims of the drive to improve education. Further, if quality were related to funding, the great inequities in funding which exist among school districts should be causing inequities in the educational opportunities offered to the students in the different districts.

In an attempt to address these concerns this study examined two sets of variables. One set represents educational effectiveness and the second represents educational costs. The dependent variables are measures of educational effectiveness. Michigan Educational Assessment Program (MEAP) test scores represent the measures of effectiveness (Michigan Department of Education, 1993). The independent variables are measures of educational cost. These three variables consisted of average teacher salaries, per pupil expenditures in operating, and per pupil spending in instructional categories (Michigan Department of Education, 1993).

### A Summary of the Literature Review

The review of literature addressed three questions which arose when considering the relationship between school finance and school quality. First, how did the current vehicle for funding schools in the United States originate? Second, did funding affect the quality of a student's education? Third, was the current vehicle treating students in the United States fairly and equitably? The review of literature addressed these three questions with: (1) a brief history of school finance, (2) a review of research on school finance and student achievement, and (3) a review of school funding equity in the United States.

State and local financial control of education was found to be deeply rooted in American law and tradition. The nation's founders understood the importance of an educated populous if the democratic form of government was to work successfully. From the beginning, education was seen as a vital ingredient for an individual's welfare, as well as the welfare of the nation. The Tenth Amendment to the Constitution reserved the responsibility of education to states. The use of local property tax to support education began in the American colonies and spread as the nation grew. The scope and degree of the public's responsibility to educate all of its citizens has grown steadily throughout the history of the nation. Starting with Thomas Jefferson, numerous politicians and prominent citizens have promoted the state of the American educational institution.

The literature review revealed no clear consensus on the relationship between spending and student achievement. If there was any correlation to be found, it seemed to be between an author's political perspective and his findings. Research initiated by Secretary of Education William Bennett during his tenure with the Reagan Administration found no correlation (Hanushek, 1986). The same 147 studies upon

which Bennett based his assertions were re-examined by another educator and found to show significant correlation (Childs & Shakeshaft, 1987). In another case, an educator was commissioned by a group of school superintendents to study the question of correlation between spending and student achievement. The researcher's initial study found a negative correlation. Due to concern over the findings, the method was revised and a second study turned up positive correlation (Connors, 1982). The other research in the area was similarly contradictory. This lack of a clear consensus made additional study appear appropriate.

Issues of equity have been a part of the school debate for as long as the United States has existed. The notion that an education was for all citizens, not just the nobility, was a unique and somewhat radical idea when introduced in the American Colonies. While new, the idea fit well with the democratic principles being applied to the formation of the United States. The original notion of what was meant by "all citizens" has changed dramatically over the more than two centuries of American history. The close relationship between educational level and socio-economic level has made equity of educational opportunity a major issue in the discussion surrounding equality within American society.

### Discussion of the Findings

The findings of this investigation indicate little, if any, correlation between the variables studied. Interpretational guidelines suggest that Pearson ( $r$ ) values between  $-.30$  and  $.30$  are indicative of little if any relationship. Correlation coefficients between current operating expenses and MEAP scores varied between  $-.054$  and  $.198$ . Correlation coefficients between instructional spending and MEAP scores varied between  $-.031$  and  $.216$ . Correlation coefficients between average teacher salaries and



MEAP scores varied between  $-.032$  and  $.256$ . While positive, these correlation coefficients are weak enough to suggest that little, if any, correlation exists between MEAP scores and the level of per pupil funding in the categories of Current Operating Expenses or Instructional Spending or MEAP scores and average teacher salaries. Based on these findings, the null hypothesis that there was no correlation between student academic achievement and the amount of per pupil funding in the student's school district in the State of Michigan was accepted in this study.

The findings from this study corroborated the inconclusive nature of the review of the literature. Some of the studies reviewed found correlation, while others found none. Those studies showing correlation between funding and achievement and those finding no correlation did so based on similar, and in some cases, the same data. Research designs and statistical methods of interpretation played a significant role in the conflicting nature of the findings. It seemed that careful study of a set of data and the application of different statistical instruments could render contradictory results. Eugene Connors (1982), in a study carried out in Virginia, found little or slightly negative correlation between funding and student achievement. He was disturbed by the findings, so revised his methods and repeated his study. The second study found the positive correlation which Connors expected.

Some of the research consisted of individual studies while other research brought together large numbers of studies and attempted to draw conclusions from the work of many researchers. Eric Hanushek (1986) compiled 147 different studies to conclude that no correlation existed between financial support for education and student achievement. Another researcher used a different, and in his opinion, more appropriate statistical method to find substantial positive correlation from the same set of studies (Childs & Shakeshaft, 1987).

The issue of financial support for education carried strong political overtones. Conservative politicians in the 1980's, led by then Secretary of Education William Bennett (1988), used Hanushek's findings, that indicated no correlation between spending and achievement, to advance their educational agenda. The findings used by these politicians were rebutted by a reexamination of the data using different statistical methods. The new interpretation directly contradicted Hanushek's findings. While both studies were credible and reasonable, there seemed to be ample evidence for each side of the issue to support their position.

Strong feelings surrounded the issue of financial support for public education. The emotional nature of the issue has led to much debate and research. The findings of the research have done little to settle the debate.

#### Limitations of the Study

One serious limitation of this study is the degree to which MEAP scores accurately measure student achievement. MEAP scores were used in this research because they represent the most often cited and most public measurements of student achievement within individual school districts in Michigan. While this made them the choice for this researcher, it also makes them somewhat suspect in their validity. The degree of significance given to these scores varies widely from district to district. For this reason the pressure to produce good scores and the resultant attention given to preparation for the tests can vary widely from district to district. The tests themselves, designed to measure basic competency, are often criticized as an inaccurate measure of district curricula and performance.

A second limitation of this study is its focus on just one state. While Michigan has a varied demographic make up, its educational system is fairly centralized at the

state level. Educational practice is defined through many state wide policies and laws. Because of the state's strong union orientation, the Michigan Education Association is one of the stronger teacher associations in the nation leading to rather consistent teaching conditions throughout the state. These factors lead to a somewhat consistent set of conditions for the students. For these reasons, the results may not be generalizable beyond Michigan.

### Implications of the Study

The primary implication of this study is to question the assumption of many educators that the amount of money available to spend within a school district has a strong bearing on the ability to successfully teach the students in that district. This implication goes against the instincts of most professionals in the field. As practitioners struggle to meet the needs of their students, they seem to be constantly faced with a lack of resources. This shortage often takes the form of too few professionals to assist with the many personal and educational needs of students. Many times the need manifests itself through outdated equipment or insufficient supplies.

Educators are coming under increased pressure to change the way they deliver their product, yet they are increasingly frustrated by a lack of resources for accomplishing this task. A major obstacle of innovators in the educational system, as with most institutions, is finding funding to implement and carry out new ideas. New programs usually require new materials or equipment. Many school districts are unable to fund the large capital expenditures often necessary for large-scale change and innovation.

While defying commonly held assumptions about the influence of school funding on learning, the findings of this study add an additional challenge to the task of educators seeking support for their programs. As finances are considered for education, the educational benefit must be weighed based on how this money will affect student achievement. While spending alone may not correlate with student achievement, it is still important to support educational strategies that will positively affect learning.

Education is a taxpayer supported industry. Taxes have never been popular. Few people enjoy paying taxes, even when they understand the importance of the function for which the taxes are being spent. For this reason it is important that this study not be seen as a reason to further cut the tax support accorded education. Instead of simply focusing on financial support, educators must focus on programs that can be shown to be effective. While money may be needed to finance new programs, money alone does not seem to correlate to higher student achievement.

### Recommendations for Further Study

This study raises several other avenues of possible research. The issue of school quality and equity remains one of the most discussed aspects of the educational debate. A major part of the discussion seems to inevitably come down to how the proposed improvements, whatever they may be, will be financed. If educators hope to convince those who pay the bills that their ideas are worthy of support, they must be able to show that the ideas will positively affect student achievement. Achievement is perhaps the most elusive of the two sets of variables studied in this investigation. Other measures of achievement may be worthy of investigation with regard to cost.

As discussed in the limitations section of this chapter, the reliability of MEAP scores are sometimes questioned. One avenue of possible research might utilize other measures of academic achievement. There are many other tools for measuring student learning. While test scores are the most commonly used form of evaluation, other forms of assessment are beginning to gain popularity. There may be benefit in investigating whether some degree of correlation exists between spending and these other forms of assessment.

There is a body of evidence that suggests test scores, while measuring student academic achievement, do little to assess a student's potential for success outside the school setting (Daggett, 1993). If preparation for the world outside of school is the function of education, then perhaps measures of student success beyond school should be the dependent variable, rather than achievement scores whose predictive power outside the academic setting may be questionable.

### Summary

Chapter I of this study began with a discussion of some of the issues facing the financing of education in America. The public is demanding a better system while holding the educational community increasingly accountable for spending. Both the quality of the system and the equity within the system have received attention in the debate. Chapter II reviewed the literature surrounding the issue of financial support for education and student achievement. The debate has become politicized with different sides of the argument able to support their view of the issue. This study sought to add to the body of knowledge surrounding the issue of financial support for education and the resultant achievement level of students within that system. Chapter III described the methods which were used to carry out the study of financial support for and

achievement within public schools in the state of Michigan. Chapter IV reported the results of the study. The null hypothesis that there was no correlation between student academic achievement and the amount of per pupil funding in the student's school district in the State of Michigan was accepted in this study. Chapter V summarized the study and made recommendations for future research. Literature on the subject of student achievement and financial support for education was inconclusive. One issue that emerged from the literature review was the suggestion that how money was spent was more important than how much was spent. The findings of this study indicate that the amount of money alone did not significantly correlate with student achievement as measured by MEAP tests in Michigan during the 1991-92 school year.

**Appendix A**

**Letter to the Michigan Department of Education  
Requesting Bulletin 1014 Financial Data**

Ms. Glenda Rader  
Financial Management Services  
P.O. Box 30106  
Lansing, MI 48909

March 14, 1994

Dear Ms. Rader:

As per our telephone conversation, I am requesting, under the Freedom of Information Act, a copy of booklet 1014 outlining per pupil expenditures of school districts in the state of Michigan for the 1991-92 school year.

In our discussion you indicated the information was also available on computer disk in ASCII format. Because I am using the data for statistical analysis in conjunction with my doctoral studies at Western Michigan University, the computer disk would simplify my work considerably.

I have enclosed \$3.50 as required for expenses associated with this request. Please mail the information to:

Doug Snyder  
2252 Bentbrook Ct. SE  
Kentwood, MI 49508

Your attention to this matter is greatly appreciated.

Sincerely,

Doug Snyder



## **Appendix B**

### **Letter to the Michigan Department of Education Requesting MEAP Test Score Data**

Steve Peter  
100 S. Pine  
Box 30008  
Lansing, MI 48909

March 14, 1994

Dear Mr. Porter:

Per our discussion on Monday, March 14, 1994, I am requesting, under the Freedom of Information Act, MEAP district information for the 1991-92 school year. The specific information I need is the percentage of students scoring in the satisfactory category in all 9 levels and subjects tested for every district in the state. These are the scores reported state-wide in the media.

I need this information on computer disk as I am doing statistical research through Western Michigan University. You indicated in our conversation that the disk was available in ASCII format. That is the format that would best serve my needs.

You may mail the information to me at my home address:

Doug Snyder  
2252 Bentbrook Ct. SE  
Kentwood, MI 49508

I appreciate your attention to this matter and your willingness to help.

Sincerely,

Doug Snyder

## **Appendix C**

### **Letter From Human Subjects Institutional Review Board (HSIRB) Approving the Study**



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WESTERN MICHIGAN UNIVERSITY

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Date: August 8, 1994

To: Doug Snyder

From: Richard Wright, Acting Chair

*for R. Wright*

Re: HSIRB Project Number 94-08-01

This letter will serve as confirmation that your research project entitled "A study of the correlation between per pupil spending and student achievement in the state of Michigan" has been **approved** under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: August 8, , 1995

xc: Jenlink, EDLE

## **Appendix D**

### **File Descriptor Information From Michigan Department of Education for Data Diskettes Containing MEAP Data**

03/16/94 12:56PM

K12 Data Base System  
File Layout  
for  
MEAP Data 1991-92

K12 File Group: ACHIVMNT Achievement Data..... (19 Files)  
 File: MEAP Data 1991-92..... (3574 Recs)  
 System File: M:\ACCESS\K12DB\ACHIVMNT\DATA\MP\*9192.DBF  
 mdx File: M:\ACCESS\K12DB\ACHIVMNT\DATA\MP\*9192.MDX  
 Data Updated: 03/08/94  
 Record Size: 168      File Size: 604648      DOC Vers. #: 001  
 Number of Fields: 19      mdx Size: 134144      " Created: 02/23/94  
 Total: 738792

Name	Type	Len	Dec Pos	ASCII Pos	Description.....
1 DCODE	Char	5		1-5	District Code
2 DNAME	Char	30		6-35	District Name
3 DNAME2	Char	20		36-55	District Name
4 BCODE	Char	4		56-59	Building Code (Zeros for district records)
5 BNAME	Char	30		60-89	Building Name
6 DGRRGE	Char	5		90-94	Building Range of Grades
7 ISDCODE	Char	2		95-96	Intermediate District Code
8 MATH4	Num	6	1	97-102	MATH 4th Grade, % Sat.
9 MATH7	Num	6	1	103-108	MATH 7th Grade, % Sat.
10 MATH10	Num	6	1	109-114	MATH 10th Grade, % Sat.
11 STORY4	Num	6	1	115-120	STORY 4th Grade (Reading), % Sat.
12 STORY7	Num	6	1	121-126	STORY 7th Grade (Reading), % Sat.
13 STORY10	Num	6	1	127-132	STORY 10th Grade (Reading), % Sat.
14 INFO4	Num	6	1	133-138	INFO 4th Grade (Reading), % Sat.
15 INFO7	Num	6	1	139-144	INFO 7th Grade (Reading), % Sat.
16 INFO10	Num	6	1	145-150	INFO 10th Grade (Reading), % Sat.
17 SCI5	Num	6	1	151-156	SCIENCE 5th Grade, % Sat.
18 SCI8	Num	6	1	157-162	SCIENCE 8th Grade, % Sat.
19 SCI11	Num	6	1	163-168	SCIENCE 11th Grade, % Sat.

## **Appendix E**

### **File Descriptor Information From Michigan Department of Education for Data Diskettes Containing Bulletin 1014 Financial Data**

COMPUTER JOB NO480 PRINT FORM 9 BULLETIN 1014 3153 2100MILAN

SUB-SCHEDA FILE NAME: 1014 BULLETIN DATA

STORAGE ORGANIZATION: INDK MEDIA: TAPE  
 DATABASE: YES SEQ: NO OTHER

MARKS: THIS FILE WILL BE DOWNLOADED FROM THE MAINFRAME, COPIED ONTO DISKETTES AND SENT TO ALL REQUESTING SCHOOL DISTRICTS

FILE TYPE: 1000-11 CODE SET: 01A  
 112M (X) 07PC (X) 07FF (X) 07ER (X) 07ER (X)

NO.	FROM	THRU	DESCRIPTION	FORMAT	SEER	NOTES/REMARKS
01-25			1014-DATA-LEFT			LEFT SIDE REPORT
01	01	05	SCHOOL DISTRICT CODE	9(5)	05	
02	06	32	SCHOOL DISTRICT NAME	9(27)	27	
03	33	37	LOCAL SOURCES - PER PUPIL	9(5)	05	
04	38	40	LOCAL SOURCES - RANK	9(3)	03	
05	41	43	LOCAL SOURCES - % OF GENERAL FUND	9(3)	03	
06	44	48	STATE SOURCES - PER PUPIL	9(5)	05	
07	49	51	STATE SOURCES - RANK	9(3)	03	
08	50	54	STATE SOURCES - % OF GENERAL FUND	9(3)	03	
09	55	59	FEDERAL SOURCES - PER PUPIL	9(5)	05	
10	60	62	FEDERAL SOURCES - RANK	9(3)	03	
11	63	65	FEDERAL SOURCES - % OF GENERAL FUND	9(3)	03	
12	66	70	ALL SOURCES - PER PUPIL	9(5)	05	
13	71	73	ALL SOURCES - RANK	9(3)	03	
14	74	78	BASIC PROGRAMS - PER PUPIL	9(5)	05	
15	79	81	BASIC PROGRAMS - RANK	9(3)	03	
16	82	86	ADDED NEEDS PROGRAMS - PER PUPIL	9(5)	05	
17	87	89	ADDED NEEDS PROGRAMS - RANK	9(3)	03	
18	90	94	OTHER PROGRAMS - PER PUPIL	9(5)	05	
19	95	97	OTHER PROGRAMS - RANK	9(3)	03	
20	98	102	TOTAL INSTRUCTION - PER PUPIL	9(5)	05	
21	103	105	TOTAL INSTRUCTION - RANK	9(3)	03	
22	106	108	TOTAL INSTRUCTION - % OF C.O.E.	9(3)	03	
23	109	113	SALARIES FOR INSTRUCTION - PER PUPIL	9(5)	05	
24	114	116	SALARIES FOR INSTRUCTION - RANK	9(3)	03	
25	117	119	SALARIES FOR INSTRUCTION - % OF C.O.E.	9(3)	03	
26-53			1014-DATA-RIGHT			RIGHT SIDE REPORT
54	120	124	S.S. EXP. INSTRUCTION - PER PUPIL	9(5)	05	
55	125	127	S.S. EXP. INSTRUCTION - RANK	9(3)	03	
56	128	132	S.S. EXP. ADM. & BUSI. - PER PUPIL	9(5)	05	



A. DEPT. OF ED.		ISC DATA DESCRIPTION		NO4	08-10-92	
WORD LAYOUT (11-87)						
PROJECT NAME: COMPUTER JOB NO480 - PRINT FORM B BULLETIN 1014		REL. C	ANALYST	3153	TOM MILLAR	
SUB-SCHEMA		SEC. (X) LABELED (C) UNLABLED				
FILE NAME: 1014 BULLETIN DATA		ID:				
V/REC #/RECORD NAME:		STORAGE ORGANIZATION: ( ) INDEX MEDIA: ( ) TAPE (X)				
AND/DATA/DOWNLOAD		( ) DATABASE ( ) REL. (X) SEQU. ( ) OTHER				
REMARKS: THIS FILE WILL BE DOWNLOADED FROM THE MAINFRAME, COPIED ONTO DISKETTES AND SENT TO ALL REQUESTING SCHOOL DISTRICTS		FILE TYPE: ( ) JEDS-11 ( ) JEDM (X) JOPAC ( ) JUPP ( ) JOTHR		CODE SET: (X) JORCD ( ) JORCD ( ) JOTHR		
NO.	FROM	THRU	DESCRIPTION	FORMAT	SIZE	NOTES/USER COMMENTS
29.	133	135	S.S. EXP. ADM. & BUSI. - RANK	9(3)	03	
30.	136	140	S.S. EXP. TOTAL - PER PUPIL	9(5)	05	
31.	141	143	S.S. EXP. TOTAL - RANK	9(3)	03	
32.	144	146	S.S. EXP. TOTAL - % OF C.O.E.	9(3)	03	
33.	147	151	S.S. EXP. SAL. FOR S.S. - PER PUPIL	9(5)	05	
34.	152	154	S.S. EXP. SAL. FOR S.S. - RANK	9(3)	03	
35.	155	157	S.S. EXP. SAL. FOR S.S. - % C.O.E.	9(3)	03	
36.	158	162	OPERATIONS AND MAINTENANCE--PER PUPIL	9(5)	05	
37.	163	165	OPERATIONS AND MAINTENANCE - RANK	9(3)	03	
38.	166	168	OPERATIONS AND MAINTENANCE -% OF CUE	9(3)	03	
39.	169	173	CURRENT OPERATING EXP. - PER PUPIL	9(5)	05	
40.	174	176	CURRENT OPERATING EXP. - RANK	9(3)	03	
41.	177	181	TOT. GENERAL FUND EXP. - PER PUPIL	9(5)	05	
42.	182	184	TOT. GENERAL FUND EXP. - RANK	9(3)	03	
43.	185	189	AVG. TEACHER SALARY - AMOUNT	9(5)	05	
44.	190	192	AVG. TEACHER SALARY - RANK	9(3)	03	
45.	193	195	AVG. TEACHER SALARY - % OF C.O.E.	9(3)	03	
46.	196	203	STATE AID MEMBERS - PUPIL TOTAL	9(8)	08	
47.	204	206	STATE AID MEMBERS - RANK	9(3)	03	
48.	207	209	PUPIL TEACHER RATIO (P/T)	9(3)	03	
49.	210	217	S.E.V. PER STATE AID MEMBER - AMOUNT	9(8)	08	
50.	218	220	S.E.V. PER STATE AID MEMBER - RANK	9(3)	03	
51.	221	224	MILLAGE RATES OPERATIONS LEVIED	99V99	04	
52.	225	228	MILLAGE RATES BUILDING AND SITE	99V99	04	
53.	229	232	MILLAGE RATES DEBT RETIREMENT	99V99	04	
NOTES:				LOGICAL SIZE	232	
				STORE OVERHEAD		NON-OAT
				PHYSICAL SIZE	232	CI SIZE

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