

**The Impact of School District Financial Allocation on District Effectiveness: A Look at  
School Districts in Missouri**

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## **Dedication**

To my parents Wes and Brenda Bartels, whose consistent encouragement has convinced me that I can achieve any goal I wish to pursue. To my Mom, through her selflessness and commitment to family, has taught me what is really important in life. To my Dad, who reminded me to keep work and personal goals in the correct perspective of importance, which I will always remember.

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## Table of Contents

Acknowledgements.....	ii
Table of Contents.....	iii
Abstract.....	vi
Chapter One	
Introduction to the Study.....	1
Statement of the Problem.....	3
Purpose Statement.....	5
Research Questions.....	6
Conceptual Framework.....	7
Design and Method.....	8
Assumptions.....	9
Limitations.....	9
Bias.....	10
Definition of Key Terms.....	10
Significance.....	11
Summary.....	12
Chapter Two	
Introduction.....	13
School District Funding in Missouri.....	13
Missouri School Improvement Plan 5 <sup>th</sup> Cycle (MSIP V).....	18
Instructional Resource Variables.....	20
Expenditures per pupil.....	22

Instructional salary.....	26
Professional Development.....	31
Summary.....	34
 Chapter Three	
Research Problem.....	35
Research Purpose.....	36
Research Questions.....	37
Research Design.....	38
Population.....	39
Data Collection.....	39
Data Analysis Procedures.....	40
Human Subjects Protection.....	42
Quality Issues.....	42
Summary.....	43
 Chapter Four	
Review of Research Design.....	44
Descriptive Analysis.....	45
Data Analysis.....	46
Summary.....	49
 Chapter Five	
Findings and Interpretations.....	51
Additional Findings.....	55
Implications for Practice.....	58

Future Research.....	59
Summary.....	60
References.....	62

**THE IMPACT OF SCHOOL DISTRICT FINANCIAL ALLOCATION ON DISTRICT  
EFFECTIVENESS: A LOOK AT SCHOOL DISTRICTS IN MISSOURI**

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**ABSTRACT**

The purpose of this quantitative study was to increase the knowledge base on the relationship between categorical educational spending and how resource allocation impacts district effectiveness. The independent variables are overall expenditures per ADA, average teacher salary, expenditures on instructional salary per pupil, expenditures on instructional support salary per pupil, and expenditures on professional development per pupil. The dependent variable for the study was district effectiveness as measured by MSIP V scores, the method by which school districts in Missouri are accredited. Data was used from all K-12 school districts in Missouri for the 2012-2013 school year.

The variable that had the most significant positive impact on district effectiveness was expenditures on instructional salary per pupil. This variable can be compared to a student to teacher ratio. There was a significant positive relationship between districts with higher expenditures on instructional salary per pupil and district effectiveness. Average teacher salary and expenditures on instructional support salary had no significant impact on district effectiveness. Overall expenditures per ADA and professional development expenditures per pupil had a significant negative impact on district effectiveness. These negative relationships could be explained by how districts are funded and also the absence of time consideration for this study.

## **Chapter One**

### **Introduction to the Study**

Measuring the financial efficiency of a school is somewhat a mystery. In business and industry these measurements are commonplace and are relatively simple and straightforward. The assumption that does not cross the educational boundary is net income. In business, net income and cash flow are used in some form, fashion, or ratio to determine the performance of the organization or project. Two common measures of project specific success in business are net present value (NPV) and internal rate of return (IRR). In NPV, cash flows generated by an initial investment are measured using the time value of money to determine if a project should be undertaken. If the present value of the expected cash flows is greater than the initial investment, the NPV will be positive. If the NPV is positive, the project should be undertaken if this is the only available project. If there are competing projects, the project with the highest NPV should be undertaken. Similarly, for IRR, the project with the highest IRR should be selected (Brigham and Daves, 2002.)

Since school districts do not have the goal of producing a net income or financial gain, this measurement is meaningless in terms of the success of the organization. Results are often measured in education by student achievement through standardized test scores. Also compounding the problem is estimating or projecting student outcomes according to tests. Many studies try to determine if the amount of money spent by an educational organization has an effect on student achievement, but these results are mixed (Hanushek, 1997 and Greenwald, Hedges, and Laine, 1996). If there was a research based link between how much and where a school district should focus financial resources, it could transform the method in which school districts budget their revenue.

Increasing the importance of such information is the downward pressure school districts have seen on their revenue streams while expenses continue to increase. The recent “Great Recession” that started in 2007 (Zuckerman, 2010) has affected school district funding and forced schools to make difficult decisions when cutting expenses. This recession has had an effect on all three sources of revenue school districts receive; local, state and federal sources. This is important because revenue concentration has been found to be the most influential factor affecting when instructional expenditures are cut (Trussel and Patrick, 2012).

Many Districts rely heavily on local funding through local property taxes. This revenue stream has been hurt by the economy. With reduced home values, local businesses delaying capital purchases, and fewer automobiles being purchased, school districts have felt declines to varying degrees.

In Missouri the Foundation Formula, the primary method in which school districts are funded with state funds, has been reduced from what schools expected to get starting in 2009. The Foundation Formula has been prorated at different rates since this time and will be \$600 million short this year (FY14) of what was promised to school districts in 2005 (The Associated Press, 2013). Many other categories have been cut as well such as transportation funding, Parents as Teachers (PAT), virtual schools, career ladder, and others (Department of Elementary and Secondary Education, DESE, 2013).

Federal funding has also become questionable. The American Recovery and Reinvestment Act (ARRA) helped states and districts with funding cliffs that would have otherwise been much worse. ARRA also infused districts with short term special education funding, but these sources have now ended. More recently, the federal sequester threatens

federal funding from the Individual with Disabilities Act (IDEA) and Title 1 among other programs (DESE, 2013).

Although districts have seen downward pressure on revenues, costs have continued to increase. Many districts have struggled giving increases in salaries and have been forced to reduce staff in many cases. Human resource related expenses such as health insurance, other fringe benefits, and retirement have increased over this time. Expenses such as energy, bus fuel, food, and supplies have also experienced increases.

With the downward pressure on revenues and increasing costs, school districts are faced with difficult decisions in regard to allocating financial resources. Currently, there is no indication that these pressures will cease, so decisions today have an increased effect on the financial condition of schools in the future. Increasing the knowledge base on the effect of investing in certain educational areas will benefit school leaders as they make decisions to allocate resources.

### **Statement of the Problem**

Within the broad constraint of not spending over what districts receive plus any unused balance, each funding source also has restrictions on how the money can be used. On a continuum, federal funds are most restrictive, state funds are less restrictive, and local funds have the least amount of restrictions. Federal funds generally have to be spent on certain groups of students or projects. For example, Title 1 funds must be spent on early childhood education or in buildings with high free and reduced lunch rates to increase literacy in these buildings. IDEA funds must be spent on children with disabilities, so these funds have little flexibility on how they can be spent. In Missouri, the majority of funds are generated from the state Foundation Formula. The Foundation Formula consists of a formula payment and a payment based on the

classroom trust fund (funds generated from gambling). A minimum of 75% of the funds generated from the formula must be placed in the teachers fund and spent on certified staff salaries. The classroom trust fund money can be placed in any fund and spent on other educational related expenses (DESE, 2013). Other state revenue such as transportation, parents as teachers, and early childhood special education must be spent on these specific programs. Local tax revenue is placed in the school district's funds according to the tax rate and spent accordingly on related expenses. Although the funds are restricted, districts can prioritize and strategize on how to best appropriate inside these guidelines. Outside of what is required by law, districts can make decisions on the local level as how to best allocate these resources.

There is an abundance of research related to the use of district resources and student achievement outcomes or district effectiveness (Coleman, 1966; Hanushek, 1997, Greenwald, Hedges, and Laine, 1996; and Dee, 2005). A major problem with this body of research is that there is little consistency on how the two variables are related. Another issue with the current literature is the lack of knowledge of how specific categorical spending impacts student achievement. In sum, there is no set of "best practices" or prescribed theory to optimize resources.

The body of literature related to overall district spending and categorical spending and how it relates to student achievement is vast, but results are conflicting. Studies conducted by Archibald, (2006); Dee, (2005); Sander (1999); Odden & Archibald, (2000); Odden, et al., (2008); and Greenwald, Hedges, and Laine, (1996), all indicate that there is direct positive relationship between how a district uses financial resources and student achievement results. Alternatively, there is significant research that indicates negative or at least mixed results on the relationship, giving rise to the notion that the effect is minimal, nonexistent, or that the body of

research is incomplete. Authors such as Coleman, (1966); Nyhan and Alkadry, (1999); Hanushek, (1997); and Yeh, (2007), make this assertion based on their findings.

One variable that does seem to be consistent and is directly related to this topic is the importance of recruiting and keeping good teachers. The research provides background and support of the connection between hiring and retaining good teachers and student achievement. Prior studies by Jiminez and Constellanos, (2010); Knoppel, Verstegan, and Rinehart, (2007); and Ronfeldt, Loeb, and Wyckoff, (2012), all suggest that there is a positive relationship between these variables. This is directly related to the proposed research topic because certified salaries are a significant portion of a school district's budget and teacher salaries are generally based on education and experience.

Combining the downward pressure on revenue with increasing costs and restrictions on spending, districts have found themselves making difficult decisions on how best to employ financial resources. The current body of literature does give significant insight into ways districts can best employ financial resources, but the results of prior research do not give a set of "best practices." Increasing the knowledge of how financial resources can best be employed to generate the greatest gains in district effectiveness will benefit all school districts by providing some guidance on budgeting practices.

### **Purpose Statement**

The purpose of this quantitative study was to increase the knowledge base on the relationship between categorical educational spending and how resource allocation impacts district effectiveness. The independent variables were overall expenditures per ADA, average teacher salary, expenditures on instructional salary per pupil, expenditures on instructional support salary per pupil, and expenditures on professional development per pupil. The

dependent variable in this study was district effectiveness as measured by Missouri School Improvement Program Fifth Cycle (MSIP V) scores. MSIP V is the method by which district effectiveness is measured in Missouri. A more detailed description is given in the definition of key terms section. Data from all K-12 school districts in Missouri was used. These variables were found in Missouri school districts Annual Secretary of the Board Reports (ASBR), and through DESE. The overall purpose of the study was to contribute to the knowledge base of determining financial variables that school districts can allocate resources to optimize results in district effectiveness.

### **Research Questions**

The theory used to guide the study was developed into a set of research questions as suggested by Creswell (2009), based on variables related to district spending. Quantitative research questions make inquiries about the dependent and independent variables in a study the researcher seeks to know (Creswell, 2009). The research answered five research questions:

Q1. How do district expenditures per ADA affect district effectiveness as measured by MSIP V scores?

H1. District expenditures per ADA have no significant impact on district effectiveness.

Q2. How does district average teacher salary affect district effectiveness as measured by MSIP V scores?

H2. District average teacher salary has no significant impact on district effectiveness.

Q3. How do district expenditures on instructional salary per pupil affect district effectiveness as measured by MSIP V scores?

H3. District expenditures on instructional salary per pupil have no significant impact on district effectiveness.

Q4. How do district expenditures on instructional support salary per pupil affect district effectiveness as measured by MSIP V scores?

H4. District expenditures on instructional support salary per pupil have no significant impact on district effectiveness.

Q5. How do district expenditures on professional development per pupil affect district effectiveness as measured by MSIP V scores?

H5. District expenditures on professional development per pupil has no significant impact on district effectiveness.

### **Conceptual Framework**

School districts in Missouri receive funds from three primary sources; the federal government, the state, and local revenue from tax levies on property. District budgets are built upon estimations of these three sources and expenditures cannot exceed what a district expects to receive plus any available fund balance. Given these broad constraints, districts must decide how to allocate these resources from many competing needs. Although stated in many ways, a primary goal of K-12 school districts is to educate students and prepare them for life after high school. This goal is often measured during a student's education by standardized test scores, and in Missouri is a major aspect of the MSIP V scoring.

Creswell (2009) says theory for a quantitative study is a set of variables formed into relationships or hypothesis that help describe phenomena that occur in the real world. He goes on to say that the theory provides an explanation for this prediction (Creswell, 2009). Within the broad constraint of not spending over what the districts receives plus any unused balance, each funding source also has restrictions on how the money can be used. On a continuum, federal funds are most restrictive, state funds are less restrictive, and local funds have the least amount

of restrictions. Although the funds are restricted, districts can prioritize and strategize on how to best appropriate inside these guidelines. The overall theory that guided the research was that school districts can allocate financial resources in such a way to increase district effectiveness.

The study was from a postpositivists worldview. Logic might suggest that increasing spending in certain categories related to instruction might produce increases in student achievement or district effectiveness. This notion has certainly been challenged, but the postpositivist wishes to challenge norms and assess causes that influence outcomes (Creswell, 2009). In the case of this study, the research goal was to challenge or add to the body of knowledge related to this topic. As mentioned previously, prior research is mixed with some studies indicating a positive effect, while others show no effect.

### **Design and Method**

The study was quantitative and took the form of a non-experimental correlational analysis. The research sought to determine the relationship among the independent spending variables identified individually, and collectively. Of particular interest was spending in more than one category and the combined effect on district effectiveness. To accomplish this goal a multiple regression was used to determine the statistical relationship between and among the independent variables as they are related to the dependent variable. A regression analysis measures an outcome as predicted by one or more independent variables (Field, 2009).

That data used in the study was currently available through DESE. Sampling was not necessary because the entire population of K-12 school districts in Missouri was used. Information on the independent variables were taken from all K-12 school districts in Missouri using their ASBR's and other information readily available from DESE's website. Information for the dependent variable of MSIP V scores was also readily available from DESE. These data

were selected based on availability and ease of collection. The researcher worked with DESE staff to obtain the data.

### **Assumptions**

To complete this research project, assumptions were made that must be stated and mitigated. The first assumption concerns the gathering of required information to complete the study. This study required data obtained from DESE. All data on the independent variables in this study could not be obtained as required directly from the public portion of DESE's website. Contact was made with DESE to inquire about the data for each independent variable. Dese staff provided all data required for this study by querying data available to the public. Data for the dependent variables, MSIP V scores, was obtained directly from DESE's website.

This study also assumed consistency in the data reported to DESE. DESE compiles data from all school districts according to expenditures reported to them on the ASBR and Core Data. The study assumed that each school district reported data on the ASBR in the correct accounting code as stated in the Missouri Financial Accounting Manual.

### **Limitations**

There were also limitations to this study. The first limitation concerned the selected variables. There are many variables that have an impact on district effectiveness and many are not related to resource allocation. There are also many resource related variables that were not tested. Variables were selected that are measureable, comparable, referenced in prior research, and were related to student instruction.

Since this study was a correlational analysis and not an experimental design, the results are limited by only determining if a relationship exists. This study did not determine, nor was it intended to determine, the level of increased district effectiveness given a specific increase in

categorical spending. Also limiting this study was the population sample and timing of data. The study used data from all Missouri school districts and only considered one year school year.

### **Bias**

The bias that needs to be addressed is the researcher's role as the Associate Superintendent of Finance and Business Operations of a K-12 school district. Given this role and the perceived importance it plays in the success of district, the researcher believes that proper allocation of resources has an impact on the success of a district. This bias was mitigated by the quantitative nature of the study and the statistical outcome determined the relationship between variables.

### **Definition of Key Terms**

**Average teacher salary** is defined by the total amount a district spends on teacher salaries per year divided by the amount of teachers. The amount of teachers is stated in terms of full time equivalents (FTE's).

**Current expenditures per ADA** is a calculation prepared by DESE that takes a school districts current expenditures and divides the amount by the average daily attendance (ADA) (DESE, 2013). This number is used to make comparisons between districts on the amount of money spent per student.

**District effectiveness** will be defined by performance as measured by MSIP V scores. MSIP V measures K-12 districts based on student achievement as measured by standardized test scores, subgroup achievement as measured by standardized test scores, college and career readiness, attendance, and graduation rate (MSIP V Comprehensive Guide, 2013). A district score is produced based on scores in these areas. The district score will be used to determine district effectiveness.

**Instructional salary per pupil** is the amount of money spent on teaching salaries in a school district. This amount will be divided by district enrollment to get an amount per student.

**Instructional support salary per pupil** is the amount of money spent on salaries supporting the instruction of teachers. This amount will be divided by district enrollment to get an amount per student.

**Professional development per pupil** is the amount of money spent on continuing education of teachers. These expenses include salaries related to curriculum development, techniques of instruction, child development and understanding, staff training, and teacher mentor/professional development. Districts in Missouri are required to spend at least 1% of the money received through the Foundation Formula minus money received through the Classroom Trust Fund (Missouri Financial Accounting Manual, 2013).

### **Significance**

Nationally, school districts are facing challenges related to increased accountability on student achievement at a time when revenue and financial resources are all but certain. With the increased pressure on results, school districts must find ways to maximize their resources and employ them efficiently. Increasing the body of knowledge related to productive ways districts can employ financial resources will help to shape the framework in how districts make and justify important budgeting decisions.

Given that the study focused exclusively on Missouri school districts, policy makers in the state may be interested in the results of this study. The results of the study could inform policy decisions related to how districts are funded by determining where resources should be allocated. Restrictions and requirements exist, but these restrictions and requirements could be refined based on this research as a means to improve school district efficiency and effectiveness.

On a local level, information obtained from this study could inform important district decisions. As with many other school districts, data are used in making decisions. Currently there are few data driven parameters used in making financial decisions. Incorporating information derived from this study will improve the decision making processes by having some basis for increasing or decreasing allocations of financial resources.

### **Summary**

Determining how school districts should best employ financial resources continues to be a mystery. There is no set of “best practices” that guide districts on how financial resources should be invested to get the best results in student achievement or district effectiveness. Although prior research is mixed as to the correlation between financial resource investment and student achievement, many studies indicate a positive relationship. If this relationship truly exists, then it is imperative to know exactly where resources should be focused. This study focused on whether this relationship does exist and attempted to begin laying the groundwork for investigating which variables have the largest impact. It is understood that many variables are involved in determining student achievement or district effectiveness and this research was limited in scope in the determination of those variables. The overall goal of this research was to increase the body of knowledge on the topic and help shape policy decisions related to school district finance and support districts in decision making in these times of increased accountability and financial uncertainty.

The next chapter will discuss prior research related to resource allocation in overall expenditures per pupil, instructional salaries, and professional development. This chapter will also discuss how districts are funded and what restrictions are imposed in Missouri, as well as MSIP V resource standards and how school districts are held accountable in Missouri.

## **Chapter Two**

### **Introduction**

As pressure on school district revenue nationally continues to increase and schools continue to face increased costs, answers on how to properly allocate limited resources become more important. The literature on this topic is far from complete or straightforward (Hanushek, 1997, and Greenwald, Hedges, and Laine, 1996). Schools obviously need financial resources to operate, but there is no “book” on proper allocation. Schools are different based on their geographic locations, population demographics, and student demographics. All of these factors make a difference on how to properly allocate resources. Schools are also vastly different on the continuum on effectiveness, largely based on these differences. Even with these differences, schools must determine how to effectively employ financial resources given the current financial conditions.

The question of whether resources can make a difference in the classroom in general is still not clear, much less how to specifically allocate them. This chapter will discuss how school districts are currently funded in Missouri and what restrictions schools must follow. Since this study focuses on resources and how they make a difference in student achievement, a review of the school district grading system in Missouri (Missouri School Improvement Plan or MSIP) will also be reviewed. Finally, the researcher will discuss the literature related to financial variables being tested and how they relate to student achievement or district effectiveness.

#### **School District Funding in Missouri**

School districts are funded through three primary sources in Missouri; local, state, and federal sources. With each level of funding come different restrictions and policies that apply to

the accounting and expenditure of the funds. This section will describe the sources and restrictions of each funding source.

Local funds are primarily generated through real estate and personal property taxes collected at the county level and have the least amount of spending restriction of the three major sources. These funds are then distributed to each taxing entity including school districts based on their established tax rate. The value of real estate and personal property is determined by the county assessor. Property is reassessed as of January 1<sup>st</sup> in odd numbered years. Once the property is valued, a reduction is applied based on the classification. Real property is classified as residential, agricultural, or commercial and is assessed at 19%, 12%, and 32% respectively. Personal property, which includes manufactured homes, farm equipment, historic cars and planes, crops, and other vehicles are also assessed at reduced values (Missouri State Tax Commission, 2012).

Tax rates are determined by the local taxing entity and are based on prior revenue received, established inflation rates, and increases due to new construction and improvements. Voters in the taxing district establish a tax rate ceiling in which the annual rate cannot exceed (Missouri State Tax Commission, 2012).

The money generated from property taxes is then distributed to taxing entities by each county. The money received funds the general operations of the entity or school district and is distributed based on the “fund” in which the tax was levied. The accounting and expenditure of the money received is governed by rules established by the State Board of Education in the Missouri Financial Accounting Manual. In Missouri there are four fund types; general fund (incidental fund), special revenue fund (teacher’s fund), capital projects fund, and debt service fund (Missouri Financial Accounting Manual, 2013).

Several other sources of revenue are collected by school districts in Missouri. Another major source of revenue is collected through sales taxes. These taxes are collected by state established sales tax and are distributed by the state. The state sales tax is 4.225%, but 1% of this amount is reserved for education (Missouri Department of Revenue, 2013). This amount is distributed to school districts based on the school district's prior year weighted average daily attendance (WADA). Seventy-five percent of half of the money received must be placed in the teachers fund to be spent primarily on certified teacher salaries. Other examples of local funding sources include merchant and manufacturers surtax, financial institutions tax, in lieu of tax, tuition from other districts, earnings on investments, food service program receipts, and others (Missouri Financial Accounting Manual, 2013).

Another major source of funding school districts receive is from the State of Missouri. The state primarily funds district through the Foundation Formula, which is budgeted by the General Assembly of Missouri. The Foundation Formula is generated from general state revenue. The payment to districts is based on a district's WADA multiplied by a State Adequacy Target (SAT), multiplied by a dollar value modifier, and then local funding established in 2004-2005 is subtracted for a total state aid payment. This amount represents the funds generated by the Formula and is paid to the district is two separate payments, one for the Formula, and another for the Classroom Trust Fund. The Classroom Trust Fund represents funds generated from gaming. This amount is determined by an estimate based on the state budget for gaming revenue per prior year state ADA (average daily attendance) and is multiplied by the prior year average daily attendance (ADA) to determine the districts amount received (DESE, 2013).

Seventy-five percent of the Formula payment must be placed in the teachers fund and spent primarily on certified teacher salaries. The remaining amount of the Formula payment and

the amount generated by the Classroom Trust Fund can be placed in any of the school districts funds and spent on the operations of the district (Missouri Financial Accounting Manual, 2013). This amount has been prorated recently and in the 2012-2013 school year the Formula was prorated by 7.42% (DESE, 2013).

The current formula is the result of a lawsuit filed in 2004 by 257 school districts. They sued on the basis that state funding was inadequate and resulted in dramatic inequities between schools (Viadero, 2005). The State Legislature adopted SB287 in 2005. This legislation created the new formula which sought to fix these issues, although few school districts dropped from the lawsuit. The Cole County Circuit Court ruled the new formula met the constitutional tests of adequacy and equity in 2007 (Committee for Educational Equality v. Missouri, 2007). This decision was appealed, but again in 2009, the Missouri Supreme Court upheld the decision (Committee for Educational Equality v. Missouri, 2009) (Monsees, 2012). Although the current formula is now prorated and underfunded, no school districts in Missouri have filed suit against the state.

Districts also receive revenue from other categorical funding sources. Transportation is another large category of state revenue. The state makes payments to school districts based on the cost incurred and district transportation efficiency. Transportation funding is also generated from the general fund of the state and is subject to appropriation by the General Assembly. In the 2012-2013 school year transportation funding was prorated by 63.23% of efficiency allowable cost for eligible pupils (DESE, 2013). Other sources of state revenue include Early Childhood Special Education (ECSE), Parents as Teachers (PAT), career education, food service, and others (Missouri Financial Accounting Manual, 2013). These are all categorical revenue sources and must be spent on the specific program and are on a reimbursement basis.

Federal funding is the other major category of revenue school districts receive in Missouri. This source of revenue comes with the most restrictions on how the money can be spent. Federal funding is generally categorical in nature. Funds are generally received on a reimbursement basis. Federal funding is also generally targeted to certain populations including low income, special education, Medicaid, homeless, English Language Learners (ELL) among others. The major sources of federal funding come in the form of Title Programs from the Elementary and Secondary Education Act (ESEA) and Special Education from the Individual with Disabilities Act (IDEA).

Title I, Part A of ESEA funds schools with the purpose of educating children from low income families to meet academic standards. Title I, Part C is similar but provides funding for children of migrant families. Title II, Part A, provides funding to school districts based on low income populations to provide professional development to teachers and administrators to improve student achievement. Title III provides schools with funds to serve ELL students. Title VI, Part B, provides funding for small, rural school districts. IDEA, Part B, provides funding for student with disabilities from ages 3 – 21 years old. IDEA, Part C, provides funding for students with disabilities from ages birth – 2 years old (U.S. Department of Education, 2013). Other sources of federal revenue include Medicaid for eligible students, ECSE, Perkins, and others (Missouri Financial Accounting Manual, 2013). All sources of federal revenue must be spent on the intended program and follow spending restrictions for each program.

The weight of each funding sources varies among school districts in Missouri. As mentioned, federal funding carries the most restrictions, then state revenue, with local having the least amount of restrictions. Within the guidelines and regulations of each source, schools do have flexibility to use financial resources in the manner which the local board and administration

feel are most appropriate. It is within these boundaries the researcher sought to find ways successful schools allocate resources.

### **Missouri School Improvement Plan 5<sup>th</sup> Cycle (MSIP V)**

The Missouri School Improvement Plan (MSIP) is a program governed by the Missouri State Board of Education and is the accountability system for Missouri schools and districts. MSIP began in 1990 as the 1<sup>st</sup> cycle. MSIP is currently in its 5<sup>th</sup> cycle and is commonly referred to as MSIP V. MSIP V is the result of the ESEA Flexibility waiver that Missouri was granted by the United States Department of Education in 2012. This offered relief from some of the requirements of the No Child Left Behind Act, but also required the state to create its own accountability system. The goal of MSIP V is to graduate students that are college or career ready (MSIP V Comprehensive Guide, 2013).

K-12 school districts are judged on five resource standards under MSIP V. The resource standards include academic achievement, subgroup achievement, college and career readiness, attendance rate, and graduation rate. The scoring guide for the resource standards has 140 points possible. There are four levels of accreditation; accredited with distinction, accredited, provisionally accredited, and unaccredited. District accreditation level is determined by the percentage of the 140 points available the district earns. To earn accreditation with distinction a district must earn 90% or more of the possible points; accredited districts must earn 70% or more; provisionally accredited must earn 50% or more; and unaccredited earn less than 50%. The State Board of Education reviews each district's score based on a three year trend. If the district's accreditation status is in jeopardy of becoming unaccredited, the district may be asked to submit a Comprehensive School Improvement Plan (CSIP) and assistance from the Regional

School Improvement Team (RSIT) could be initiated. The State Board will then use all available data to assign an accreditation status to the district (MSIP V Comprehensive Guide, 2013).

Resource standards do not carry an equal weight of the available points. The academic achievement standard is weighted most with 56 points possible consisting of scores in English Language Arts (16 points possible), math (16 points possible), science (16 points possible), and social studies (8 points possible). Scores in each content area are based on student scores on grade level assessments, standardized tests, and a student growth model. The subgroup achievement standard has 18 points possible consisting of scores in English Language Arts (4 points possible), math (4 points possible), science (4 points possible), and social studies (2 points possible). Subgroups include students on free/reduced lunch, minority students, ELL students, and students with disabilities. Scores in each content area are based on student scores on grade level assessments, standardized tests, and a student growth model. The college and career readiness standard is weighted with 30 points possible based on scores on six indicators. Indicators 1-4 are based on graduate participation and scores on approved standardized tests meant to measure post-secondary preparedness. These indicators have 20 possible points. Indicators 5-6 are based on graduates who attend post-secondary education or are in the military and graduates who complete approved career education programs. These indicators have 10 possible points as well. The attendance rate standard is calculated by students who regularly attend school. This standard has 10 possible points. The graduation rate standard is based on the percentage of students who graduate based on requirements established by the State Board. This standard has 30 possible points (MSIP V Comprehensive Guide, 2013).

Although the MSIP V standards are now the accountability measures for the state, the adoption was met with criticism from several education groups. The criticism centered on the

standards themselves and also the process of adoption. On March 22, 2011, the Missouri Associations of School Administrators (MASA) approved a motion to, “aggressively encourage the State Board of Education to withdraw the MSIP 5 standards from the rulemaking process until such time as stakeholders have been provided with the opportunity to provide input on the proposed standards” (Missouri Association of School Administrators, MASA, 2013). On May 6, 2011, the Missouri National Education Association (MNEA), Missouri State Teachers Association (MSTA), and AFT sent a letter to the State Board with a list of 14 concerns that included criticism of the standards and the lack of stakeholder input that was obtained (MNEA, 2013). After this time there were meetings held to gather input from state educational associations. Even though the standards are adopted some groups are still not satisfied. In the legislative priorities reported by MASA on October 4, 2013, they still list as supporting, “...pilot programs that districts may adopt which would allow those districts to be exempt from certain aspects of the state school improvement plan in exchange for a continuous improvement effort...” (MASA, 2013).

### **Instructional Resource Variables**

School district funding has been a topic of debate for decades. The basis for this debate is basically does money make a difference in increasing student achievement results. Studies have taken different forms using different variables, but the majority of studies related to this topic have the same question in mind, does money make a difference? The debate intensified in 1966 with the publication of the Coleman Report. The findings of this study by the U.S. Department of Health, Education, and Welfare said that educational inputs (money, resources, etc.) is not the primary driver of student achievement, rather family dynamics primarily drives student achievement (Coleman, 1966). Family socioeconomic status has been known to be a

primary driver of student achievement, but the question of resources was still not answered fully. With several meta-analytic studies and attempts to answer the question Hanushek, most recently in 1997, has consistently found in agreement with the Coleman Report (1966), that increased resources do not significantly increase student achievement (Hanushek, 1997).

Even with several major findings against the notion that resources matter, the debate is far from clear. In 1997, Greenwald, Hedges, and Laine had significantly different findings from their meta-analytic study. Using 29 of the studies analyzed by Hanushek from his 1989 analysis and compiling 31 more studies, they found that many resources including per pupil expenditures, average teacher salary, teacher ability, and teacher experience all had a statistically significant positive impact on student achievement (Greenwald, Hedges, and Laine, 1996). Allen Odden and Sarah Archibald, with the help of others, have also contributed significantly to the debate with conclusions that resources do matter. At the center of their conclusions is that resources matter, but they argue that schools can reallocate resources to make significant gains in student achievement (Odden, Goertz, Goetz, Archibald, Gross, Weiss, Mangan, 2008; Odden and Archibald, 2000; Archibald, 2006; and Odden, 2001.)

Again, the debate of whether or not money makes a difference in student achievement or school district effectiveness is far from settled. Some of the answers might be found in how school districts allocate limited resources and not whether just the amount of resources is the determining factor. The next sections will give further insight to this debate. First, literature related to overall district spending per pupil will be discussed, followed by a discussion on instructional and teacher salaries, and finally professional development expenses.

## **Expenditures per Pupil**

Logic might suggest that increasing the funding for a program would create an opportunity for improvement in the intended goal of the program. School districts today spend nearly three times more per pupil on an inflation adjusted basis than they did 40 years ago (Odden and Busch, 1998). This logic has been applied to school districts for decades, but it is debatable whether or not an increase in resources has delivered the expected results in district effectiveness based on student achievement.

In reality, school districts must have financial resources to operate. The decisions on how to best employ these limited resources hinge in large part on district administration and local boards of education. The debate of whether resources make a difference has two sides. The argument that resources have a positive effect on student achievement is straightforward. Proponents argue that increasing the amount of expenditures per pupil has a significantly positive effect on student achievement or district effectiveness. Opponents of this claim do not necessarily say that additional resources have a negative effect, they primarily claim that increased resources do not significantly affect achievement or that resources should be reallocated to create gains in student achievement. In other words, there are enough resources, they should just be reallocated.

As mentioned, the study that fueled the debate was termed the Coleman Report in 1966. The report was mandated by the U.S. Office of Education and was titled Equality of Educational Opportunities (Coleman, 1966). This reported has been reviewed extensively and found that educational inputs (money) had little bearing educational outputs (student achievement) (Greenwald, Hedges, and Laine, 1996; and Hanushek, 1997). Since this time there have been many studies that confirm or agree with these results.

An often referenced author who has studied the issue is Eric Hanushek. Hanushek (1997) supports the Coleman Report (1966) with support from various studies. An update to his meta-analytic studies in 1981, 1986, and 1989 confirms his previous findings that adding additional resources to schools will not likely produce higher results in student achievement. He does concede that resources are necessary, although he argues that additional resources will not likely be used efficiently to produce student achievement results (Hanushek, 1997). His argument gives rise to the notion that schools do not need additional resources, but need to reallocate existing resources.

Nyhan and Alkadry (1999) confirm the results of Hanushek (1997) and Coleman (1966). Their study was much narrower in scope, but analyzed three counties in Florida; Broward, Dade, and Palm Beach. They assessed whether or not direct classroom expenditures per pupil have a significant impact on student achievement and found that increases have little impact (Nyhan and Alkadry, 1999). Yeh (2007) agrees with this finding. Yeh's primary goal for his study was the effectiveness of rapid assessment, which is defined as, "systems that provide nonjudgmental testing feedback immediately after each test two to five times per week" (Yeh, 2007, p. 417). His study relied on existing data on expenses per pupil, among other measures. He found that rapid assessment was 193 times more effective than a 10% increase in existing patterns of educational spending (Yeh, 2007). His findings support the notion that more money is not needed, school districts just need to reallocate existing resources. Cybulski, Hoy, and Sweetland (2005) agree that resources should be reevaluated. They report that efficiency and productivity matter. Schools have limited resources to employ and those entrusted with their care should be consumed with attaining greater efficiency and productivity (Cybulski, Hoy, and Sweetland (2005).

More research supports the claim that although resources do matter, districts need to reevaluate how resources are used. Odden and Archibald (2000) studied 5 elementary schools in the U.S. The school implemented new programs to increase student achievement results, but had to use existing resources to implement. Two schools reduced class sizes and the others hired instructional aides, added extensive professional development (PD), and hired an instructional facilitator. Although schools implemented the programs at different degrees and accurate results were not available, it is significant that they were able to use existing resources to implement expensive programs (Odden and Archibald, 2000). The results were confirmed in a similar study that involved 11 elementary schools in 4 states. These schools also implemented educational programs by reallocating existing resources. These schools all increased achievement results based on standardized testing (Odden, Gertz, Goetz, Archibald, Gross, Weiss, and Mangan, 2008). Both of these studies give support that schools can increase their effectiveness using existing resources.

The research that has been presented thus far indicate that either increasing resources have no effect on student achievement or that adding more resources is not the sole answer for increasing student achievement. Some research has gone farther to claim that increased spending per pupil actually has a negative effect on achievement. This was found in a study by Normore and Ilon (2006) and Hall (2006). Their findings seem to go against the logic that increased educational spending would increase results, but the findings could also be explainable. Both studies indicate that other factors are more important in predicting academic achievement such as family socioeconomic status. Both studies held family socioeconomic status equal by grouping according to this factor. When schools are equal on this variable, a statistically significant negative relationship exists when comparing educational expenditures to student achievement

(Normore and Ilon, 2006; Hall, 2006). These results can be explained by the fact that schools with more economically disadvantaged students receive more revenue based on their populations of high rates of free/reduced lunch status, high minority, and other factors known to affect student achievement. This makes these results logical because socioeconomic status has been proven to be a primary factor in achievement.

On the opposite side of the discussion are several studies that have indicated a significantly positive relationship between educational expenditures and student outcomes. A major study that directly refutes the claims by the Coleman Report (1966) and Hanushek (1981, 1986, 1989, 1991, and 1997) is Greenwald, Hedges, and Laine (1996). The findings from this study which is based on the research of Hanushek finds that increases in educational spending as defined by per pupil expenses, teacher salary, and teacher pupil ratios have a statistically significant positive effect on student achievement (Greenwald, Hedges, and Laine, 1996).

Sander (1999) found very similar results in his study of the effects of expenditures per pupil and expenditure related variables on schools in Illinois. His primary finding from this study is that third and eighth grade math scores increased significantly with higher expenditures per pupil (Sander, 1999). More recently, Dee (2005) published results based on data provided by the National Center on Educational Statistics. He found that resource levels might have a significant effect on graduation rates. He also found that increases in resource levels did produce gains in achievement, but the results were not statistically significant. In the conclusion he wrote, “the money spent on instruction does “matter.” This suggests that additional spending that is targeted for student instruction can promote educational attainment” (Dee, 2005).

Archibald (2006) goes deeper into the data. She evaluated data from the Washoe County School District in Nevada. She argues that prior studies have only assessed data at the district

level. Initially she looked at the data at the district level, but then looked at the data at the individual schools level, then went further to assess which spending categories had the largest effect. She found that per-pupil spending at the school level had a significant positive effect on student achievement (Archibald, 2006). This study again confirms the question of whether or not money makes a difference in the classroom. Other studies have found similar positive results in regard to educational resources and higher student achievement (Chiu and Khoo, 2005; and Ram, 2004).

The debate of whether per pupil expenditures impact student achievement is far from clear. Card and Krueger (1998) looked at empirical evidence of whether school resources impact educational attainment and future earnings. They left the debate open for discussion in a summary of their article, “after an account of empirical findings in these studies, the authors conclude that there is some evidence that school resources affect earnings and educational attainment, although much uncertainty remains in the literature” (Card and Krueger, 1998).

### **Instructional Salary**

Expenses per pupil is a very broad variable and is made of up of many different types of expenses, but expenses per pupil is the most often referenced variable when compared to district effectiveness. Another variable that is common in this field of research is instructional salary expenditures. Most often this research refers to teacher salaries, but can also include other instructional salaries such as aids, paraprofessionals, etc. The two most common methods of measuring instructional salaries are average salary or salary expenditures per pupil. Average teacher salary is most often calculated by taking the total amount teachers are paid in a district and divided by the amount of teachers. Salary expenditures per pupil take the total amount teachers are paid and divide it by the number of students. This measure is comparable to a

student – teacher ratio. As referenced earlier, the amount of money spent on education has increased substantially over the past 40 years (Odden and Busch, 1998). This increase has primarily been spent on professional staff outside the regular classroom in areas such as art, music, physical education, and special education. The increase has also gone to increase the preparation time for teachers so they are teaching fewer hours per day. The increase has also gone to hire additional classroom aides (Odden and Archibald, 2000).

The teacher is at the center of any classroom and by the nature of the educational system is the lynchpin for the success of any educational reform or program. The results depend on the ability and competency of the teacher. Teachers and their salary are also often studied in relation to educational reform in either class size reduction, pay for performance, or the historic nature of the teacher salary schedules and their legitimacy. Teachers and class size ratios are often the focus because of the amount of educational resources directed toward them. “We emphasize the pupil-teacher ratio because difference in class size account for close to one-half of the variation in expenditures per pupil across school districts and because changes in class size are the object of many educational reform proposals” (Card and Krueger, 1998, p. 44).

Included in this discussion is whether or not teacher salary has any relation to teacher effectiveness. Often teacher salary is used as a measure of teacher effectiveness because schedules are generally based on teacher experience and their level of education. Teacher quality has also been found to be the most important factor influencing achievement (Knoepfel, Verstegen, and Rinehart, 2007). Archibald (2006) also found that variations exist between classrooms (Archibald, 2006), which also tells us that the quality of the teacher matters. Many other studies also find that teacher quality, teacher development, recruitment, and retention make a difference in the classroom and subsequently on student achievement (Iatarola and Fruchter,

2004; Diaz, 2008; and Ronfeldt, Loeb, and Wyckoff, 2012). Teacher turnover does impact district performance, although factors other than average salary drive teacher turnover, so manipulating turnover is very difficult for policy makers (Hall, 2006).

Much of the research that is directly related to expenditures per pupil and student achievement is also related to salary expenditures and student achievement because salary and benefits is the largest expense of a school district. Since this research is related, the results of the research are similar as well reflecting little agreement on the whether or not instructional salaries are directly related to student achievement.

The Coleman (1966) report again sets the stage for this body of research indicating that educational resources are not the primary driver in student achievement (Colman, 1966). Following Colman, Hanushek, 1997, confirmed these findings in his meta-analysis. He found that 9% of studies of teacher education level and 15% of studies of student-teacher ratios found positive effects on student achievement, and 13% of studies found a negative relationship. Interestingly, his results somewhat depended on the level of observation. Only 12% of studies indicated a positive relationship between student-teacher ratios when observed at the classroom level, but 64% indicated a positive relationship when observed from the state level. In a summary of his work, he indicates that schools must have adequate resources to operate, otherwise no results in achievement would be expected, but there is also no indication that adding more resources (money, teachers, administrators, etc) would impact student achievement because the resources would likely be used inefficiently (Hanushek, 1997).

Claims on the lack of correlation between class size and achievement is supported by Hall (2006) as well in a study of Ohio school districts. In this study, the dependent variable for achievement was district graduation rate. He found that class size was not consistently related to

achievement. He does concede that class size is not unimportant, only that reduction in class sizes do not have an equal impact on achievement (Hall, 2006). Similarly, Normore and Ilon (2006) found that class size reductions are the least effective way to improve student achievement scores, although there is a positive relationship. They also found that the mix of staffing (increasing the number of aids) was a more cost effective method to increase achievement results (Normore and Ilon, 2006).

Part of the ineffective use of resources is related to the pay structure for teachers based on pay for experience and education, and not on performance as measured by achievement (Hanushek, 1997). Supporting this claim, Borland and Howsen (1995), found that average teacher salary is insignificant when compared to student achievement when competition and student cognitive skills are part of the equation (Borland and Howsen, 1995).

Greenwald, Hedges, and Laine (1996) directly contradict much of the research published against the notion that resources make a difference in student achievement. In their study, which used much of the same data as Hanushek, they find that resources have a significant and substantial effect on student achievement. The findings are similar to that mentioned about per pupil expenditures. The variables related to this study include average teacher salary, teacher ability, teacher education, teacher experience, and teacher/pupil ratios. For all of these variables they found that significant positive relationships exist when compared to student achievement. They also claim that adding \$500 per pupil in any of the financial categories would result in an increase of one sixth of a standard deviation in student achievement. Similar investments in teacher education and experience would result in similar increases in student achievement (Greenwald, Hedges, and Laine, 1996).

These findings directly contradict the Hanushek (1997) and Coleman (1966) findings that there is no positive relationship. Although it does not find a direct link between teacher salary and teacher quality, it does speak to other research mentioned above (Knoeppel, Verstegen, and Rinehart, 2007; Archibald, 2006; Iatarola and Fruchter, 2004; Diaz, 2008; and Ronfeldt, Loeb, and Wyckoff, 2012) that supports that teacher quality is a significant factor in student achievement. Jimenez-Costellanos (2010), in his study of the 43 schools in La Esperanza School District in California, found that higher teacher salaries, among other variables, were positively correlated with student achievement. Again, he did not directly link teacher salary to teacher quality but did identify reasons that higher salaries could be related to teacher quality. Teacher pay is linked to teacher experience and teachers with more experience have had more time to develop skills and experience teachers will have learning environments with better resources that have been accumulated over time (Jimenez-Costellanos, 2010). Although they did not find that reducing class sized was cost effective, Normore and Illon (2006) did find that teachers with advanced degrees positively affects student achievement and is more cost effective (Normore and Illon, 2006).

Sander (1999) supports the body of research that average teacher salary and lower class sizes have a positive impact on student achievement. In his study of Illinois schools, he found that average teacher salary is significantly related to positive student achievement. He also found that class size is negatively related to student achievement, as the number of students increase as opposed to teachers, supporting that teacher salary per student is positively related to achievement (Sander, 1999).

## **Professional Development**

Guskey (2000) defines professional development as “those processes and activities designed to enhance the professional knowledge, skill, and attitudes of educators so that they might, in turn, improve the learning of students” (from Sample McMeeking, Orsi, and Cobb, 2012). In addition to spending on staff, school districts also invest significant resources in professional development. In Missouri, schools must spend 1% of the money they receive from the Foundation Formula minus the amount received from the classroom trust fund (Missouri Financial Accounting Manual, 2013). As with other educational spending variables, the literature does not always show a positive effect on student achievement, but generally professional development is regarded as effective. Much of the literature today focuses on what constitutes “good” professional development and its cost effectiveness.

In the past some school districts focused on professional development that was motivational with feel-good speakers or consulted with high-priced out of town facilitators that provided no follow-up (Richardson, 2008). There is evidence through scientific research that educators must use to assess the effectiveness of their professional development programs and it is no longer feasible or acceptable to choose professional development activities based on hearsay, intuition, or district tradition (Guskey, 2009). There are several studies that have developed criteria for selecting “high quality” professional development programs. Blank (2013) found that effective programs were content focused, were time intensive, had ongoing activities, had learning goals, and had collective participation by teachers. Programs that meet these criteria are found to provide significant gains in teacher and student learning (Blank, 2013). Similarly, higher performing schools tended to have professional development programs that were highly conceptualized and had a mixture of district and school based professional

development strategies. Lower performing schools used professional development that was district generated and directed by principals and district administrators (Iatorola and Fruchter, 2004).

Since the research is focused on the effectiveness of professional development programs, some recent research has found that not all professional development is effective. In a study of school districts in Florida on teacher experience and professional development, Harris and Sass (2011) found that contemporaneous professional development, at minimum, did not increase teacher productivity as measured by achievement. They claim the reason to be time away from the classroom reduced the effect of professional development (Harris and Sass, 2011). The Collaborative Language and Literacy Instruction Project (CLLIP) is a program designed to prevent difficulties in reading rather than employ remedial methods when difficulties are found. The program requires teachers and administrators to attend six different comprehensive learning modules in the first year of training. The program also offers ongoing support with regularly scheduled on-site visits, phone calls, and email resources. Research based on this intensive professional development program was found to have no evidence in improving student outcomes (Porche, Pallante, and Snow, 2012).

There is also evidence that professional development is not only effective in terms of student achievement, it is also cost effective as opposed to other programs or options. In a national study of science teachers, a significant link between teacher professional development and student achievement was found. Teachers trained in one of three different courses designed to increase content knowledge and teaching practices in science. The course also focused on written justification to accompany ELA standards. The courses were considered moderate in duration and last 24 hours. Even with a relatively short amount of time, students achieved

significantly better when taught by teachers with this training. Not only did their scores increase in the current year, but also in the following year (Heller et al., 2011). Seven school districts in Colorado with 64 middle schools participated in a professional development program with a duration of 15-24 months for middle school math teachers. The professional development program was designed to give teachers deeper content knowledge and to use an-inquiry based approach to math. Again the authors found that students with teachers who participated in these programs performed significantly better on standardized tests than teachers who did not (Sample McMeeking, Orsi, and Cobb, 2012).

In a similar study of math in Kentucky, the Appalachian Math and Science Partnership (AMSP) program was studied for effectiveness in terms of student achievement and cost. The study included 175 school districts, 38 of which participated in the program. The results indicated that the program was effective for students in elementary and middle school, but not significant at the high school level. The program also only seemed to be effective in the current year. This study also followed other research cited about effects on student achievement including socioeconomic background. Schools with higher free/reduced lunch counts and high minority populations seemed to do worse on tests. This suggests that the PD, although effective, is not the strongest factor influencing achievement. When assessed from a cost effectiveness standpoint, AMSP proved to be more effective than measures such as class size reductions, longer school days, teacher advance education degree programs, but less effective than comprehensive school reform programs and rapid assessment (as discussed by Yeh, 2007) (Foster, Toma, and Troske, 2013). This cost effectiveness analysis is important because it gives some credit to the value of professional development as it relates to other programs that compete for the same resources. This study also relates to the notion that existing resources can be

reallocated to improve student achievement (Odden, Goertz, Goetz, Archibald, Gross, Weiss, Mangan, 2008; Odden and Archibald, 2000; Archibald, 2006; and Odden, 2001.)

### **Summary**

The literature on school district finance allocation is extensive, but far from consistent when considered collectively. The topic has been researched for decades with most studies citing the Coleman Report from 1966. The topic is older than this study, but became prominent after this time. Studies since this time have taken different forms and results are not consistent and range from Hanushek in several studies and most recently in 1997 finding there is no measurable relationship between resources and student achievement to Greenwald, Hedges, and Laine (1996) totally contradicting these results. These prior research results are the same for all variables being studied including expenditures per pupil, instructional salaries, and professional development. Although the research is inconsistent with overall findings, researchers do tend to agree that school districts can use existing resources more effectively.

Given the inconsistencies in prior research and that schools can use resources more effectively, there needs to be more research done to find the variables that make a difference in student achievement and district effectiveness. This research study continues that search to find how proper resource allocation can make a difference in the classroom.

The next chapter will describe the research design and methods of the study. This chapter will give some additional background on the study such as the problem, purpose, and questions. Then sections on research design, population and sample, data collection, human subject protection, data analysis procedures, and quality issues will be discussed.

## **Chapter Three**

### **Research Problem**

School district funding is a well-researched topic that has been studied for years, but recent economic activity has put increased pressure on revenue. The recent “Great Recession” that started in 2007 (Zuckerman, 2010) has affected school district funding and forced schools to make difficult decisions when cutting expenses. This recession had an effect on all three sources of revenue school districts receive; local, state and federal sources.

Many districts rely heavily on local funding through property taxes which have been crippled by the economy. With reduced home values, local businesses delaying capital purchases, and fewer automobiles being purchased, school districts have felt these effects to varying degrees.

In Missouri the Foundation Formula, the primary method in which school districts are funded with state funds, has been reduced from what schools expected to get starting in 2009. The Foundation Formula has been prorated at different rates since this time and will be \$600 million short this year (FY14) of what was promised to school districts in 2005 (The Associated Press, 2013). Many other categories have been cut as well such as transportation funding, Parents as Teachers (PAT), virtual schools, career ladder, and others (Department of Elementary and Secondary Education, DESE, 2013).

Federal funding has also become questionable. The American Recovery and Reinvestment Act (ARRA) helped states and districts with funding cliffs that would have otherwise been much worse. ARRA also infused districts with short term special education funding, but these sources have now ended. More recently, the federal sequester threatens

federal funding from the Individual with Disabilities Act (IDEA) and Title I among other programs (DESE, 2013).

Although districts have seen downward pressure on revenues, costs have continued to increase. Many districts have struggled giving increases in salaries and have been forced to reduce staff in many cases. Human resource related expenses such as health insurance, other fringe benefits, and retirement have increased over this time. Expenses such as energy, bus fuel, food, and supplies have also experienced increases.

With the downward pressure on revenues and increasing costs, school districts are faced with difficult decisions in regard to allocating financial resources. Currently, there is no indication that these pressures will cease, so decisions today have an increased effect on the financial condition of schools in the future. Increasing the knowledge base on the effect of investing in certain educational areas will benefit school leaders as they make decisions to allocate resources.

This chapter outlines the design and methods used to research this topic. First, the research purpose and questions are stated. The next section identifies the design for the study and explains the rationale for the approach including the specific methodology. Following the design are sections identifying and explaining the population, data collection procedures, and data analysis procedures. Next is a discussion on the human subjects' protection followed by a section on quality issues. The chapter concludes with a summary.

### **Research Purpose**

The purpose of this quantitative study was to increase the knowledge base on the relationship between categorical educational resource allocation and the impact on district effectiveness. The independent variables were overall expenditures per ADA, average teacher

salary, expenditures on instructional salary per pupil, expenditures on instructional support salary per pupil, and expenditures on professional development per pupil. The dependent variable in this study was district effectiveness as measured by MSIP V scores. Data from all K-12 school districts in Missouri was used. These variables were found in Missouri school districts Annual Secretary of the Board Reports (ASBR), and DESE. The overall purpose of this quantitative study was to increase the knowledge base on the relationship between categorical educational spending and how resource allocation impacts district effectiveness.

### **Research Questions**

Logic might suggest that increasing spending in certain categories related to instruction might produce increases in student achievement. In the case of this study, the research challenged or added to the body of knowledge related to this topic. Prior research was mixed with some studies indicating a positive effect (Greenwald, Hedges, and Laine, 1996), while others show no effect (Hanushek, 1997).

The overall theory that guided the research was school districts can allocate financial resources in such a way to increase student achievement results. The theory used to guide the study was developed into a set of research questions as suggested by Creswell (2009), based on variables related to district spending. The research answered five research questions:

Q1. How do district expenditures per ADA affect district effectiveness as measured by MSIP V scores?

H1. District expenditures per ADA have no significant impact on district effectiveness.

Q2. How does district average teacher salary affect district effectiveness as measured by MSIP V scores?

H2. District average teacher salary has no significant impact on district effectiveness.

Q3. How do district expenditures on instructional salary per pupil affect district effectiveness as measured by MSIP V scores?

H3. District expenditures on instructional salary per pupil have no significant impact on district effectiveness.

Q4. How do district expenditures on instructional support salary per pupil affect district effectiveness as measured by MSIP V scores?

H4. District expenditures on instructional support salary per pupil have no significant impact on district effectiveness.

Q5. How do district expenditures on professional development per pupil affect district effectiveness as measured by MSIP V scores?

H5. District expenditures on professional development per pupil has no significant impact on district effectiveness.

### **Research Design**

The study sought to address a problem of practice. The problem was lack of information school district officials have when making important budgeting decisions related to allocation of financial resources. The results of this study could help school district officials make decisions about finances and inform decision makers how these decisions will impact student achievement and district effectiveness. To address this problem, the researcher determined the relationship between educational financial variables and school district effectiveness. Quantitative research was the best fit to determine this relationship. Quantitative research is used when the theory can be tested by measuring the relationship among variables (Creswell, 2009).

The study took the form of a non-experimental correlational analysis. A correlational study does not manipulate the variables involved in the study, but rather seeks the relationship

between the variables as they occur naturally (Field, 2009). The research sought to determine the relationships among the independent spending variables identified individually, and collectively. Of particular interest was the spending in more than one category and their combined effect on district effectiveness. To accomplish this goal a multiple regression analysis was used to determine the statistical relationship between and among the independent variables as they were related to the dependent variable. A multiple regression analysis measures an outcome predicted by two or more independent variables (Field, 2009).

### **Population**

The population used for this study was all K-12 school districts in Missouri. There are 519 school districts in the state. This number includes 447 K-12 districts and 72 K-8 districts (DESE, 2013). Since data on the entire population was available, sampling was not necessary. All K-12 districts were included in this study because the independent variables apply to every district and the dependent variable (district effectiveness) was taken from MSIP V scores.

One year of data was used for each district. The 2012-2013 school year was used because this was the most recent data available. The school year for districts is based on a fiscal year beginning July 1, and concluding on June 30. One year of data was appropriate for this study because the study was focused on one year and not based on a trend. The study was not intended to measure increases in spending for specific districts, rather to measure how districts allocated resources and how this allocation affected student achievement.

### **Data Collection**

Data was collected on all school districts in Missouri. The independent variables were expenditures per ADA, average teacher salary, instructional salary per pupil, instructional

support salary per pupil, and professional development expenses per pupil. For the dependent variable (district effectiveness), MSIP V data was collected.

Archival data was used for this study. No instrumentation was needed to obtain the data. The data was available through DESE, and was deemed to be accurate as reported to them by districts. DESE staff queried internal reports requested by the researcher. The data was received in spreadsheets and was manipulated by the researcher to arrive at the targeted variables. This was described further in the data analysis procedures section below.

### **Data Analysis Procedures**

This research was designed as a correlational study and the data was treated with a multiple regression analysis. Multiple regression measures an outcome as predicted by one or more independent variables (Field, 2009). In the case of this study, the outcome was district effectiveness as measured by MSIP V scores and the independent variables were student instructional related spending categories.

To analyze the data, the researcher first had to organize the information in the correct format. The information was received from DESE in spreadsheets. The independent variables of expenditures per ADA and average teacher salary were received in the correct format and needed no manipulation. Expenditures per ADA was a figure calculated by DESE and represents how much a district spends per pupil. Average teacher salary was also calculated by DESE and represents the average amount a teachers earns in the district. The data for expenditures on instructional salary per pupil, expenditures on instructional support salary per pupil, and expenditures on professional development per pupil needed to be correctly formatted to fit the study. Data for these independent variables was received from DESE as queried data from all school district's ASBR's. Data for these variables were received in the form of district

total expenditures in each expenditure category. The researcher took the overall expenditures in each category and divided each total by corresponding district enrollment to arrive at an expenditure per pupil amount.

One issue that was anticipated was the expenditures for special education related expenses for instructional and instructional support salaries for school districts. In the St. Louis and Southeast Missouri area, there are two school districts that provide special education services to districts. These expenses were not included in the ASBR information in participating districts. To ensure all school districts were compared equally, all special education related salary expenditures were eliminated from all K-12 school districts. Once these totals were calculated, the data were in the correct format for instructional salary expenditures per pupil, instructional support salary expenditures per pupil, and professional development expenditures per pupil. Eliminating the two special education school district brought the number of total districts in the population to 447.

The dependent variable of district effectiveness was measured by MSIP V scores. MSIP V measures district effectiveness based on five factors; academic achievement, subgroup achievement, college and career readiness, attendance rate, and graduation rate (DESE, 2013). The MSIP V score was calculated by the amount of points a district received based on the mentioned criteria. Total possible points under MSIP V scoring were 140. The total was calculated as a percentage by dividing points obtained divided by 140 (MSIP V Comprehensive Guide, 2013). This data was received in a spreadsheet and was converted to an Excel spreadsheet.

After all data were organized, each independent variable was correlated to the dependent variable using a multiple regression. The computer program used for data analysis was SPSS.

To determine if a significant relationship existed, a confidence interval of 95% was used. This analysis identified if there was a significant relationship between spending levels in each category individually and district effectiveness.

### **Human Subjects Protection**

Anytime data are collected, analyzed, and interpreted, ethical issues emerge and must be considered and mitigated (Creswell, 2009). In the case of this study the ethical issues involving protecting human subjects are minimal. The data collected for this study did not individually identify any human subject. All data collected were at the school district level. This applied to all independent variables and the dependent variable of MSIP V scores. The only data derived from human subjects involved MSIP V scores. This data was based on overall district MSIP V scores. This data was available publically on DESE's website.

Although the data was district level and not individually identifiable, the study still needed approval from the Institutional Review Board. It was determined that the project did not constitute human subjects research and therefore did not require approval or exemption.

### **Quality Issues**

Since no instrumentation was needed to obtain the data, reliability and validity did not apply to this study. A quality issue that pertained to this study was generalization. When considering this issue, two factors were important to assess. First, did the number of cases represent the observed data? Second, could the model be used to fit other samples (Field, 2009)?

For this study, the number of cases properly represented the observed data. This was appropriate because the entire population was included. All K-12 school districts in Missouri were used. The second question was more involved. If another sample were chosen in Missouri, then the model would be appropriate, but the sample would have to change in some way. The

only feasible change to apply directly to this model would be a change in school year because all K-12 districts in the state were represented. If the population considered were to change, such as all school districts in the United States, then this model would not apply because reporting and requirements will differ between states.

### **Summary**

This study sought to determine if a relationship existed between financial resource allocation in certain instructional related variables, and if differences in allocation had an impact on school district effectiveness in Missouri. This study focused on whether this relationship did exist and began laying the groundwork for investigating which variables had the largest impact.

To determine this relationship, a non-experimental correlational analysis was conducted. The researcher used a multiple regression analysis to determine if a significant relationship existed between and among the independent variables and their impact on student achievement. The design of the study presented limits to the application of this research because no determination was made on the effect on student achievement given a specific increase in categorical spending. Given this limitation, this study increased the knowledge base on the topic of school district resource allocation and gave district decision makers background on the effect of resource allocation.

## **Chapter Four**

### **Review of Research Design**

The purpose of the study was to begin laying the groundwork for determining how school districts can best allocate finite financial resources. The overall theory that guided this study was that school districts can allocate resources in such a way to increase district effectiveness as measured by MSIP V. The research was guided by five research questions:

Q1. How do district expenditures per ADA affect district effectiveness as measured by MSIP V scores?

H1. District expenditures per ADA have no significant impact on district effectiveness.

Q2. How does district average teacher salary affect district effectiveness as measured by MSIP V scores?

H2. District average teacher salary has no significant impact on district effectiveness.

Q3. How do district expenditures on instructional salary per pupil affect district effectiveness as measured by MSIP V scores?

H3. District expenditures on instructional salary per pupil have no significant impact on district effectiveness.

Q4. How do district expenditures on instructional support salary per pupil affect district effectiveness as measured by MSIP V scores?

H4. District expenditures on instructional support salary per pupil have no significant impact on district effectiveness.

Q5. How do district expenditures on professional development per pupil affect district effectiveness as measured by MSIP V scores?

H5. District expenditures on professional development per pupil has no significant impact on district effectiveness.

The study was designed as a correlational study to determine the relationship between the independent variables of expenditures per ADA, average teacher salary, instructional salary expenditures per pupil, instructional support salary expenditures per pupil, and professional development expenses per pupil and how they predict MSIP V scores. The independent variables selected were measurable, comparable, referenced in prior research, and were related to student instruction. The dependent variable of MSIP V was the method used to determine district accreditation at the state level, so it was used to determine district effectiveness in this study. Data were available on all 447 K-12 school districts in Missouri, so sampling was not necessary. To analyze the data, a multiple regression was conducted using SPSS software. A 95% confidence interval was used to determine statistical significance.

### **Descriptive Analysis**

The population in this study was based on information reported to DESE from all 447 regular K-12 school districts in Missouri. A summary of these data is in table 4.1. The average MSIP V score of the population was 86.49%. The scores ranged from a high of 100% to a low of 11.10%. Average teacher salary for all districts was \$39,859.76. The range of average teacher salary is \$70,715 to \$27,937. Average current expenditures per ADA was \$9,278.52. The range of current expenditures per ADA was \$18,925.40 to \$6,391.57. The average instructional salary spent per pupil was \$3,186.45. The range of instructional salary spent per pupil was \$7,501.43 to \$2,139.95. The average instructional support salary spent per pupil was \$97.01. The range of instructional support salary per pupil was \$700.40 to \$0.00. The average

amount of professional development expense per pupil was \$135.44. The range of professional development expense per pupil was \$905.75 to \$0.00.

Table 4.1

*Descriptive Statistics from Population*

Variable	n	M	Std. Dev.	Range	
				High	Low
MSIP V Score (%)	447	86.49	9.73	100.00	11.10
Average Teacher Salary (\$)	447	39,859.76	6994.03	70,715	27,937
Current Expenditures/ ADA (\$)	447	9,278.52	2008.19	18,925.40	6,391.57
Instructional Salary / Pupil (\$)	447	3,186.45	713.47	7,501.43	2,139.95
Instructional Support Salary / Pupil (\$)	447	97.01	83.15	700.4	0.00
Professional Development Expenses / Pupil (\$)	447	135.44	143.27	905.75	0.00

**Data Analysis**

The data generated was analyzed using a multiple regression analysis to determine the relationship among the independent variables as they relate to the dependent variable. Multiple regression is a method of statistical analysis which an outcome is predicted by a linear combination of two or more predictor models (Field, 2009).

The predictive model generated by the variables in the research questions produced a significant squared multiple correlation,  $R^2 = .102$ ,  $F(5, 441) = 10.060$ ,  $p < .001$ . This suggested that the values of the independent spending variables have a significant influence on the dependent variable of MSIP V scores. The data is displayed below in table 4.2.

Table 4.2

*Model Summary*

R Squared Change	F Change	df1	df2	Sig. F Change
0.102	10.06	5	441	0.001

Although collectively the independent variables in the research questions significantly predict MSIP V score, each research question will be addressed individually. The data analysis is in Table 4.3.

Q1. How do district expenditures per ADA affect district effectiveness as measured by MSIP V scores?

H1. District expenditures per ADA have no significant impact on district effectiveness.

District expenditures per ADA significantly predicted MSIP V scores as demonstrated by the regression coefficient,  $\beta = -.379$ ,  $t(441) = -3.907$ ,  $p < .001$ . The null hypothesis was rejected that district expenditures per ADA have no significant impact on district effectiveness. Although the relationship was statistically significant, the relationship was negative meaning when expenditures per ADA increased, MSIP V scores decreased.

Q2. How does district average teacher salary affect district effectiveness as measured by MSIP V scores?

H2. District average teacher salary has no significant impact on district effectiveness.

District average teacher salary did not significantly predict MSIP V scores as demonstrated by the regression coefficient,  $\beta = .016$ ,  $t(441) = .313$ ,  $p = .755$ . The null hypothesis was confirmed that district average teacher salary had no significant impact on district effectiveness. Although the relationship was not statistically significant, the relationship was slightly positive.

Q3. How do district expenditures on instructional salary per pupil affect district effectiveness as measured by MSIP V scores?

H3. District expenditures on instructional salary per pupil have no significant impact on district effectiveness.

District instructional salary per pupil significantly predicted MSIP V scores as demonstrated by the regression coefficient,  $\beta = .453$ ,  $t(441) = 4.702$ ,  $p < .001$ . The null hypothesis was rejected that district instructional salary per pupil had no significant impact on district effectiveness. The relationship was statistically significant, and the relationship was positive meaning when instructional salaries per pupil increased, MSIP V scores increased.

Q4. How do district expenditures on instructional support salary per pupil affect district effectiveness as measured by MSIP V scores?

H4. District expenditures on instructional support salary per pupil have no significant impact on district effectiveness.

District instructional support salary per pupil did not significantly predict MSIP V scores as demonstrated by the regression coefficient,  $\beta = -.068$ ,  $t(441) = -1.479$ ,  $p = .140$ . The null hypothesis was confirmed that district instructional support salary per pupil had no significant impact on district effectiveness. Although the relationship was not statistically significant, the relationship was slightly negative.

Q5. How do district expenditures on professional development per pupil affect district effectiveness as measured by MSIP V scores?

H5. District expenditures on professional development per pupil has no significant impact on district effectiveness.

District professional development expenditures per pupil significantly predicted MSIP V scores as demonstrated by the regression coefficient,  $\beta = -.190$ ,  $t(441) = 3.807$ ,  $p < .001$ . The null hypothesis was rejected that district professional development expenditures per pupil had no significant impact on district effectiveness. Although the relationship was statistically significant, the relationship was negative meaning when professional development expenditures per pupil increased, MSIP V scores decreased.

Table 4.3

*Regression Analysis*

Regression	$\beta$	$t$	$p(t)$
Current Expenditures / ADA	-0.379	-3.907	0.001
Average Teacher Salary	0.016	0.313	0.755
Instructional Salary Expenditures / Pupil	0.453	4.702	0.001
Instructional Support Salary Expenditures / Pupil	-0.068	-1.479	0.140
Professional Development Expenditures / Pupil	-0.190	-3.807	0.001

**Summary**

This chapter described the findings based on each research question and the corresponding hypothesis. A multiple regression analysis was used to determine if each research question revealed statistical significance. The null hypothesis for research questions one, three, and five was rejected because a significant relationship was found. For research questions one and five, the significant relationship was negative meaning as expenditures per ADA and professional development expenses per pupil increased, MSIP V scores decreased. Research question three was statistically significant in a positive direction meaning that as instructional salary expenditures per pupil increased, MSIP V scores also increased. The null hypothesis for

research questions two and four was confirmed with no statistically significant relationship found. In chapter five the findings are examined further with conclusions, implications, suggestions for future research, and an overall summary.

## **Chapter Five**

### **Findings and Interpretations**

The purpose of the study was to begin laying the groundwork for determining how school districts can best allocate finite financial resources. The overall theory that guided this study was that school districts can allocate resources in such a way to increase district effectiveness as measured by MSIP V. The research was guided by five research questions.

Q1. How do district expenditures per ADA affect district effectiveness as measured by MSIP V scores?

H1. District expenditures per ADA have no significant impact on district effectiveness.

The null hypothesis for question one was rejected because district expenditures per ADA had a significant negative impact on MSIP V scores. This outcome seems to be in agreement with the prior research (Colman, 1966) that indicated increased financial resources do not have an impact on effectiveness of school districts.

In fact, it indicated that adding additional financial resources had a negative impact on the effectiveness of school districts. Prior studies by Normore and Ilon (2006) and Hall (2006) found a similar outcome. Both of these prior studies held family socioeconomic status equal. The outcome from this study also did not differentiate according to poverty. The results can be interpreted similarly that other factors are at play and may be more influential in determining district effectiveness. These results are explained by the fact that schools with more economically disadvantaged students receive more federal revenue based on their populations of high rates of free/reduced lunch status, high minority, and other factors known to affect student achievement. Federal revenue from Title programs is largely based on poverty levels (U.S. Department of Education, 2013), so districts with higher levels of poverty receive more federal

funding. The result is districts with higher poverty could have more revenue to spend per pupil than districts in wealthier communities. This makes these results logical because socioeconomic status has been proven to be a primary factor in achievement.

Q2. How does district average teacher salary affect district effectiveness as measured by MSIP V scores?

H2. District average teacher salary has no significant impact on district effectiveness.

The null hypothesis for research question two was accepted because average teacher salary did not significantly predict district effectiveness. Although the results were not significant the analysis did suggest a positive relationship. The results indicated that districts that paid their teachers more on average did not increase the effectiveness of the district. Districts in Missouri generally tie their salary schedules to experience and educational attainment of teachers. The more years a teacher teaches and the more education they receive, the more they receive in relation to other teachers.

Teacher quality has also been found to be the most important factor influencing achievement (Knoeppel, Verstegen, and Rinehart, 2007). Jimenez-Costellanos (2010), found that higher teacher salaries, among other variables, were positively correlated with student achievement. He did not directly link teacher salary to teacher quality, but did identify reasons that higher salaries could be related to teacher quality. Teacher pay is linked to teacher experience and teachers with more experience have had more time to develop skills and experienced teachers have learning environments with better resources that accumulate over time (Jimenez-Costellanos, 2010). The problem is that teacher quality and pay are not necessarily related because of how salary schedules are determined. According to Hanushek (1997), part of the ineffective use of resources is related to the pay structure for teachers based on pay for

experience and education, and not on the performance as measured by achievement (Hanushek, 1997). The results of this study agree with Hanushek (1997) because the level of district effectiveness as measured primarily by student achievement was not significantly related to the amount a school district paid teachers on average as compared to other districts. Also, if teacher quality was a primary factor in achievement as found by Knoeppel, Verstegen, and Rinehart (2007), then the salary schedule mechanism used in Missouri was not an indicator of teacher quality as measured by district effectiveness.

Q3. How do district expenditures on instructional salary per pupil affect district effectiveness as measured by MSIP V scores?

H3. District expenditures on instructional salary per pupil have no significant impact on district effectiveness.

The null hypothesis for question three was rejected because instructional salary per pupil significantly predicted district effectiveness as measured by MSIP V scores. Instructional salary per pupil was calculated by taking the amount a district spends on teacher salaries and dividing it by district enrollment. The result was the amount a district spends per pupil on teacher salaries. Increased amounts spent per pupil indicate a lower student to teacher ratio. The results indicated that increased amounts spent on instructional salaries per pupil (or lowering class sizes) was positively related to district effectiveness.

Generally, class size reductions have been found to positively affect student achievement. Even studies such as Hanushek (1997), Hall (2006), and Normore and Ilon (2006) that have found insignificant results in this relationship or that class size reductions are inefficient, still indicated that the relationship is positive. Although this study cannot report on the efficiency of lowering class sizes, it confirmed the relationship is positive and significant. On the other side of

the debate, Greenwald, Hedges, and Laine (1996) and Sander (1999), had similar results that lowering class sizes made a significant improvement in student achievement. This study supports this research.

Q4. How do district expenditures on instructional support salary per pupil affect district effectiveness as measured by MSIP V scores?

H4. District expenditures on instructional support salary per pupil have no significant impact on district effectiveness.

The null hypothesis for question four was accepted because district expenditures on instructional support salary did not significantly impact district effectiveness. Although it was not a significant predictor, the relationship was negative. This result means that as district expenditures on instructional support salary per pupil increased, district effectiveness decreased.

This result is interesting because it indicated that student achievement does not increase when more instructional help was added to the classroom. This result was counterintuitive. The reason teacher aids are added to the classroom is to increase the instructional significance of the teacher. This study contradicts the results of Normore and Ilon (2006) that found that the mix of staffing had a more significant effect on student achievement than class size reductions (Normore and Ilon, 2006).

Q5. How do district expenditures on professional development per pupil affect district effectiveness as measured by MSIP V scores?

H5. District expenditures on professional development per pupil has no significant impact on district effectiveness.

The null hypothesis for question five was rejected that expenditures on professional development per pupil had no significant impact on district effectiveness. Although the null

hypothesis was rejected and there was a significant impact, the relationship was negative. This means that district effectiveness decreased when a districts spent more on professional development per pupil.

This result again seems to be counterintuitive. The expected result from a district perspective was for student achievement or district effectiveness to increase when more financial resources are spent on professional development. Although counterintuitive, this finding supports the research of Harris and Sass (2011) and Porche, Pallante, and Snow (2012) that professional development did not impact school district results. This result could be explained similarly to research question one. Since all K-12 school districts were included in this study and district poverty level was not considered, all district were held equal according to poverty. Title II is a federal award to expand professional development to teachers and administrators to improve student achievement. The level of funding was largely determined by district poverty level determined by free/reduced lunch rates (U.S. Department of Education, 2013). Districts with high poverty levels receive more federal revenue from this Title program and are required to spend these funds on professional development. Since poverty has been determined to be a significant predictor of student achievement, the districts with disadvantaged students are the same districts with higher proportions of Title II allocations.

### **Additional Findings**

In addition to the stated research questions, the researcher was interested in how some of the independent variables, when combined, affected district effectiveness. Specifically, the researcher was interested in district expenditures in a combination of variables and the impact on district effectiveness. The same regression analysis was completed on specific combinations. The predictive model generated by the variables in this model produced a significant squared

multiple correlation,  $R^2 = .087$ ,  $F(7, 434) = 6.613$ ,  $p > .001$ . This suggested that the values of the independent spending variables had a significant influence on the dependent variable of MSIP V scores. Table 5.1 displays these results.

Table 5.1

*Combined Variable Analysis*

Regression	$\beta$	$t$	$p(t)$
Instructional Salaries / Pupil and Professional Development Expenses / Pupil	1.231	3.425	0.001
Instructional Salaries / Pupil and Instructional Support Salaries / Pupil	0.511	1.442	0.150
Average Teacher Salary and Professional Development Expenses / Pupil	-1.397	-4.996	0.001
Average Teacher Salary and Instructional Support Salary / Pupil	-0.280	-0.999	0.318
Average Teacher Salary and Current Expenditures / ADA	0.393	1.144	0.253
Current Expenditures / ADA and Instructional Salary/ Pupil	-0.550	-1.320	0.188
Current Expenditures / ADA and Professional Development Expenses / Pupil	-1.368	-3.299	0.001

The variable combinations that yielded significant results in district effectiveness were instructional salaries per pupil and professional development per pupil, average teacher salary and professional development expenses per pupil, and current expenditures per ADA and professional development expenses per pupil. Two of the three significant combination yielded results that were negatively related to district effectiveness.

Average teacher salary and professional development per pupil significantly predicted MSIP V scores as demonstrated by the regression coefficient,  $\beta = -1.397$ ,  $t(434) = -4.996$ ,  $p < .001$ . Recall that independently average teacher salary was not a significant predictor of district effectiveness, but professional development expenditures per pupil did significantly impact district effectiveness negatively.

Current expenditures per ADA and professional development expenditures per pupil also significantly predicted MSIP V scores as demonstrated by the regression coefficient,  $\beta = -1.368$ ,  $t(434) = -3.299$ ,  $p = .001$ . Again, both current expenditures per ADA and professional development expenditures per pupil independently yielded significant negative results in district effectiveness scores. Combining these results intensified this relationship to district effectiveness.

Instructional salary expenditures per pupil and professional development expenditures per pupil significantly predicted MSIP V scores as demonstrated by the regression coefficient,  $\beta = 1.231$ ,  $t(434) = 3.425$ ,  $p < .001$ . Independently both of these variables yielded significant results. Instructional salaries per pupil was significantly positive and professional development expenditures per pupil was significantly negative. Combining these variables produced a stronger positive relationship than the instructional salary expenditures per pupil alone. This result indicated that reducing class sizes and further educating teachers was the most significant predictor of district effectiveness of any of the variables measured. This connection reinforced the research by Greenwald, Hedges, and Laine (1996) and Sander (1999) in that class size reduction matters, but also adds value to the professional development findings by Blank (2013), Iatorola and Fruchter (2004), Heller et al., (2011), and Sample McMeeking, Orsi, and Cobb (2012) in that professional development can have an impact on achievement. From a larger perspective, this finding also supported the notion that resources in the classroom can be allocated in such a way to improve district effectiveness.

## **Implications for Practice**

This research produced some implications for practice in school finance. First, it revealed some encouraging data that suggested financial resources can be allocated in ways that produce gains in district effectiveness. The most significant way found in this study was that school districts improved effectiveness by investing more resources in per pupil expenditures on instructional salaries. In effect, investing more in teacher salaries per pupil lowers district overall class sizes. The implied outcome of lowering class sizes is that it gives teachers more time to individualize learning by giving more time per student. From a student perspective, it lowers the competition for teacher attention and in theory would allow more individual time with the teacher. This research also suggested that investing not only in lowering class sizes, but also providing more high quality professional development to teachers improved district effectiveness. In isolation, investing in professional development produced a significant negative result in student achievement, but the combination of lowering class size and professionally developing teachers produced a significant positive result in district effectiveness.

Second, policy makers could use this information to continue to refine class size suggestions or targets. Currently in Missouri, DESE has class size targets through the Missouri School Improvement Plan, but mandating and funding such targets could be an effective way to improve results. From a district perspective, this information could be used to reallocate resources over time to continue to drive down the class size numbers. Since finances would be a significant barrier to this reduction, a reallocation over time or more funding would be necessary.

Third, the results could be used to support pay for performance measures. This research calls into question the current practice of school districts to base teacher salary on years of experience and education. This study found that districts that had higher average teacher salaries

in Missouri did not perform any better on the current measure of district effectiveness. The implicit goal of any school district is to increase student achievement results. The majority of the MSIP V scores is based on student achievement. If districts that have more experience and educated teachers are not producing results, this triggers a question of whether or not the current method of paying or incentivizing teachers is effective. Policy makers could use this information to support pay for performance measures.

Finally, this research found that higher levels of resources to the district alone did not produce higher results in the 2012-2013 school year. As discussed earlier in this chapter, other factors are certainly at play in this finding especially family socioeconomic status. This information can certainly be used from a policy making standpoint for future funding considerations, but this will need further study and is discussed in the future research section.

### **Future Research**

As described in chapter two, the debate about how and whether resources matter in student achievement is unsettled. Unfortunately, this research study did not settle the debate, nor was it intended to, but it did continue the discussion and presented opportunities for future research.

The first opportunity for future research is the consideration of time. This study was completed based on one school year. The significant findings for research question one and research question five could be different if more than one school year is considered. The findings for this study found that expenditures per ADA and professional development expenditures per pupil both significantly predicted MSIP V scores, but in a negative way. The explanation could be found in how these districts were funded based on their poverty status, but what this finding did not account for is how these districts performed over time. For example, if

a district with high poverty generally underperforms a district with higher socioeconomic status, then considering only one year at a time will continue to yield the same results. Taking this same poor district and trending their results over time could reveal that they are making steady gains and their students are significantly being impacted by the higher levels of resource investment. To find the answer would require data over a period of time but could be completed in a future study.

Also, as mentioned briefly in the previous paragraph, family socioeconomic status could reveal much different results. This study considered each district to be equal in term of poverty level. In a future study, free/reduced lunch rates should be considered because achievement results have been linked to poverty level.

Another important factor that could be considered in future research is school district size. Resource efficiency was also not considered in the study. Grouping districts according to size could produce different results because of increased or decreased efficiency based on district size. If other variables are found to also impact district effectiveness, a cost benefit analysis could also be conducted to see which resource investments provide the largest gain for an equal resource investment. This could provide valuable information to policy makers and school business officials that are trying to allocate resources to provide the largest gains in district effectiveness.

### **Summary**

The purpose of this study was to increase the knowledge base on categorical educational spending and how resource allocation affected district effectiveness. The results of this study were mixed, but the purpose of the study was still fulfilled. The significant negative findings in research question one and question five in regard to overall expenditures per ADA and

professional development expenditures per pupil showed that resources were not the most important factor in determining student achievement, but it did not remove their importance from the equation and raised questions about how these resources make a difference over time. The finding in research question two that average teacher salary was not a significant predictor in district effectiveness aroused other questions of the current method in which teachers are paid and whether or not experience and education level is the most effective model. Research question three showed that spending more resources on instructional salaries per pupil is a strong predictor of district effectiveness, but more questions could be asked about how effective and efficient these investments are in comparison to other factors.

The debate about how resources should be invested to produce the highest gains student achievement levels or district effectiveness is far from complete. What we do know about school finance is that resources are a necessity and they should be spent in ways that are going to help children succeed. The debate about resource allocation should continue and school business officials should always be looking for ways to continuously improve results with the finite resources that are available.

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