

PROFESSIONAL DEVELOPMENT EXPENDITURES AND DISTRICT-LEVEL  
PERFORMANCE ON THE MISSOURI ASSESSMENT PROGRAM

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PROFESSIONAL DEVELOPMENT EXPENDITURES AND DISTRICT-LEVEL  
PERFORMANCE ON THE MISSOURI ASSESSMENT PROGRAM

Presented by Bradley Cooper a candidate for the degree of Doctor of Education and  
hereby certify that in their opinion it is worthy of acceptance.



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A Dissertation  
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Doctor of Education

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By

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## ABSTRACT

Current researchers have not been clear on whether or not professional development expenditures, at the school district level, share any possible relationships with student achievement outcomes on state-level summative testing. While there are many articles and numerous research studies on the concept, they are very contradictory in their findings. The purpose of this quantitative, correlational study is to test the theory that increased spending in district-level professional development expenditures is related to district-level student achievement scores in ELA and mathematics. The researcher examined the 518 public schools within the State of Missouri. The researcher also examined the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and mathematics on the Missouri Assessment Program (MAP), for the school years of 2017-2019. Based on study results, there are a few professional implications that can be quickly identified by the negative relationship indicated by the Pearson  $r$  between district professional development spending and student achievement scores. There were no statistical relationships indicated by the Pearson  $r$  coefficient between district professional development spending and student achievement scores for the subject of mathematics.

Keywords: Missouri Assessment Program, professional development, student achievement, English Language Arts, Mathematics

## CHAPTER ONE

### Introduction

Since the publication of “A Nation at Risk” (Gardner, 1983), state legislatures and school district leaders must scrutinize and closely examine decisions regarding the allocation of their resources. Throughout history, the federal government has placed accountability measures among school reform policies such as the political battle of financial needs and wants (Bolman & Deal, 2017). This movement aided in the development and urgency in defining an adequate and equitable education. In practical attempts to maintain impartiality, the Missouri School Improvement Program (MSIP) has tried to support such reform requirements of accountability, while preserving or improving district and state-level educational obligations (Department of Elementary and Secondary Education, 2015).

Originating in 1990, the MSIP programs were developed to promote growth among Missouri school districts. The state of Missouri has now been using the sixth cycle of MSIP since 2020. This program is used to develop accreditation recommendations to the state school board, outline expectations for student achievement, and develop a yearly quantitative report to school districts regarding their district-level performance on such standards (Department of Elementary and Secondary Education, 2015). In response to the historical need of state-level educational reform, programs such as MSIP have been implemented to track district-level performance levels and provide feedback to school districts at their current level of accomplishment and their work toward MSIP standard goals and objectives (Missouri Department of Elementary and Secondary education, 2015). MSIP, and other similar tools, have been producing data across the United States

for several years and can be used to develop and guide policy and law(s) in public education (Welker, 2006). This information is reported via a district-level financial narrative called the Annual Performance Report (APR) (Missouri Department of Elementary and Secondary Education, 2015).

The Missouri Assessment Program (MAP) is one of several educational reforms embedded in all MSIP cycles, all of which were mandates of the Outstanding Schools Act of 1993. As a result of this legislation, the State Board of Education directed the Missouri Department of Elementary and Secondary Education (DESE) to identify the knowledge, skills, and competencies that Missouri students should acquire by the time they complete high school and to assess student progress toward these academic standards. These practices continue throughout today's MSIP 6 cycle (Vick, 2020).

School districts rely on state-level funding mechanisms for yearly revenues (Jones, 2018). The Committee for Education Equality challenged Missouri's funding mechanism in 1993. A Cole County judge, Byron Kinder, ruled that in the case of Committee for Educational Equality, et al., v. State of Missouri, the funding mechanism used by the State of Missouri at that time was found unconstitutional (Ogle, 2007; Committee for Educational Equality, et al., 1993). Judge Kinder stated, "The present Missouri school system does not provide an equal opportunity for each Missouri child as guaranteed by the Missouri Constitution" (Committee for Educational Equality, et al., 1993, p. 2). This 1993 ruling caused Missouri legislators to develop Senate Bill 380 (Missouri S. 380, 1993), otherwise known as the Outstanding Schools Act (OSA) of 1993.

The OSA was designed to address equity within the funding mechanism, thus supporting an adequate chance of success for both students and school districts. Prior to the Cole County ruling, the state of Missouri had only revised its funding system twice, once in 1969 and the other in 1977 (Jang, 2006). Senate Bill 380 was later referred to as the “foundation formula”. Within this formula was the state of Missouri’s solution to the inadequate distribution of state education monies. The formula distributed funds on a basis of the number of pupils enrolled in the district and then adjusted for the local wealth dependent on the district (Welker, 2006; Hurley, Demott & Hill, 2020).

The notion of equality began early in the 20<sup>th</sup> century with the work of Ellwood P. Cubberley (Brimley & Garfield, 2002). Cubberley was a professor at Stanford University and later in life spent time as the dean of their graduate school of education. Through his studies, he developed state-wide plans of school finance that focused on the principle of equal opportunity for all (Brimley & Garfield, 2002). However, equitable/fair treatment does not mean equal monies in real-life scenarios. If all districts received equal funding per-pupil yet did not take into the consideration of the needs of the individual students of the district, then funding cannot be viewed as equal, but instead inadequate (Calcaterra et al., 2006).

In the state of Missouri, equity has been the basis of dispute concerning the funding mechanisms used to subsidize the state’s school system for years (i.e., SB 270). It is exceedingly difficult to meet the financial needs of school districts when deliberating the parity of school finance because one would think that there are only two choices: equal and unequal. However, there is a contention that both apply (True-Frost, 2018; Awwad, 2018). A couple of examples could be high poverty rate or even a student with a

specific disability (Baker & Corcoran, 2012). This suggests that equity may be “the notion that students should be treated according to their different learning needs and characteristics” (Bandaranayake, 2013, p. 193), thus making the concept of equal funding an unclear target (Garcia Vasquez, 2018). Litigation has taken the problem of equal and adequate education and placed it directly on the state level governing systems and has succeeded in driving reform in over half of the state-level funding mechanisms since the 1970’s (Russo, 2010).

To meet recent demands of litigation, studies began to form utilizing less attention toward average or median expenditures per-pupil and moving toward an advocated set of outcomes. The practice of using outcome data for school reform is called the Successful Schools Model. The Successful Schools Model is constructed of data on measures such as attendance, dropout rates, and student test scores to distinguish schools/districts that meet a certain criterion of what success is or should look like (Baker et al., 2021).

This approach develops the assumption that the expenditures among school districts that are identified as a successful school and their per-pupil expenditures spent should be the appropriate baseline of funding needed to proficiently educate children of like geographical location (Welker, 2006) and may have an effect on the quality or type of professional development the educators within the system receive and can change the instruction that they provide (Allensworth et al., 2021).

In Chapter One, the researcher will include a problem statement along with the purpose and rationale for the quantitative study. It will also include the researcher’s theoretical framework, which was based on establishing an argument for a high percentage of variance a teacher has upon their students and the importance of

professional development on student achievement. This chapter will include research questions, null hypothesis, significance of the study, definition of key terms, limitations and delimitations of the study, assumptions, and design of controls. The chapter will then conclude with a summary.

### **Theoretical Framework**

The purpose of this quantitative, correlational study is to test Walberg's Theory of Academic Achievement where professional development expenditures is related to district-level student achievement scores in ELA and Mathematics. The theoretical framework for this study is centered on this theory. Walberg's theory claimed that the quantity and quality of instruction a student receives (Walberg, 1980) does affect a student's immediate environment and directly influences their educational outcomes (Reynolds & Walberg, 1992). The researcher found the need to implement research from Dr. John Hattie (2003, 2008, 2009) to support this theory. The researcher used the findings from Hanushek and Lindseth (2009; 2019) as well as the conflicting views of Hedges, Larry, Laine, & Greenwald (1994). These researchers will be used to develop a convincing argument for a narrowed spending approach and how it can directly affect the outcome of student performance data. Linda Darling-Hammond (2009; 2017) will also be analyzed throughout this section for explicit needs regarding professional development practices.

Dr. Hattie's research emphasizes the importance of teacher/student variances. These variances were considered when choosing expenditure codes to be examined on a school district's Annual Secretary of the Board Report (ASBR). The ASBR is required by Section 162.821 RSMo to be submitted to the Missouri Department of Elementary and

Secondary Education on or before August 15<sup>th</sup> of each year. The ASBR contains information such as revenues, expenditures, fund balances, debt, and transportation data that are used for various data comparisons, calculations, and data requests. Example calculations include payment transmittals, the local effort calculation, the current expenditure calculation, district report card, and federal reporting information (MoDese, 2017).

In Hattie's book, "Teachers Make a Difference: What is the Research Evidence?" Hattie stated (2003, p. 4), "We should be asking where the major source of variance in student's achievement lie and concentrate on enhancing these sources of variance to truly make the difference." His findings have developed identifiable variances among school-aged children related to their level of achievement. These variances were identified by Hattie using hierarchal linear modeling, which can differentiate the variances that students may bring to the classroom when they arrive at school. Variances such as curricula, policies, climate, principals, teachers, methodology, and interactions that occur among their home lives are among these variabilities (Hattie, 2003).

Students account for around 50 percent of their own achievement. Beyond the students own account, home influences account for around 5-10 percent, schools and principals account for approximately 5-10 percent, peers account for 5-10 percent. Teachers can account for a staggering 30 percent of variances among a student's achievement at school making expenditures related to teacher quality very significant (e.g. Professional Development) (Hattie, 2003).

Professional development strategies lead to student achievement with a standard deviation effect size of 0.62, listed as 19<sup>th</sup> of the most important practices by Hattie

(Hattie, 2009; Hattie & Anderman, 2019) defining variables of teacher/school variances and professional development spending (Hattie, 2003). A teacher's content knowledge, instructional practices, and their approach to their daily instruction all tend to support a positive correlation between student achievement, teacher efficacy, and their participation in professional development activities (Williams, 2016). To further examine district-level spending and the effect it may have on teacher quality one could look to the research of Hedges, Laine, and Greenwald (1994) and the contradictory findings of Hanushek (1997; 2009; 2019).

Hanushek (1989; 1997; 2009) has repeatedly asserted that since the mid-20<sup>th</sup> century per-pupil expenditures in American schools have increased 400% (a figure that allegedly includes inflation), yet achievement has remarkably remained unchanging. He also states that even with the extensive efforts to develop policies among state educational funding mechanisms, their efforts to lower class sizes, hire additional personnel, and the development of magnitudes of intervention and instructional programs, the achievement of America's students have still not been perceptively different for decades. Therefore, Hanushek continues to claim that extra spending by school districts may have little to no effect on student achievement (2009).

However, there are scholars that argue that there are relationships among educational inputs (such as professional development expenditures) and educational outputs (e.g. student achievement) and do have consistent positive relationships (Hedges et al., 1994). Hedges et al. (1994) varied in their dissimilar research as Hanushek (1987) in the publication, *Educational Researcher*, the exact same publication platform that Hanushek

utilized to claim there were no correlations. Hedges et al. argued that there are consistent relationships among spending and student achievement outcomes (1994).

Darling-Hammond & Richardson (2009) reported that teaching practices are changed when opportunities for collective development occur. These practices should cause teachers, that have been engaged in a well-designed professional development, to promote engagement and continuous learning opportunities that resemble that of the lesson their students will encounter. In return they will replicate this experience with their students through their lesson design.

Research-based techniques are required to support and develop teachers (Sowell, 2017) and in order to develop environments for educators to feel and perform successfully, a culture that creates learning opportunities must be cultivated; this can only be achieved by quality professional development (Svendsen, 2020). Fostering high-quality educators takes time and support, professional learning is a process that allows for a plan of scaffolded improvement of practices (Darling-Hammond et al., 2017; Wong & Wong, 2018). Research questions were developed in order to examine the two variables that examined the additional spending in professional learning and observed the student achievement outcomes in ELA and mathematics.

### **Problem Statement**

The accountability of school district achievement has been a popular political bullet since a flat period of insipid student achievement scores of about 30 years (Hanushek & Lindseth, 2009) remain at a flat trajectory in more recent years (Hung et al., 2020; Hanushek, 2021). Such measures have been mostly required by federal mandates and tied directly to federal monies through laws such as the Elementary and Secondary

Education Act (ESEA) (Murphey, 1971), The No Child Left Behind Act (NCLB) (Bush, 2001), and Every Student Succeeds Act (Witherspoon, 2018). However, the majority of these mandates must be created at the state level making law makers define what quality education is in the state of Missouri. This includes how each school district will be held accountable for the state's educational standards and objectives regarding the systems interpretation of the state constitution and the state department/school district's educational responsibilities (Baker et al., 2021).

Since the implementation of the ESEA and NCLB laws, as well as the development of the Missouri School Improvement Program (MSIP) and the Missouri Assessment Program (MAP), there have been many divergent views of how to spend resources available to Missouri school districts. These variances among philosophies of education, approaches to quality instruction (for the purpose of this study the researcher will interpret that high-quality instruction is a product of effective professional development), and state-level revenues can restrain district-level expenditures and may affect the performance of a school districts achievement level.

There are very few studies to be found regarding specific spending in professional development and the direct achievement outcomes that can be attained by such spending practices. This study will define the gap in literature regarding whether or not resources can affect student achievement outcomes that have been too often contradictory. Such research has remained parallel to one another for decades (Hung et al., 2020). There are few studies tying the direct spending in professional development and the achievement outcome gains that can be attained by such spending practices. The researcher attempted to connect the two parallel variables by examining the current available research.

Teacher efficacy is strongly presented as a positive variance among a student's achievement by Hattie (2003), and the positive relationship that was argued by Hedges, Larry, Laine and Greenwald tend to promote the opinion that spending does matter (1994), all of which leads to the dispute that school districts should be intentional with how much and where they utilize district resources and/or district-level expenditures. Williams (2016) claimed that the relationship between teachers and the professional development in which they participate in are so apparent that further research should be continued. The continuation of research among professional development experts show that it should quantify within the teacher's beliefs, practices, and attitudes, be structured, advanced, and useful to the district, as well as establishing a stressing need for a culture of continuous professional learning to develop and increase teacher quality (Hattie, 2012; Delpier et al., 2019).

### **Purpose of the Study**

The purpose of this quantitative, correlational study is to test the theory that increased spending in district-level professional development expenditures is related to district-level student achievement scores in ELA and mathematics. The researcher examined the 518 public schools within the State of Missouri. The researcher also examined the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and mathematics on the Missouri Assessment Program (MAP), for the school years of 2017-2019. The study will determine the relationship by identifying trends that may exist among the spending of successful Missouri School Districts compared to lower performing Missouri school districts, specifically using the school districts ASBR

reporting fund code 2214 (professional development expenditures) in order to study the correlation between the two variables.

Missouri is a mostly rural state, located in the central United States. Districts that will be considered include kindergarten through 8<sup>th</sup> grade school districts, as well as Kindergarten through 12<sup>th</sup> grade school districts in order to consider all Missouri school Districts. Although the State of Missouri is mostly rural, all 518 public school districts were considered for the study.

Historical MAP data in English Language Arts (ELA) and Mathematics, district-wide, was utilized in this quantitative, correlational study. The MAP data was a continuous variable that included all grade-level specific data for the school district, in all 518 Missouri public school districts, that was reported as the percentage of students that scored at or above proficient or advanced. Their MAP and ASBR data were considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). To answer RQ's 1-2, data was examined and relationships were identified among the continuous variable of district-level professional learning expenditures, reported in dollars, and student achievement scores in Missouri school districts, reported in percentages of proficient or advanced student achievement. The districts ASBR will then be examined and compared to the district-level spending on professional development and the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement.

### **Research Questions**

Questions guiding this research study were as follows:

RQ1

What is the relationship of a school districts professional development expenditures and district level student achievement as measured by ELA MAP scores?

RQ1a. What is the relationship of a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores in **SY 2017**?

RQ1b. What is the relationship of a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores in **SY 2018**?

RQ1c. What is the relationship of a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores in **SY 2019**?

RQ2

What is the relationship of a school districts professional development expenditures and district level student achievement as measured by Mathematics Map Scores?

RQ2a. What is the relationship of a school district's professional development expenditures and district level student achievement as measured by Mathematics MAP scores in **SY 2017**?

RQ2b. What is the relationship of a school district's professional development expenditures and district level student achievement as measured by Mathematics MAP scores in **SY 2018**?

RQ2c. What is the relationship of a school district's professional development expenditures and district level student achievement as measured by Mathematics MAP scores in **SY 2019**?

## **Null Hypotheses**

H<sub>01</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores?

H<sub>01a</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores in **SY 2017**?

H<sub>01b</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores in **SY 2018**?

H<sub>01c</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district level student achievement as measured by ELA MAP scores in **SY 2019**?

H<sub>02</sub>: There is no statistically significant relationship between a school districts professional development expenditures and district level student achievement as measured by Mathematics MAP scores?

H<sub>02a</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district level student achievement as measured by mathematics scores in **SY 2017**?

H<sub>02b</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district level student achievement as measured by mathematics MAP Scores in **SY 2018**?

H<sub>02c</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district level student achievement as measured by mathematics MAP Scores in **SY 2019**?

### **Significance of the Study**

The body of research in the field of district-level expenditures that are specific to professional development/learning and student achievement in Missouri are lacking. Due to the apparent affect that professional learning may have on student achievement outcomes, more research is needed to establish a deeper understanding of professional learning and its effects (Williams, 2016). By determining whether or not there is a significant relationship between professional development expenditures and student achievement, it may allow school districts aid in planning and developing their budgets and spending resources on the most effective avenues. Due to the position of the teacher being one of the most influential and manageable variables, professional learning opportunities may be one of the most powerful tools educators and their organizations have in their tool kit (Hattie, 2009), allowing the decision makers of the organization to develop better planning with their resources and develop more appropriate control over their achievement scores on the MAP test. If found significant, this study could be meaningful at the local and state level when planning resource allocation.

This research will benefit anyone that is a decision maker regarding professional learning expenditures within a school district or anyone that can be affected by high-quality professional learning. This study aimed to add to the knowledge base of previous work completed in relation to professional learning

expenditures of Missouri Public School Districts and the outcome data of student MAP achievement scores.

### **Definition of Key Terms**

**Missouri Department of Elementary and Secondary Education (MODESE, DESE).** According to the MODESE website, DESE is an acronym used to identify the administrative arm of the State Board of Education otherwise known as the Department of Elementary and Secondary Education (Missouri Department of Elementary and Secondary Education, 2015).

**MCDS.** Acronym utilized to identify the Missouri Comprehensive Data System (Missouri Department of Elementary and Secondary Education, 2015).

**ASBR.** Acronym utilized to identify the annual secretary of the board report. Each school district is required to develop such a report, constructed by the secretary to the board (Missouri Department of Elementary and Secondary Education, 2015).

### **Limitations, Delimitations, and Assumptions**

While it is the researcher's intent to provide the most accurate information and data available to add to the body of knowledge on educational best practices, educational research is a difficult field of study due to the many variables that play a part in the management of school funds and the implementation and utilization of instruction. Many factors influence district-level achievement making educational research related to such a topic complex. This complexity creates limitations and delimitations within the study.

#### **Limitations-**

1. The MAP assessment tool is assumed to be valid and an effective indicator of student achievement levels.

2. Annual Secretary of the Board Report (ASBR) data utilized in this study are self-reported expenditure reports and while the state of Missouri adheres to common reporting practices, such as coding guidance and auditing, there cannot be complete commonality among all school district's reporting practices or an absolute means of verification.
3. Professional development decisions at a district-level are not uniform and not exclusively reported through the Missouri Comprehensive Data System. Only their final expenditure reports can be holistically identified.
4. Missouri school districts are required to spend a minimum of 75% of one percent of their state funding on professional development. A district's strategic adherence to this rule to save money, may have an impact on this study. Many school districts may have only budgeted the 75% of one percent to be spent on professional development while others may have chosen to spend more.
5. The uncontrollable revenue of a school district in certain accounting codes.
6. Accounting practices of each school district and the philosophies that were used for expenditure coding through central offices of the chosen school districts can reflect how the ASBR report is interpreted.

**Delimitations-**

1. Sample population was limited to only Missouri Public Schools.
2. The ASBR data was limited to the total instruction expenditures (ASBR Code 1999) and professional development expenditures (ASBR Code 2214) found on the district-level Annual Secretary of the Board Report (ASBR)

3. The data was delimited to the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19).
4. The student achievement data was delimited to the subjects of ELA and mathematics for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19).
5. The professional development expenditures will only reflect the current school year's student achievement data and not of the actual impact of the professional learning.

#### **Assumptions-**

1. The data uploaded to the Missouri Comprehensive Data System by school districts is reliable and correct.
2. School districts considered successful are districts that score well on summative testing cycles such as the Missouri Assessment Program (MAP).
3. The Annual Secretary of the Board Reports downloaded from Department of Elementary and Secondary Education are accurately reported to the state department of education.
4. School districts that receive state funding were considered to be a public school.

#### **Design and Controls**

This quantitative correlational study will examine the spending trends and MAP achievement results of Missouri public school districts in the school years (SY) of 2016-2017, 2017-2018, 2018-2019. These years were chosen to dismiss any variables that may have occurred during the 2014-2015 and 2015-2016 school years annual performance reports (APR) due to the hold-harmless testing tolerances and the 2021 change to MSIP 6

for the state of Missouri. The hold-harmless testing tolerance was designed to concede that the new state standards and testing procedures created an unfairness when calculating annual test scores, therefore the tolerance was maintained during these two school year cycles to not allow lower test scores to affect the school districts APR configuration (Strand, 2016). In other words, a school district could not be held accountable for test scores that were going to lower the APR results of the district. The only test scores that could be utilized in the figure were scores that increased the APR score, thus making the possibly data invalid for this study.

A correlational study was determined to be appropriate due to the nature of the research. The researcher will attain the current state of resources available in the current conditions of Missouri school finance to be spent on professional learning, thus being descriptive by research design. The correlational portion of the study will discover the relationship of a school districts professional development expenditures and district level student achievement as measured by ELA and mathematics MAP scores to allow the prediction of future events from present school finance knowledge.

Professional Development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) will be divided by the Total Instruction expenditure code 1999, found on the ASBR, to compute a percentage of funds spent on professional development for the 518 school districts, for the school years 2016-2017 (SY 2017), 2017-2018 (SY 2018), and 2018-2019 (SY 2019), to compare their successes to each other.

The limitations of this study were not controlled by the researcher due to the nature of the research and data required to answer the research questions. Non-

experimental design was used to examine essential data to the research. All data that was utilized was publicly accessible. Exclusively, the ASBR data that is self-reported by Missouri School District's and the professional development spending practices of a school district. Professional development decisions at a district-level are not uniform and not exclusively reported through the Missouri Comprehensive Data System, however the state of Missouri adheres to common coding practices for auditing purposes.

The delimitations of this research were controlled by the researcher to provide appropriate dependent variable data such limiting the data to the 518 Missouri public school districts, ASBR Professional Development expenditures which may identify trends among the spending of successful Missouri school districts compared to lower performing Missouri school districts, specifically using the school district's ASBR reporting fund code 2214 (Professional Development Expenditures) to compare their successes, for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). Data will be examined through the MCDS (MODESE) portal in detail regarding professional development and other imperative data such as MAP scores and will be fluid dependent on Missouri School Districts performance for each of the school year(s) being examined and the assessment subject upon the specific research question.

Achievement data for this study was collected through the utilization of the Missouri Department of Secondary Education's (MODESE) open access database for Missouri Comprehensive Data System (MCDS portal) which can be found through the web applications public menu on MODESE's website and a data request made through MODESE. The percentage of "proficient and advanced" student achievement data was obtained for all 518 public schools in Missouri.

School finance data was collected through the Annual Secretary of the Board Reports (ASBR), reported by MODESE, and downloaded from the open access data base from MODESE MCDS portal. A data request was also made through MoDESE. Such data included:

1. Total instruction expenditures for the selected years for public school districts in the state of Missouri.
2. Professional development expenditures for the selected years' public-school districts in the state of Missouri.

Professional development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) will be divided by the total instruction expenditure code 1999, found on the ASBR, to compute a percentage of funds spent on professional development for all 518 school districts for the school years 2016-2017 (SY 2017), 2017-2018 (SY 2018), and 2018-2019 (SY 2019). This will provide appropriate data to be examined through the SPSS system to determine the correlation among student achievement and the amount of funding spent on professional development for the school districts that were examined.

### **Summary**

This chapter contained an overview of the current gap in the literature regarding professional learning and the expenditures spent on professional learning and how it can affect student achievement outcomes. The purpose of this quantitative, descriptive, correlational study was to determine the relationship between district professional development expenditures and district-level student achievement in ELA and Mathematics on the MAP assessment. The researcher examined 518 Missouri Public

Schools and their professional development expenditure codes 2241 that was then correlated to their ELA and Mathematics MAP data during the study.

This research will fill the gap in literature where there are very few studies regarding direct spending in professional development and the achievement outcome gains that can be attained by effective professional development. Teacher efficacy is presented as a positive variance among a student's achievement by Hattie (2003), and highly correlated to the amount and quality of professional development a teacher receives. Hattie states that professional development strategies lead to student achievement (Hattie, 2009; Hattie & Anderman, 2019). Thus, making the connection with the variable of teacher/school variances and professional development spending imperative (Hattie, 2003).

Research questions were developed to examine trending expenditures among identifiably successful Missouri school districts. This study intends to examine the relationship among the identified school districts and their expenditures related to monetary resources spent in professional development for the 2016-2017 (SY 2017), 2017-2018 (SY 2018), and the 2018-2019 (SY 2019) school years.

Chapter 2 of this paper will provide a review of literature, organized thematically, of existing research of successful schools' models and how professional development practices can impact the efficacy of a teacher, resulting in higher student achievement. Chapter 3 will describe the methodology utilized in identifying school districts within the study. In this chapter, the researcher will examine the data sets collected through the chosen districts' ASBR between the MSIP years of 2017-2019. Chapter 4 will offer a presentation of these findings. Chapter 5 will provide a summary of this project and the

educational implications and significance of these findings for educational decisions and future studies.

## CHAPTER TWO

### REVIEW OF LITERATURE

#### **Introduction**

The purpose of this quantitative, descriptive, correlational study is to determine the relationship between district professional development expenditures and district-level student achievement in ELA and math. The study will examine trends that exist among the spending habits of successful Missouri school districts compared to lower performing school districts, specifically using the school district's ASBR reporting fund code 2214 (professional development expenditures) to compare their successes.

Federal accountability has historically driven the debate of how to achieve accountability and equity in the nation's public schools. From the National Defense Act of 1958 (Gillette, 2021), all the way to the Every Student Succeeds Act of 2015 (Close et al., 2020), all these reforms intend(ed) equity within the educational system during their inception and development of policy (Chu, 2019). When equity is the goal, education should provide adequate resources to every student (Brown, 2018). The notion of equity began early in the 20<sup>th</sup> century with the work of Ellwood P. Cubberley (Brimley & Garfield, 2002; Jacobi, 2018). Through his studies he developed state-wide plans of school finance that focused on the principle of equal opportunity for all (Brimley & Garfield, 2002; Jacobi, 2018). However, equitable treatment does not always mean equal treatment (Calcaterra et al., 2006). Adequacy and/or equity is having the same level of resources available as other districts of similarity, guaranteeing a universal education for all (Odden & Piccus, 2004). Ultimately, equity becomes, "the notion that students should

be treated according to their different learning needs and characteristics”

(Bandaranayake, 2013, p. 193).

To meet precedent demands, studies began to form utilizing an advocated set of outcomes and their use in gauging the adequacy of the education being scrutinized. The use of outcome data is called the Successful Schools Model (Hurley et al., 2020). Through such theories, the Missouri School Boards Association commissioned Augenblick and Myers to theorize what the minimum level of spending per student that would be considered necessary for an adequate and equal education to Missouri resident students may be. Through DESE’s district report cards, annual secretary to the board reports (ASBR), and Missouri School Improvement Program (MSIP) data, Augenblick and Meyers examined 102 school districts that were performing at perfect or nearly perfect scores of accountabilities. After examining these districts, it was declared that there was an average dollar amount to be spent on students to achieve adequacy (Augenblick & Meyers, 2003; Podgursky & Springer, 2006).

In reaction to a rising need of student-outcome based decisions regarding finances and many other facets of education, value-added models such as the works of Robert Marzano (Crump, 2019) and John Hattie (2003) have been utilized to develop appropriate instructional practices. Hattie’s research points specifically to the power that instructional leaders have regarding student variances (Hattie, 2009; Hattie and Anderman, 2019), as well as the influence that instruction has on student outcomes (Hattie, 2003). Hattie, claims that there are student variances at play that schools have no control of. In Hattie’s book, “Teachers Make a Difference: What is the Research Evidence?” Hattie states, “We should be asking where the major source of variance in student’s achievement lie and

concentrate on enhancing these sources of variance to truly make the difference” (2003, p. 4). The student often “shows up” at school with many underlying negative attributes and/or positive contributions. Beyond the students’ own account, their teacher can account for about 30 percent of variances among a student’s achievement at school. Thus, making the teacher one of the greatest controllable variables that can make a difference in a student’s education. Hattie suggests that we stop worrying about how we are organizing the students behind the classroom’s closed doors and more about the readiness and enthusiasm of the individual giving the instruction instead (Hattie, 2003).

Hattie claims in much of his research that nearly everything we do in education has a positive effect in a student’s development within their education, but the goal of instruction should become not just that of positive effect. Instead, it should be a process that identifies the elements that have a larger impact on the student, through the teachers’ control of variance. In other words, identify what we can do in the teaching of students that will have major and meaningful effects on student learning and developing an opinion that we should focus our direct attention towards higher quality teaching that creates exceptional effects (Hattie, 1992, 1993a, 1993b, 1997, 1999).

But, in order to develop a teacher, educational leaders must help provide opportunities for teachers to engage in effective and appropriate professional development (Darling-Hammond et al., 2017). Although it has many layers, effective professional development can be simplified to a personal experience with a focus on professional growth (Darling-Hammond et al., 2019). This support can be ongoing workshops, coaching, reflection, and even reviewing the results of data. The personal experience may be experienced through a group of teachers through professional learning

communities, or through leadership roles where the development of clear vision and goals are imperative (Learning Forward, 2021).

Darling-Hammond's research indicated that professional development is defined as "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes" (2017, p 7). Darling-Hammond's research also points out that, "Effective professional development provides teachers with adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice (Darling-Hammond et al., p 7, 2017).

Greenwald, Hedges, & Laine (1996) found that there are positive relationships between educational inputs and student outcomes (Delpier, et al., 2019). These researchers are not the only ones with this opinion. Wenglinsky is another researcher that utilized a more robust body of research than that of Hanushek's research during the 1980's that attempted to disprove this concept (Delpier et al., 2019; Wenglinsky, 1997; Hanushek, 1986). In the last 20 years there have been several studies that have determined that improved school funding will in fact determine student learning outcomes (Delpier et al., 2019).

This chapter will discuss the current state of research that claims that the spending habits of successful school districts can directly affect student outcomes. This paper will attempt to make the connection with creating professional learning opportunities and investing in educators will develop high quality teachers that produce high quality instructional habits, thus affecting the student outcomes.

The analysis of research will begin with the history of federal accountability and how these accountability measures have shaped anticipated student learning outcomes in

which school districts strive for. These outcomes have formed through multiple methods of educational reform and tend to require higher student outcomes (Wrabel et al., 2018). A section discussing the importance and effectiveness of educational equity and equity throughout school finance will strive to deliberate the importance of dollars spent on education and how student learning outcomes can increase.

This chapter will then examine components of what effective ELA and mathematics instruction should contain to increase student learning outcomes and the resources needed to achieve this goal. Chapter 2 will then conclude with elements that quality professional development includes and standards that are recommended in effective implementation of professional learning. At the conclusion of this chapter, the researcher will discuss the key points of current research and deliberate Chapter 3 and its key elements.

### **History of Federal Accountability**

State-level educational reform has historically been shaped by the federal government's incentivized requirements hidden among accountability programs that can be connected to financial contributions at the state and local levels for school districts. The majority of these requirements have been awarded through student outcomes and achievement (Wrabel et al., 2018). The consistency occurring throughout history, regarding educational reform, is that past and present needs for educational equity and outcomes are embedded in all types of reform; success and failures, performance and accountability, effectiveness and equity are all key contemporary reform components (Kim, 2018). The direct need for student achievement has developed the need for standardized testing and has become today's normalized student-outcome machine,

shaping the documentation landscape of today's school districts throughout the United States (Finefter & Chowdury, 2020).

### **National Defense Education Act of 1958**

After World War II, American leaders began to reflect on the country's current educational resources and initiated a needs assessment that would identify whether or not the United States could keep up with the beginning era of a consumer culture and be able to produce highly skilled individuals that could maintain the needs of that culture (Gillette, 2021). The necessity was not only sought after for the consumer-based civilian population regarding the world economy, but also for government interest such as the Department of Defense. Such government entities were focused on the fact that the Soviet Union was making progress developing highly skilled scientists and engineers. This theory was posited to the world with the Soviet's successful launching of Sputnik in 1957 (Stedman & Smith, 1983).

Just weeks before the launching, President Eisenhower's Committee on Education Beyond the High School reported to the president its final recommendations on the demands of higher education in the United States of America. The committee shared in this report that they were worried about the abundance of successful scientists, engineers, and technicians that the Soviet Union was able to produce. The committee also expanded to President Eisenhower that our industry, foreign affairs, and politics could be threatened if our country were unable to produce civilians, as well as the Department of Defense, with such talents (The President's Committee, 1957, p.1), thus falling behind to the Soviet Union.

Therefore, the administration's focus shifted, and our federal government began to endow innovative scientific and mathematical research that later became known as STEM (Science Technology Engineering and Math) under the Smith-Hughes Act (Lauzon, 2018). Prior to the 1950's, any involvement regarding the federal government and the topic of education was almost non-existent (Slegers, 2019), but it was obvious to the Department of Defense that stratagem was needed.

In 1958 The National Defense Education Act (NDEA) was passed into law by congress and President Eisenhower (Grubbs, 2020; U.S. Department of Education, 2017). The NDEA's focus was to develop personnel for defense-oriented positions that would use STEM orientated skills to strengthen the defenses of the United States (McKibben, 2017). Through the NDEA the federal government would help collegiate level schools with funds for scholarship programs developed with the sole purpose of educating both teachers and students in the areas of science, math, and foreign languages (U.S. Department of Education, 2017; Maher, 2016). It was now obvious that the Sputnik challenge created interest and fears in the realm of astrophysics and other space sciences/technologies that led to the development of the NDEA and according to the framers of the NDEA, strengthening the defense position of the United States (McKibben, 2017).

However, according to Mendoza & Zhou (2017), the NDEA focused too excessively on specific areas of instruction, consequently ignoring growth that would have been instrumental in the development of skilled workers that the federal government was aiming to produce, ignoring other areas of academia in the belief that their significance was unimportant to the goals of the National Defense Department (Zhou &

Mendoza, 2017). Opinions of opponents during this time caused a continuation of debate regarding the nation's educational system and led to the development of more educational reform.

### **Elementary and Secondary Education Act of 1965**

During President Lydon B. Johnson's presidency, a political platform that he liked to call the "War on Poverty" was a focus of federal reform. The War on Poverty was supposed to eliminate financial destitution in the United States (Wrabel et al., 2018). Many politicians felt that some of the social issues of the period were a direct causation of the poverty level found in our society and possible inequalities were creating a progression ARY problem for all government entities (local/state/federal) because they needed to education children from poor families at all three levels (Goodwin, 2018). Therefore, "the government remained accountable for something of which it had little influence" (Cohen & Moffitt, 2010, p. 7). Before the period of the recent decade, education was most often left to the level of local control (Goodwin, 2018).

### **The Coleman Report and the Elementary and Secondary Education Act**

A report called the Equality of Educational Opportunity Survey (EEOS), was developed by the Title IV section of the 1964 Civil Rights Act and was developed to screen the inequalities found in education and how student achievement was affected by such variables. In this report, Coleman stated that a school was only responsible for 20% of a child's success. Coleman reported that 80% of the outcome of student achievement was related to "parental educational and social backgrounds." According to Coleman, "80 percent of the variation in students' achievement lay within, not among, schools" (Cohen & Moffitt, 2010, p. 69).

After President Johnson took office, the Elementary and Secondary Education Act of 1965 was passed. This was the first authentic federal answer to the apprehension of public education and a correlation with the imperativeness of the success of poor children (Goodwin, 2018). His office believed that there was a major divide among economically disadvantaged portions of the country and that of areas of higher wealth (Taylor & Frankenberg, 2021). The ESEA included a provision called Title I. Title I gave the government the ability to give approximately 1 billion dollars in funds to school districts collectively while mandating how the monies could be utilized (Sleegers, 2019). This entangling the federal government with local educational agencies, but only if they chose the financial aid, thus requiring them to use it only on the impoverished children's needs and education (Cohen & Moffit, 2010; Sleegers, 2019).

Ultimately, that was the beginning stages of federal educational infusion, providing funds that would help schools with training their staff, providing quality equipment and materials, and promoting parental involvement (due to the findings of Coleman) regarding their student's education (Lewis, 2019). The act focused on state-level offices and governments at locations of impoverished communities and assisted them with loans or grant programs that would provide the additional funds that may influence the abilities of the nation's impoverished youth (Ross, 2020).

### **A Nation at Risk**

It remained apparent that there was a continuum of concern for skilled and knowledgeable individuals that lingered throughout the Cold War into the 1980's. The utilization of education and the significance of knowledge and its use to overcome the rest of the global economy was of great concern and commencing the consideration that

our success was just reliant on the physicality and brawn of the nation's workforce making it successful. This would prove in both the consumer world and the world of defense (Slegers, 2019). In 1983, Secretary of Education Terrell Bell commissioned a report through the National Commission on Excellence in Education that later, after its presentation to President Ronald Reagan, alarmed most media reporters with its claims that something was awry with the nation's educational system. This document, that became known as A Nation at Risk, alarmed so many it was allegedly reported to have been printed by the Government Printing Office over three million times within 3 months of its presentation to the president (Clark, Astuto, & Rooney, 1983).

The national commission responsible for the report A Nation at Risk, made a well-organized argument that had not augmented an appropriate number of skilled engineers and scientists to compete with the hastened pace of the world economy (National Commission on Excellence in Education, 1983, p. 8-9).

In agreement with the public upheaval of the national education system, the committee published that the nation's future well-being relied on the success of public education and claimed that the nation had, "squandered the gains in student achievement made in the wake of the Sputnik challenge (p.6)" (National Commission on Excellence in Education, 1983).

### **No Child Left Behind (NCLB)**

The No Child Left Behind Act (NCLB) of 2001 is a renovation/reauthorization of the Elementary and Secondary Education Acts (ESEA) of 1965 (Brownell et al., 2018). President Johnson's "War on Poverty" had already begun to deteriorate the philosophy of local educational control through the ESEA and the NCLB used this leverage to occupy

the still apparent need for educational reform (Pleinies, 2021). Many authors credit the passing of the NCLB to the events of September 11<sup>th</sup>, 2001, as well as President Bush and Congress' need to show a unified legislature (Hunter, 2019). However, educational reform was a major topic of the 2000 presidential campaigns for both George Bush and Al Gore, mutually claiming that strict accountability policies could repair the nations educational system (Graham III, 2020).

The NCLB was now known as the largest extension of federal power regarding the education of American Students to its 2001 passage. Local contributions to the finances of the educational systems budgets now caused a contemporary view of educational policy making (Pleinies, 2021). The NCLB is often quoted to be the most substantial piece of legislature, regarding educational reform, since the development of the ESEA and the publication of A Nation at Risk (Graham III, 2020; Pleinies, 2021), as well as a major shift towards educational federalism (Sourdout & Janak, 2021). Public education and any reform decisions had traditionally been the state's decision(s), therefore many opponents felt that the NCLB was a federal government violation of state rights (Hess & Finn, 2004).

Ritter & Lucas (2003) states that the NCLB was specifically devoted to leading all American children to score proficiently in both ELA and mathematics exams. The Act also included a goal that by the year 2014, all students (100 percent) would score at the proficient scale target/or higher for each state and these targets were required to increase every three years (USDOE, 2002, Section 1111 (2) B). School districts were required to show adequate yearly progress (AYP) towards this goal through state-specific formulas within their accountability systems (Sourdout & Janak, 2021).

The framers of the NCLB intended for the requirements of high-level learning standards to correlate into higher state-level assessment scores, hence statistically helping children of all socioeconomic levels (Hess, 2016). The implementation of higher-level learning standards, that the NCLB so highly relied upon for its success, is often referred to as a standards-based movement. Through such practices it is believed that wide-spread changes may occur over time for all learners in the system (Hess, 2006). Through this data, student performance was tracked and divided into levels of achievement that were compared to increasing provisions set forth by each participating state (Martinez, 2020). Another reason that the NCLB was framed was to strategize a positive effect on American economically under privileged children (Pascual, 2020), a belief that directly stemmed from the ESEA and President Johnson's "War on Poverty" (Starr, 2019). According to Shavelson & Huang (2003), there was evidence of an increasing achievement gap between white economically advantaged students and all races of socioeconomically disadvantaged students of this time period making it obvious that there were many students at risk of failure in schools that may in turn create a risk of large spread school failures.

To meet the mandates of the law, states were required to develop challenging academic standards and assessments, improve instruction, curriculum, and school climates, and ensure high-quality/highly-qualified teachers that have appropriate teaching qualifications for their subject area. Students would also be required to perform within a minimum level of proficiency regarding the developed standards through yearly summative testing (Carrington, 2018). It was expected to do all of this through a plan of hypothetically fair and equitable instructional resources (Augenblick & Meyers, 2003).

States had the ability to opt-out of the NCLB Act of 2001, but they would in turn be forfeiting their Title I funding provided by the federal government through the original passage of the ESEA (Brownell et al., 2018).

The NCLB set a new precedent regarding rights of parents and guardians concerning their student's education, giving them never before options of school choice (within the same school district). If the results of their school began to trail other buildings in the district, the guardians had an option to change schools (Close et al., 2018). But, regarding current educational law, the most significant element of the NCLB was the momentum that was developed towards research on the effects of teachers and student achievement. Reforming many states' teacher evaluation systems (Close et al., 2018) and the development of Every Student Succeeds Act of 2015.

### **Every Student Succeeds Act of 2015 (ESSA)**

In 2015, Congress and President Obama passed Every Student Succeeds Act (ESSA) (Ross, 2020), re-authorizing a new version of the Elementary and Secondary Education Act (ESEA). The ESSA was intended to display the federal governments devotion, to the state and local governments and an ability to develop appropriate policies that will affect their students to a greater/more specific extent (Chu, 2019). At the core beliefs of the law, the ESSA is intended to give back some of the local control/state control that states lost during the rule of No Child Left Behind (NCLB) (Gayle, 2018) while keeping their federal funding revenue streams.

To do this, the ESSA predominately leads with a state's ability to rationalize their testing practices and/or mandates that were set forth by NCLB and instead sanctioning state and local controls that will use evidence-based assessments to make quality

decisions regarding their school improvement needs (Gayle, 2018). The ESSA still requires states to participate and assess student achievement annually, if they choose to keep receiving federal monies, but gives options to the planning and preparation of their students at a state-level, needs-based, improvement planning process (Sourdout & Janak, 2021). The ESSA terminated the adequate yearly progress requirements of the NCLB and instead placed flexibility into the law that allows states to identify the lower performing districts and create plans of how to best address their specific needs (Sourdout & Janak, 2021). Allowing states to take more control of educating their own youth.

In 2015, The School Superintendents Organization, publicly lauded that the ESSA “takes the pendulum of federal overreach and prescription--and returns autonomy and flexibility to the state/local level” (American Association of School Administrator, 2015, p.1).

Through the passage of the ESSA, states were given the right to waiver the reauthorization mandates of the Elementary and Secondary Education Act (ESEA) as amended by the NCLB through what is known as an ESSA Plan (Welsh, 2019; Close et al., 2018; U.S. DoE, 2016)). These plans were to include proposals with the means of researching the effects of teachers on student achievement, build in evidence-based standards to teacher evaluation systems, build in evidence-based learning standards for students, develop and utilize the data from small-scale impact studies, and plans of how to act upon the evidence acquired (Close et al., 2018; U.S. DoE, 2016).

The ESSA is one more attempt of educational reform in hopes to allow students to fully develop into their potential both through academia and meaningful societal lessons (Chu, 2019). All these reforms intend equity within the educational system during their

inception and development of policy (Chu, 2019). Missouri has not been an exception to any of these laws.

### **Educational Equity**

According to Brown (2018), when equity is being scrutinized, it must provide adequate resources to every student, especially when policy making occurs. Litigation has forced legislators to respond with decisions controlling whether the education that students are receiving is equal to that of other districts in the state or surrounding districts, therefore defining what educational equity is, at least according to their state. Such litigation has caused the need for rationale on how much funding is adequate and who the funding is being spent on (Perry, 2018). Plaintiffs have attempted to argue that education is a fundamental right and that equity is a necessity provided under the law (Perry, 2018).

The difficulty in defining equity could be the problematic speculation of inequity that gets in the way of complete consideration to the process of education (Drummey, 2020). It is significant not to get equity and equality confused. Equality can become entrenched within a strict picture that only includes a holistic view of resources and organization rather than specific outcomes, while equity may be viewed as a process with individualized access that is a causation to the success of many individual learners (Brown, 2018). Conceptually, equity can be discussed, but actually fabricating implementation of equity is difficult and is often hard to clarify (Drummey, 2020). It is very possible to place equal investment into a student and have unequal outcomes, thus making the ability to clearly understand and define equity very difficult (Atchison, 2017).

Equity should become a deliberate attempt to provide diverse opportunities of learning for the many different needs of learners (Brown, 2018). At its inception, equity must provide for high-quality instruction and educational opportunity in dissimilar locations and/or conditions (Brown, 2018). Pollack (2017) states that equity should be defined as the process of how teachers view and support their students. The researcher continued to emphasize that in order to develop more equitable learning cultures, we must, “treat all young people as equally and infinitely valuable” (Pollack, 2017, p.7). Furthermore, Geer (2018) ,” that in order to have successful student outcomes, comprehensive resources at school and beyond school must be in place.

Through agendas such as President Lydon B. Johnsons “War on Poverty,” which was supposed to eliminate financial destitution in the United States, a gap in the achievement of American children was and continues to become more evident (Wrabel et al., 2018). Via assessment programs that were developed through the “War on Poverty,” otherwise known as the Elementary and Secondary Education Act of 1965, inequalities were identified and the assessments were developed to peer into the education of children across the nation, which included poor families and influential families in its studies (Goodwin, 2018). These assessment programs were called The National Assessment of Educational Progress (NAEP). The NAEP is still utilized across the nation for the statistical assessment of what American students can do in certain academic areas (Slamowitz, 2018). The ESEA of 1965 was one of the first reforms in the United States to use formative testing to gauge the academic progress of students on a national level and NAEP was the assessment tool that was utilized (Slamowitz, 2018). The NAEP assessment, as well as other federal and state-level testing programs, have continued to

drive discussion regarding the achievement gap that occurs in the outcome of the assessment scores. In the majority of cases, it appears that there is a direct correlation among students with lower socio-economic opportunities, students with special needs, and students of minority to lower achievement levels. Many refer to these subordinate scores as an achievement gap (Rogers, et al., 2020).

If we refer back to Boykin & Noguera (2011), the researchers state that an achievement gap is related to the access to both quality instruction and materials, because the outcomes do not seem to be that of the definition of equity. We must evoke that equity also requires an understanding of what the outcomes and the causes of those outcomes are (Boykin & Noguera, 2011).

The national gap in achievement becomes defined by the lack of correspondence between those that achieve high scores on assessments such as the NAEP and those that do not among the majority of American children (Eckersall, 2017). The NAEP creates an opportunistic platform we can use to analyze nationwide trend data concerning the achievement gap and monitor the pulse of education in America (Rogers, et al., 2020). As a national probability sample, the “NAEP data are detailed by age group, not grade, and since the test itself has remained stable since the early 1970’s, it paints a picture of how things have changed over time” (Porter, 2007, p. 3). However, when speaking to the student achievement scores, many of the deficiencies or gaps are created long before they become school aged and are often evident before schools have a chance to evoke change (Rogers, 2021). Students account for around 50 percent of their own achievement. Beyond the students own account, home influences account for around 5-10 percent, schools, and principals account for approximately 5-10 percent, peers account for 5-10

percent, and their teacher can account for a staggering 30 percent of variances among a student's achievement at school (Hattie, 2003). Thus, making it difficult to induce change where it may be directly needed.

There have been many efforts through policy and research that focus on closing the identified achievement gaps for decades, but they remain obvious (Scammacca et al., 2020; Dong, 2021). Gillborn, Demack, Rollock, and Warmington (2018) have stated that "critical scholars internationally have focused a great deal of attention on differences in educational attainment and increasingly challenge the deficit assumptions that can lie coded within the phrase "achievement gap" (p. 849). In 1845, Horace Mann of Boston, recognized an "achievement gap" and developed a standardized test to determine that teacher training might solve this gap and that the cavity in achievement may not be holistically the student (Eckersall, 2017). His resolve was thought that teachers may subsidize the achievement gap through means of teacher quality or lack of. Mann's theory evokes a thought that student achievement gaps have been a long-term problem and there may be other elements to a learning environment that can affect the gap as well (Eckersall, 2017).

Due to the abundant percentage of teacher influence, the depth of understanding pertaining to their taught subject matter, enthusiasm, and methodology in which they utilize for instruction are very powerful. This is a variable in which we can improve on and control (at least to an extent), and developing a strategic opportunity can be a positive effect on student learners. An area of focus that may lead to effective instructional practices is school finance (Jacobi, 2018).

## **Equity in School Finance**

The notion of equity began in the early 20<sup>th</sup> century with the work of Ellwood P. Cubberley (Brimley & Garfield, 2002; Jacobi, 2018). Through his studies and research, he developed state-wide plans of school finance that focused on the principle of equal opportunity for all, however, equitable treatment does not mean equal treatment in real-life scenarios. (Brimley & Garfield, 2002; Jacobi, 2018). Baker & Friedman-Nimz (2003) claimed that equity is possibly defined as the unequal treatment of equals. Berne & Stiefel (1994) derived that equity becomes to be a difficult concept of understanding due to its significance of legislative characteristics, but its simplistic meaning lies at the level in the differences of children. Both sets of researchers posed the questions of who is unequal or who should be unequal and how unequal is unequal enough (Berne & Stiefel, 1994)? If all districts received equal funding per-pupil yet did not take into the consideration of the needs of the individual students of the district, then funding cannot be viewed as equal, but instead inadequate (Calcaterra, et. al., 2006).

Educational adequacy has generally been determined by the median expenditures of districts from the prior year, thus defining the adequate equity as equal in most states instead of reviewing the pure meaning of financial equity. Most state funding mechanisms purposefully strived to raise their lower half of school districts up to the median expenditure per-pupil amount, accepting that the median was adequate (Baker et al., 2021). According to Odden & Piccus (2004) a legal explanation of adequacy is that of having the same level of resources available as other districts of similarity, guaranteeing a universal education for all (Perry, 2018). For the past 30 years, any gains in the understanding of equitable education finance has been credited to the judicial

process forging educational policy (Bundt & Leland, 2001). In the majority of these cases the disparity of resources and opportunities given to the systems, staff, and students have been the ultimate vice connected to the finances that are attributed by state funding mechanisms (Gardea, 2020).

In *San Antonio vs. Rodriguez* (1973) that is the challenge that was made by the plaintiff resulting in a ruling that only state constitutions protected the educational equity of the state's educational system, not the federal constitution. This ruling allows the federal government to become a decentralized entity of governance (Wong, 2008). Such litigation succeeded in driving reform in over half of the state-level funding mechanisms since the 1970's (Thompson et al., 2021).

In the state of Missouri, equity has been the basis of dispute concerning the funding mechanisms used to subsidize the state's school system for years (i.e., SB 270). It is exceedingly difficult to meet the financial needs of school districts when deliberating the parity of school finance because one would think that there are only two choices: equal and unequal. However, there is a contention that both apply. For example, there should be an equal amount of funding for each student within the state's school funding mechanism, unless there is a greater need for the specific student that would allow them to be successful in their education, a requirement of a free and appropriate education (True-Frost, 2018), which would then be argued to be unequal (Awwad, 2018). This can be things such as a high poverty rate or even a student with a specific disability (Baker & Corcoran, 2012), making, "equity...the notion that students should be treated according to their different learning needs and characteristics" (Bandaranayake, 2013, p. 193). This makes the concept of equal funding confusing.

### **Resources are not a factor for positive student outcomes**

Eric Hanushek has been quoted through many of his studies that the amount of available resources is not a precipitating factor to a student achievement. His research has become known as the “money doesn’t matter” mantra of school finance (Delpier et al, 2019). Hanushek (1989, 1997, 2009) repeatedly argued that since the mid-20<sup>th</sup> century, per-pupil expenditures in American schools have increased 400%. Thus, making claim that we are not displaying a 400 percent growth of student achievement, therefore it is not directly correlational to the achievement gap

However, Hanushek published many new variations to this claim. In 2019, Hanushek, Peterson, Talpey, & Woessmann published an article called, *The Achievement Gap Fails to Close*. In this article the authors make claim that although the direct resources of a school are not connected to the achievement of students, it is very correlational to that of their home life and socio-economics directly reflecting the findings of Coleman many years ago (Hanushek, et al., 2019). With more scrutiny, a reader can infer that the original claims of Hanushek were also speaking to the correlation of how resources were defined as teacher salaries and direct per-pupil expenditures (Vossel Jr, 2019).

### **Resources are a factor for positive student outcomes**

In the last 20 years, studies have determined that improved school funding will determine student learning outcomes (Delpier et al., 2019). Greenwald, Hedges, & Laine (1996) found that 11 of the 12 studies that were identified statistically significant in their research exhibited a positive relationship between educational inputs and student outcomes (Delpier, et al., 2019).

In 2003 the Missouri School Boards Association (MSBA) commissioned Augenblick & Myers to theorize what the minimum level of spending per student that would be considered necessary for an adequate and equal education to Missouri resident students. Their research focused on a two-pronged approach, the first being reliant on the professional experience/opinion of state educators. This group was made up of teachers and administrators that developed a list of resources they felt to be imperative to successfully educate of their students. Through this panel it was declared that it would take \$7,832 to meet nearing proficient or higher standards set forth by current performance standards (Augenblick & Meyers, 2003). The second component that they utilized was their definition of successful schools in Missouri and the successful school's model and how it could create adequacy for Missouri students. Through DESE's district report cards, annual secretary of the board reports (ASBR), and Missouri School Improvement Program (MSIP) data, Augenblick & Meyers examined 102 school districts that were performing at perfect or nearly perfect scores of accountability. After examining these districts, it was declared that the average dollar(s) spent on student adequacy was \$5,664 per student (Augenblick & Meyers, 2003; Podgursky & Springer, 2006). The use of outcome data is called the Successful Schools Model. The Successful Schools Model is constructed of data on measures such as attendance, dropout rates, and student test scores to distinguish schools/districts that meet a certain criterion of what success is (Soderholm, 2019). State-level educational reform has historically been shaped by the federal government's incentivized requirements to financial contributions at local and state-level school districts. The majority of these requirements have been awarded through student outcomes and achievement (Wrabel et al., 2018).

Furthermore, resources can be directly tied to the retention and attrition of the teaching staff itself and assuming that Hattie's research is accurate, then our true controlled variability lies within this group. According to Christie (2019), replacement attrition cost are approximately 2.2 billion dollars per year for the public education system in the United States per year. If the cost of replacing teachers that have absconded to other districts is considered, the cost soars to approximately 4.9 billion dollars per year (Christie, 2019). Each year nearly 40 percent of educators leave the teaching profession before the completion of their fifth year (Giles, 2020). Statistics are trending towards the fact that these new teachers stay in the teaching profession for approximately 5 and 6 years and then choose a different occupation where they feel less stressed and supported at perceived higher levels (DeFoe & Tran, 2019; Wronowski, 2018). Therefore, the real cost of success not only lies in the direct instructional resources for the students, but it also lies throughout the readiness and support of our teachers (Park et al., 2019).

### **Effective Practices and Pedagogy**

Local districts depend on their leaders to hire highly-qualified educators that are talented and capable of collaborating with co-workers and implement effective instruction, as well as able to build relationships that will nurture academic successes (Park et al., 2019). Highly-qualified teachers will demonstrate quality pedagogy and instructional practices (Park et al., 2019). This type of environment can lead to changes in a student's performance outcome. The success of a school district is its ability to hire or develop educators with such pedagogy and is associated with the district's ability to obtain and then retain educators that are fitting to the school district's culture, can

improve the learning environment and instruction, and participate in a continual professional learning process (Campion et al., 2019).

In reaction to a rising need of student-outcome based decisions, as it relates to quality pedagogy and practices, value-added models such as the works of Robert Marzano have been utilized to develop appropriate and successful instructional practices (Crump, 2019). Marzano (2007) gives precise direction on what types of strategies an educator should utilize to obtain more desirable outcomes within their trade. Marzano (2007) claims that his recommendations, identified through his research, are the most current strategies that are internationally known to be widely used and practiced successfully. He has developed these recommendations through a series of 30 books and 150 articles regarding instruction, assessment, and the implementation of teaching standards across many states. Many states have adopted his research as an indicator of quality instruction and have developed teacher evaluation systems around his research (Crump, 2019). According to Marzano (2007), some of the most influenced outcome-based topics that a teacher can govern are; student engagement in the subject matter, classroom management, motivation, meeting the needs of every student, and tapping into the student's prior experiences, learning styles, multiple intelligences, strengths and needs.

Hattie's research (2009), in addition to Marzano, speaks directly to the effect a teacher has on the student. Hattie (2009) states that effective/quality instruction can be as much as one full standard deviation/effect size of improvement for their instructional practices. Therefore, while he claims that through student variances, we have little impact, what impact we do have we can control at high degrees through our instruction (Hattie, 2003;

Hamborg, 2018). Other strong learning effect sizes reported by Hattie are: self-reporting grades-understanding and having knowledge of their chance of success; Piagetian Programs-a student's knowledge of the ways in which they think; and a student's prior cognitive ability-may include IQ, EQ, etc. (Hattie, 2009).

Hattie (2003) suggests that we stop worrying about how we are organizing the students behind the classroom's closed doors and more about the readiness and enthusiasm of the individual giving the instruction instead. Some of the most significant findings of Hattie's research is the level instructional quality (1.00 effect size) making the development of teachers one of the most effective tools that we have in the success of our students (Hattie, 2003).

To complicate the moving target of adequate and equal education, Hattie claims that there are student variances at play that schools have no control of. Hattie claims in much of his research that nearly everything we do in education has a positive effect in a student's development within their education, but the goal of instruction should become not just that of positive effect, instead it should be a process that identifies the elements that have a larger impact on the student, through the control of variance. In other words, identify what we can do in the teaching of students that will have major and meaningful effects on student learning and developing an opinion that we should focus our direct attention towards higher quality teaching that creates exceptional effects (Hattie, 1992, 1993a, 1993b, 1997, 1999).

In Hattie's book, "Teachers Make a Difference: What is the Research Evidence?" he states, "We should be asking where the major source of variance in student's achievement lie and concentrate on enhancing these sources of variance to truly make the

difference” (2003, p. 4). His findings have developed identifiable variances among school-aged children related to their achievement. These variances were developed using Hierarchical Linear Modeling, which can differentiate the variances that students may bring to the classroom when they arrive at school (Hattie, 2003). Variances such as curricula, policies, climate, principals, teachers, methodology, and interactions that occur among their home lives are among these variabilities. Students account for around 50% of their own achievement. Beyond the students own account, their teacher can account for about 30% of variances among a student’s achievement at school.

The anticipative outcome of all of this research, when implemented appropriately, is how to build our professional capital that Hargreaves and Fullan express as an essential variable to the dilemma of effective instruction (2020). Professional capital is a product of high-quality experiences that manifests its lessons into veteran teachers, as well as pre-service teachers, resulting in successful high-quality instructional practices (Aykan & Dursun, 2021), thus creating highly-qualified and engaged teachers. This is a result of effective participative professional learning. Recent findings have suggested that the quality of a teacher is one of the most significant factors of the success of a country’s educational system (Aykan & Dursun, 2021). Higher expectations written within the learning standards to be taught are also an indication of a successful system (Shanahan, 2013).

### **High Quality English Language Arts Instruction**

Shanahan (2013) stated that from the school houses of yesterday to the classroom of today, there is an obvious disconnect of what the needs of students are. However, English Language Arts (ELA) instruction, in many ways, has not changed for centuries

until recent years. Guided reading lessons and uninspiring instructional strategies may have students in a stagnant cycle (Shanahan, 2013). Although the No Child Left Behind Act of 2002 did not necessarily develop the changes it originally intended towards student achievement, it did however force the development for higher learning standards such as state level initiatives or even the Common Core State Standards (Shanahan, 2013).

These standards are argued to be much more rigorous than that of the past. Coleman & Pimentel (2011) suggested that classroom instruction should be utilizing text that is sufficiently difficult for the reader. The researchers state that classroom instruction should be a shared variation of challenging encounters of the text itself. This creates a learning environment with high expectancies for the text and task at hand (Coleman & Pimentel, 2011). However, within this demanding plan, there will need to be layers of appropriate materials, effective use of supportive instruction, and intensive support for the students through the process. A component that must be considered in the instruction of reading, through such philosophies, should be that this experience will probably take longer than that of its historical counterparts (Coleman & Pimentel, 2011).

Lucy Calkin and her associates claim that, “Matching readers to texts is not enough. You then need to accelerate readers’ progress up the gradient of text difficulty, especially for readers who come into your classroom not able to read grade level complex texts. The most important way to do this is to help readers accomplish vast amounts of minds-on, engaged reading of just right expository texts.” (Calkins, Ehrenworth & Lehman, 2012, p. 96) Calkin believes that the way students become efficient readers is to

read large amounts of text at or just above their current reading level (Calkins, Ehrenworth & Lehman, 2012).

Coleman believed that we, as educators, are not allowing students to flourish due to our enabling reaction to intervention that sometimes reduces the text complexity that is being used to educate the nation's students. Coleman believed that the practice of complexity should be embraced and that scaffolding could be developed to aid the reader (Coleman, 2011). He continues by expanding on his and Calkin's belief about creating and providing students with an opportunity to learn. This cannot be provided unless the instructional staff understands the weight of their responsibilities to the student. Some readers interpret their recommendations as a type of "Goldilocks Zone" where students get advanced lessons, but are still very much obtainable to the learner (Coleman, 2011; Calkins, Ehrenworth & Lehmann, 2012).

Through initiatives such as the Common Core State Standards, No Child Left Behind, and many more recent attempts to align and rejuvenate the nation's learning standards, it is apparent that students are not the only actors in the fundamental experience of educational reform. When elaborate changes occur to the climate and process of learning for the learner, the demand and expectations of the instruction provided by the teacher becomes evident (Kaufman & Opfer, 2019).

Kaufman and their associates developed a survey that was given to the RAND American Teacher panel, which is a panel of teachers that is representative to all states throughout the nation. This survey was given in the years of 2015, 2016, and 2017. The results of the research suggested in all three years of the study that most ELA teachers do not know what their state standards foster or what materials should be used to effectively

cover such standards (Kaufman & Opfer, 2019). Their study indicated that over time, throughout the three years of the survey, teachers never expanded their awareness of their state standards either. In most cases they actually expressed that they understood less about their standards than they did three years prior (Kaufman & Opfer, 2019). This RAND survey indicated that teachers needed more assistance in picking appropriate text, materials, and resources for their students' current reading abilities and levels, how to adapt and utilize multifaceted texts for readers that are struggling, how to implement and promote complex texts to all students for the whole class, and participate in some type of training regarding the selection of appropriate text for classroom-based demands such as day-to-day lesson planning and implementation of the standards themselves (Kaufman & Opfer, 2019).

Cervetti & Hiebert (2019) advocates that no matter the reading level, ELA instruction needs to support the journey of the understanding of the text at hand and prepare them for similar future experiences with similar texts. Cervetti and Hiebert (2019) offer five suggested ways to develop “knowledge-building” instructional practices. First a teacher must ensure that students read a lot. Secondly a teacher must choose engaging and conceptually-thematically rich text. Thirdly, an educator must instruct students to use their own knowledge to comprehend the text. The fourth suggestion is for the educator to be attentive and be sure not to sacrifice content-area instruction. Lastly the teacher should give students reasons to read and write (Cervetti & Hiebert, 2019). They summarize these five practices as taking three steps towards effective ELA instruction. The first is to give extensive time to students to spend reading content-rich texts and give them plenty of self-regulated time to read. Secondly, teachers

should use read alouds to keep students engaged in the text that is thematically relevant to the connections that the teacher is trying to make. Lastly, teachers should read through their standards with the intent of identifying big ideas within the curriculum concepts so they can acknowledge the big ideas of the standards. This will allow them to develop quality, conceptually-sophisticated class-wide projects. The researchers concluded that the high-quality experience needed to effectively instruct the standards of today are actually an indicator that the quality of our teachers must continue to progress in their understanding of their instructional practices (Cervetti & Hievert, 2019). However, ELA is not the only subject where it is imperative to have a full understanding of the state-level standards to be taught and/or the brevity of developing creative and engaging lesson plans. The subject of mathematics has also been affected by the recent standards shift across the country.

### **High Quality Mathematics Instruction**

Unlike teaching ELA, mathematics is best demonstrated to its learners through pedagogy that focuses on the fundamental concepts and processes of the subject itself with further understanding to real-world application (Spillane et al., 2018). Although this seems like a simplistic summary of the subject's importance to a student's life, it is actually a very complex system which is mostly specific to the function needed at hand.

There are two types of standards that educators must prepare for within their instruction: procedural and principled. Procedural is what the majority of educators and lay individuals think of when addressing the instructional needs of mathematics. These standards focus on the computation of a problem (Spillane et al., 2018). However, principled standards require students to not only solve or compute, but requires them to

be articulate with their reasonings, which will allow them to influence their audience about their mathematical ideas and how/why they computed their answer(s). So that they may, “appreciate mathematical activity as more than a computation (Spillane et al., p. 533). This causes mathematics to be heavily reliant on experience, knowledge, and continual professional development of understanding for educators (Spillane et al., 2018).

Mathematics, like most subject areas, was greatly affected by the nation’s momentum towards initiatives developed to create comparability among standards from state-to-state, such as the Common Core State Standards (CCSS). These initiatives drove standards into impressively ambitious targets for students, thus developed demanding expectations for teachers (Allensworth et al., 2021). New standards however, do not raise achievement scores. Even though demanding standards cause major alterations to common instruction, it is largely up to the adopting state or local district to make such changes throughout their own organization. This may include any and all variations of alignment of instruction to the standards, which may include professional development supports for new instructional practices (Desimone et al., 2019).

School districts can support the implementation of new standards or curriculum through many mediums. Such mediums may include new texts, digital tools and/or text, and many other avenues of resources. However, real implementation of standards lies within a school district’s ability to invest in the instructional practices of their educators through relatable professional development (Desimone et al., 2019). In all subject areas, printed resources such as textbooks have found little to no significant changes in academic success, rather the effect is in the pedagogy of instruction and not in the resource itself (Blazar et al., 2019). Professional development is more evidently impactful

on achievement and is often ruminated as a controlling factor of instructional change and student success (Allensworth et al., 2021) which leads to defining the professional learning educators are participating in.

### **High-Quality Professional Development**

Achievement happens when school districts successfully implement learning standards in a manner that modifies instruction and develops effective learning through models and experiences (Allensworth et al., 2021). Studies pertaining to ELA and mathematics standards, such as the CCSS's, report that teachers have made considerable changes to their instruction to meet the demanding anticipated student outcomes (Edgerton & Desimone, 2018). Boykin & Noguera (2011) asserted that the access to quality instruction and materials as well as outcomes are essential to attain equity. The researchers stated that there is much more to equity than just ensuring that students have equal access, but equity also requires an understanding, as an organization, of what the outcomes and the causes of those outcomes are (Boykin & Noguera, 2011). The National Policy Board for Educational Administration wrote in their Professional Standards for Educational Leaders (2015) that, "Effective educational leaders strive for equity of educational opportunity and culturally responsive practices to promote each student's academic success and well-being" (p. 11). Respectively, in the attempt to implement equity, each student's distinctive encounters should be contemplated when coordinating effective practices and/or outcomes (Drummey, 2020).

According to Brown and Fredrick (2020), Learning Forward defines equity in education as, "the outcome of educator practices that respect and nurture all aspects of student identity rather than treat them as barriers to learning (p. 8)," and should not be

treated separately from professional learning. Instead it should be explicitly engaging in the planning processes and support of a districts professional learning program (Brown & Fleming, 2020).

Local district success depends on highly-qualified educators that are talented and capable of collaborating with co-workers, can effectively implement effective instruction, as well as build relationships that will nurture academic successes (Park et al., 2019). According to Mammadov & Cimen (2019) a highly qualified teacher is defined as someone that encompasses strong professional and pedagogic aptitudes that are focused on the improvement of a students' learning environment, which enables an increasingly successful learning process. Recent findings have suggested that the quality of a teacher is one of the most significant indicators of a country's educational system and its successes (Aykan & Dursun, 2021). The success of a school district is associated with the district's ability to develop a fitting culture, can improve the learning environment and instruction of the organization, and participate in a continual professional learning process (Campion et al., 2019).

Kane et al. (2016) states in their studies that math assessments aligned to the CCSS's showed higher student achievement levels from one year prior. Schools where significantly more effective where professional development was offered to the new standards and teachers reported feeling knowledgeable about the expectations that the standards required of them (Kane et al., 2016). Edgerton (2020) argues that ELA and mathematics curriculum is most successful and consistent when it is kept at high levels of preparation for new sets of standards. The researcher also found that the majority of participating districts found themselves inadequately prepared and lacked capacity to

offer continual support of the implementation process (Edgerton & Desimone, 2018; Edgerton, 2020) and there is evidence that when more professional learning opportunities are given there are stronger correlations of student outcomes (Blazar et al., 2019).

In most cases high-quality teachers do not come directly out of college. School districts must have a plan to develop and support the process of highly-qualified instructors and strategically design for the development of their educators in order to become and/or remain successful (Jensen et al., 2016). Districts must continuously provide opportunities that support and nurture the quality desired of the educator (Darling-Hammond et al., 2017). The district should mirror continually the standards that express that the school is a learning organization for both the staff and its student population (Danielson, 2019). Successful educational systems comprehend that educators are capable of learning and improve student outcomes through the professional learning of the educator (Danielson, 2019; Darling Hammond, 2017). High-performing school districts recognize that even veteran educators can learn and improve through effective professional learning structures (Wong & Wong, 2018). Effective districts develop opportunities for professional learning, support such learning activities, and allow time for development and allows for their experience to blossom (Danielson, 2019; Darling-Hammond, 2017).

Effective professional development is much more profound than a quick single-shot, one-day event. These types of teacher trainings do not adhere to the successful criteria of professional development, but instead develop a disconnect from curriculum and fragments learning for both the teacher and the students under their instruction (Woodland, 2019). Although it has many layers, effective professional development can

be simplified to a personal experience with a focus on professional growth (Woodland, 2019).

Darling-Hammond et al. (2017) claims that most organizations and their professional development practices do not actually support the change that they are looking for. Therefore, her and her associates have developed some elements that effective professional development needs to have (Darling-Hammond et al., 2017).

Learning Forward (2021) also supports the claim that there should be definitive attributes to successful professional development activities. By using such frameworks, school districts can develop and support very effective professional learning opportunities that will develop teachers towards their lofty student outcome goals (Gravina, 2021).

“Professional development is defined as structured professional learning that results in changes in teacher practices and improvements in student learning outcomes” (Darling-Hammond, 2017, p. 7).

Professional development should be content focused. In order to place emphasis on the actual classroom contexts, professional development must be attentive on teaching strategies that are aligned with curriculum supports. Though the works of Robert Marzano have been utilized to identify and implement successful instructional practices (Crump, 2019), Hattie (2009) states that effective/quality instruction can be as much as one full standard deviation/effect size of improvement for their instructional practices and that we do have an impact through our instruction (Hattie, 2003; Hamborg, 2018). Hargreaves and Fullan (2020) express that effective instruction is an essential variable to an educator’s professional capital. Professional capital is a product of high-quality experiences that manifests itself and transforms inexperienced educators into veteran

teachers. This is a result of effective professional learning practices (Aykan & Dursun, 2021). McKnight (2018) claims that most teachers are not given the opportunities, they need to effectively change their instruction. McKnight (2018) argues further that strategy is imperative when developing professional development activities and initiatives they should be around instruction while developing specific and deliberate pedagogies in areas such as mathematics, science, and/or literacy (Darling-Hammond et al., 2017). Learning Forward's (2018) Standard 5, Learning Designs, supports these pedagogies. By focusing on the intended outcomes and creating goals for improving student outcomes in day-to-day instructional practices of the specific content to be taught, educators can utilize multiple learned techniques explicit to their content area (Learning Forward, 2018; Gravina, 2021).

The strategy and process of how to embed professional learning into successful systems of continuous support is imperative to the attainment of professional learning (Jensen et al., 2016). This makes professional learning a decisive strategy for developing in-service teachers and preparing them for the subjects to be taught (Lo, 2021). Professional learning should build upon and incorporate active learning. Active learning is a curriculum designing strategy that places the educator directly within the experience that is being designed for students. This strategy gives educators familiarity of the lesson design they wish for their students to experience (Darling-Hammond et al., 2017). Much like teaching students, it takes highly-contextualized information used at strategic moments for a professional learning system (Darling-Hammond et al., 2017). This approach places the educator directly in the shoes of the learner through their own

experiences. The model steers away from traditional lecture-based lessons with little to no real experience (Darling-Hammond et al., 2017).

Superior professional development creates opportunities for teachers and supports collaboration. Engaging in supportive collaboration, the teacher is charged with leverage that can change the climate of their own classroom instruction and professional relationships throughout the district or building (Jensen, 2016; Darling-Hammond et al., 2017; Donohoo & Katz, 2017). These models may include samples such as lesson plans, unit plans, sample of student outcomes/classwork, observation data from peer teachers, and video or written examples of quality teaching (Darling-Hammond et al., 2017).

Expert support through the method of coaching is imperative to quality professional growth. This growth should remain focused on the individual teachers' needs; coaching and expert support involves continual coaching of evidence-based best practices (Darling-Hammond et al., 2017). Effective coaching provides scaffolding that can support the implementation of new curriculum, methodology, and instructional tools. These coaching sessions should be directly applied into existing teaching schedule to be most effective (Brenneman & Nayfeld, 2019).

High-quality professional development allows for feedback and self-reflection. If this is structured correctly, it will facilitate professional feedback among educators. Feedback and reflection aide in the development of expert-based evidence of best practices and can solicit curricular teamwork and trust (Darling-Hammond et al., 2017). Effective feedback allows for educators to gain quality input on their practices and should be given time to reflect on instructional practices (Lo, 2021). Feedback can also be given

through video recorded lessons that is later reviewed by administration and the educator to seek areas of improvement (Singer et al., 2016).

Darling-Hammond (2017) states that, “Effective professional development provides teachers with adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice,” (p. 7) and must remain sustained throughout the process of curriculum and professional development (Herro et al., 2019). One effective example is teacher preparation programs that include a year-long field placement which allows for a slower-paced experience for the pre-service educator (Herro et al., 2019). Such programs as this will allow for a more effective strategy of improvement and direction by the cooperating coaches and administrators (Lo, 2019).

In a 2016 report called, *Beyond PD: Teacher Professional Learning in High-Performing Systems*, the authors state that professional learning must be intentional (Jensen et al., 2016). Professional learning must be a deliberate strategy focused on how to improve student learning and achievement outcomes and improve schools; the process itself should be a direct reflection of their job performance (Jensen et al., 2016). The focus should be on the actual practice of professional learning. When this occurs, then the effectiveness of the educator and a positive outcome of student achievement can improve simultaneously (Jensen et al., 2016).

Through partnerships between researchers such as Darling-Hammond, and the Learning Forward organization, a set of standards for professional learning have been developed called the Standards for Professional Learning. These standards outline features believed to be of quality professional learning that leads to effective teaching practices, supportive leadership, and improved student outcomes (Hirsh, 2019). In the

development of these standards, Learning Forward specifically maintained a clear mission and staying focused on maintaining and developing the capacity of the leaders that nurture the professional learning process (Hirsh, 2019). Through this lens, Learning Forward developed 7 standards that promote improved student learning and teacher effectiveness. The first standard they list is Professional Learning Communities. Learning Forward states that when a group of educators commit to continuous improvement, keeping each other responsible to growth and goal alignment, instructors can strengthen their practice and increase student results. These learning communities can include members of the entire educational workforce such as teachers, support staff, administrators, families, policy makers, and federal, state, and local stakeholders (Learning Forward, 2021). The change that often occurs through professional learning communities involve organizational problem solving through an evidence-based process and include multiple facets of the community and organization (Edwards, 2019). Leaders must accept that change through such processes may not follow their own personal philosophies and pedagogy, but instead more directly reflect the image of the organization or group as a whole and this change may occur through mediums, through the digital age, that may not have been considered to be plausible in prior years (Edwards, 2019).

Learning Forward also recommends that teacher professional learning should keep resources in mind. Coordinating resources during educator learning can increase teacher effectiveness. The researchers list that effective professional learning requires human, fiscal, material, technology, and time resources in order to achieve goals set forth by a professional learning community. The district or organization's educator capital

could also be considered to be a valuable resource. An investment into educator capital will enable an organization to develop their capacity as educators and develop them into the practicing professionals that the organization is counting on (Fullan & Hargreaves, 2016). The use of resources are not the only hurdle, but variably the availability and allocation of resources can directly affect the quality and results of educator professional learning. When resources are effectively monitored, effective decisions can be made regarding increased quality and results of the learning (Learning Forward, 2021). However, we must keep in mind that resources are not just tangible objects, we must also view the daily lives of teachers as an imperative resource. Organizations that are purposeful about-receptiveness of time and develops time for collaborative professional learning will facilitate an environment of improvement and growth (Jensen, 2016).

The third standard that Learning Forward recommends for high-quality educator learning is including methods that integrates theories, research, and models of human learning. Learning Forward calls this Professional Learning Standard, Learning Designs. Within this standard, educators should consider factors that may affect their learning and the results in which they are planning for. They should first predict their intended outcome of the professional learning and consider what analysis may be required to produce the adult engagement and student outcomes they wish to produce (Learning Forward, 2021). McCray (2018) claims that there are three steps that school leaders can take to address any barriers within this standard. 1) always use the teacher leadership team to lead any professional development, this can be much more effectively received by their own peers (Boylan, 2018), 2) utilize data to create intended focus, 3) create meaningful learning opportunities through teacher collaboration.

The next standard that should be considered is Outcomes. The Outcomes Standard is professional learning that increases educator effectiveness through alignment of student outcomes to the educator performance outcomes and standards. Students and educators must be held to high performance standards. The design of the professional learning system must focus on professional learning that is as much focused on the performance outcomes of teachers as it is the student learning outcomes. When student learning stakes are high and demanding, so are the equitable outcomes with educators (Learning Forward, 2021). The most apparent impact that administrators should look for from the professional learning process are the results within the normal job duties of an educator (Guskey, 2017).

Leadership is the fifth professional learning standard. This particular standard state that in order to reach high student outcomes, the leaders that are maintaining and facilitating the professional learning must develop capacity, advocacy, and create support systems for the learning to take place and continue effectively (Learning Forward, 2021). Leadership must be shared for change to occur. Teachers must be empowered to share responsibility for the implementation and development of the professional learning (Jensen, 2016). A good leader should always hold learning as one of their top priorities, not just for themselves but others in which they lead. These standards and initiatives should be rooted deeply into the organization's mission and vision. Systems that recognize shared leadership advance leaders among all levels of the organization. Good leaders clearly connect student learning outcomes and quality professional learning among the staff (Learning Forward, 2021). They also develop leadership roles among the

teaching staff that facilitate school improvement teams and engage in the development of other teachers (Jensen, 2016).

Professional learning that is tended to and nurtured, along the process, utilizes data sources to direct and enrich good decisions throughout the course of professional learning. The Data Standard of the NSDC discusses how data can be effective throughout the professional learning system when it offers a balanced analysis of multiple sources. This can be at the student and staff level. The individual learner's goals can be set by the use of data, as well as the organizations. Data can lead discussion particular to student learning needs and develop a comprehensive understanding of the current climate and hurdles that an organization might face throughout the process. The NSDC claims that by using appropriate data to input appropriate fiscal, time, and personnel inputs into the system, the student learning output can grow and increase accordingly (Learning Forward, 2021).

Long-term, system-wide, change can only be maintained through effective implementation of the professional learning goals of the organization. Implementation is the final standard that the NSDC claims will promote continuous improvement to both the educators and student outcomes. In order to sustain a level of implementation throughout the professional learning process/initiative, continual support must take place (Learning Forward, 2021). Teaching staff who are engaged in change and developing their peers through this process must be celebrated. This level of dedication and enthusiasm must be recognized and rewarded to maintain the momentum of change (Jensen, 2016). This support can be ongoing workshops, coaching, reflection, and even reviewing the results of data. The constructive feedback that occurs through these

processes will clearly define the progress that the system wishes to maintain (LearningForward.org, 2021).

Stephanie Hirsh, retired executive director of Learning Forward, outlines four cornerstones that she believes are in addition to the Learning Forward Standards (Learning Forward, 2011). Hirsh's cornerstones, that she claims to be an integral portion of Learning Forward's advocacy are; Lead with equity, invest in team learning, leverage high-quality instructional materials, and advocate with evidence (Hirsh, 2019). Hirsh shares that leading with equity is a process that allows for every student to have access to the highest quality of teacher and process of learning as possible (Hirsh, 2019). Investing in team learning is an insurance that the allocated resources, including time and fiscally maintained assets of the initiative, should support all educators in the professional learning process. Anchoring your resources is the fastest way to develop practical outcomes (Hirsh, 2019). The third cornerstone of professional learning is leveraging high-quality instructional materials. This is a building block of anchoring your resources, but this cornerstone is more focused on the development, attainment, and ensuring the access to high-quality materials (Hirsh, 2019). Advocating with evidence is the final cornerstone that Hirsh claims can impact the effectiveness of professional learning. Advocating with evidence is a process that allows leaders to share the impact of the professional learning with federal, state, and local stakeholders. Hirsh claims that this is the moment to develop a voice of your initiative and gain the approval of your biggest critics (Hirsh, 2019).

Pre-service teachers are at a particular disadvantage pertaining to their professional learning experience. Sun, Strobel, & Newby (2017) state that teachers

desperately need three components to be successful: skills-based courses in teacher training, experience in the integration of current methodologies related to the teaching profession, and how to apply technologies in today's classroom during their coursework and their transition to the classroom. Ultimately, the real method of learning how to teach in a classroom comes from experience, not college (Prasojo et al., 2018).

Neal (2018) claims that high-quality teacher development programs are renowned to be one of the greatest impacts on student achievement when examining schools in similar regions. However, looking at only local statistics, to determine impacts of professional development of educators, is not the only means to determine what is imperative to the professional learning of our teachers. A recent study in London, England states that workshops alone do not effectively provide educators with the necessary skills to improve their skills of instruction, and thus do not affect the real outcome of student achievement unless other methodologies are used (Peerthy, 2018). Snow-Perry states that, "Professional development can no longer be about exposing teachers to a concept in a one-time workshop...professional development in an era of accountability requires fundamental change in teachers' practice in order to increase student learning..." (Snow-Perry, 2018, p. 38).

Therefore, when giving the attention needed to the development of effective instructional strategies, the variances at play must be tended to, such as the teachers leverage in student variance (Hattie, 2009). According to Hattie (2009), if we concentrate on the 30% variance that a teacher has on student outcomes we can truly make a difference. Within this 30% lies an effective, high-quality educator, that organizations have invested resources such as time, training, and experiences. Such teachers have been

provided opportunities that included engaging and effectively sustained professional learning (Darling-Hammond et al., 2017).

There are positive relationships between professional learning inputs and student outcomes (Delpier et al., 2019) and may lead to successful equity in the educational system (Brown, 2018). Equity can be loosely defined as an equal investment in the needs of specific learners (Drummey, 2020), but is often confused with exact and equal resources per pupil (Atchison, 2017). Brown & Fredrick (2020) quote that Learning Forward believes that equity is a direct product of the level of instruction and practices the teacher provides. Equity should be thoughtful to the needs of the learner as an individual and the means to equity should be the route of most success for that individual (Brown, 2018). Equal and un-equalness apply to a true term of equity (True-Frost, 2018). Resources and the use of those resources should be discerned through a lens that are driven by the needs of the learner (Drummey, 2020). Such needs are a part of a student's identity and are not barriers to their success (Brown & Fredrick, 2020). When equity becomes a part of the outcome, gaps in student achievement can be narrowed (Eckersall, 2017).

Strong, highly qualified teachers, that focus on instruction and participate in effective professional learning develop increasing levels of professional capital (Hargreaves & Fullan, 2020). Professional capital is a product of high-quality experiences that result in high-quality practices (Hargreaves & Fullan, 2020). The instruction provided in the subjects of ELA and mathematics can have direct effects on student outcome data. For both subjects, Edgerton (2020) argues that successful curriculum implementation is when standards are taught at high levels of preparation.

Teachers play a high-stakes role in a student's education through their control of educational equity (Brown & Fleming, 2020); the imperative role that they play in the variance of student outcomes (Hattie, 2009).

Districts should continuously provide for and implement opportunities that support and nurture the needs of their educators (Darling-Hammond et al., 2017). High-quality teachers do not magically appear straight out of college. Pre-service teacher, unexperienced teachers, and veteran teachers all need support to become and remain highly-qualified instructors (Jensen et al., 2016). Successful organizations recognize that their educators can become high-quality and can improve student outcomes through professional learning (Danielson, 2019; Darling-Hammond, 2017). High-quality professional learning is how organizations can improve student outcomes, improve schools, and improve job satisfaction (Jensen et al., 2016).

### **Summary**

This chapter discussed the current research that has been analyzed regarding state and federal accountability, educational equity, equity within school finance, student variances, effectiveness of high-quality instruction, significance of resources, the importance of high-quality professional development, and the suggested standards to develop and maintain effective professional learning. Federal accountability has historically drove the debate of how to achieve accountability and equity in the nation's student population, all these reforms sought equity within the educational system (Chu, 2019). Therefore, when equity is being scrutinized, education should provide adequate resources to every student (Brown, 2018). We discussed how adequacy and/or equity can be defined as having the same level of resources available as other districts of similarity,

guaranteeing a universal education for all (Odden & Piccus, 2004). It is exceedingly difficult to meet the financial needs of school districts when deliberating the parity of school finance, and when striving for equity, one would think that there are only two choices: equal and unequal. In the state of Missouri, equity has been the basis of dispute concerning the funding mechanisms used to subsidize the state's school system for years (i.e., SB 270, 2005).

Senate Bill 287 was developed through studies such as Augenblick & Meyers (2003). This formula was based on an adequate amount of expenditures per-pupil that would supposedly develop a proficient education for students in the state, thus creating a benchmark dollar amount through student needs rather than the tax driven formulas of the past. In reaction to a rising need of student-outcome based decisions regarding finances and many other facets of education, value-added models such as the Successful School Model have been used in the manipulation of student outcomes, as well as influence the instruction in the pursuit of student outcomes (Hattie, 2003). But, in order to develop a teacher, you must engage in effective and appropriate professional development. Although it has many layers, effective professional development can be simplified to a personal experience with a focus on professional growth (Woodland, 2019). The only way to get there is to create quality professional learning opportunities that “provides teachers with adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice (Darling-Hammond et al, 2017, pg 7).

This chapter contained an overview of the current gap in the literature, arguing whether or not professional learning practices can affect student achievement outcomes. The purpose of this quantitative, descriptive, correlational study was to determine the

relationship between district professional development expenditures and district-level student achievement in ELA and math. The researcher examined all 518 Missouri public schools and their professional development expenditure code 2241 that was then correlated to their MAP data during the study. Professional Development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) will be divided by the Total Instruction expenditure code 1999, found on the ASBR, to compute a percentage of funds spent on professional development for the school years 2016-2017 (SY 2017), 2017-2018 (SY 2018), and 2018-2019 (SY 2019), to compare their successes to each other presenting teacher efficacy as a positive variance among a student's achievement by Hattie (2003) and highly correlated to the amount and quality of professional development a teacher receives (Hattie, 2009) making the connection with the variable of teacher/school variances and professional development spending (Hattie, 2003).

Research questions were developed to examine trending expenditures among identifiably successful Missouri school districts for the 2016-2017 (SY 2017), 2017-2018 (SY 2018), and the 2018-2019 (SY 2019) school years.

Chapter 3 will describe the methodology utilized in identifying school districts within the study. In this chapter, the researcher will examine the data sets that were collected through the chosen districts ASBR between the MSIP years of 2017-2019. Chapter 4 will offer a presentation of these findings. Chapter 5 will provide a summary of this project and the educational implications and significance of these findings for educational decisions and future studies.

## **CHAPTER III**

### **METHODOLOGY**

#### **Introduction**

School district achievement has been a popular political bullet since a period of insipid student achievement scores of about 30 years (Hanushek & Lindseth, 2009) remain at a flat trajectory in more recent years (Hung et al., 2020; Hanushek, 2021). Such measures have been mostly required by federal mandates and tied directly to federal monies through laws such as the Elementary and Secondary Education Act (ESEA) (Murphey, 1971), The No Child Left Behind Act (NCLB) (Bush, 2001), and Every Student Succeeds Act (Witherspoon, 2018). However, the majority of these mandates must be created at the state level making law makers define what quality education is in the state of Missouri. This includes how each school district will be held accountable for the state's educational standards and objectives regarding the system's interpretation of the state constitution and the state department/school district's educational responsibilities (Soderholm, 2019).

Since the implementation of the ESEA and NCLB laws, as well as the development of the Missouri School Improvement Program (MSIP) and the Missouri Assessment Program (MAP), there have been many divergent views of how to spend resources available to Missouri school districts. These variances among philosophies of education, approaches to quality instruction (for the purpose of this study the researcher will interpret high quality instruction is a product of effective professional development), and state-level revenues can restrain district-level expenditures and may affect the performance of a school district's achievement level.

There are very few studies to be found regarding specific spending in professional development and the direct achievement outcomes that can be attained by such spending practices. This study will define the gap in literature regarding whether or not resources can affect student achievement outcomes that have been too often contradictory. Such research has remained parallel to one another for decades (Hung et al., 2020). There are few studies tying the direct spending in professional development and the achievement outcome gains that can be attained by such spending practices. The researcher attempted to connect the two parallel variables by examining the current available research.

Teacher efficacy is strongly presented as a positive variance among a student's achievement by Hattie (2003), and the positive relationship that was argued by Hedges, Larry, Laine and Greenwald tend to promote the opinion that spending does matter (1994), all of which leads to the dispute that school districts should be intentional with how much and where they utilize district resources and/or district-level expenditures. Williams (2016) claimed that the relationship between teachers and the professional development in which they participate in are so apparent that further research should be continued. The continuation of research among professional development experts show that it should quantify within the teacher's beliefs, practices, and attitudes, be structured, advanced, and useful to the district as well as establishing a stressing need for a culture of continuous professional learning to develop and increase teacher quality (Hattie, 2012; Delpier et al., 2019).

Research questions were developed to examine trending expenditures among identifiable successful Missouri school districts as well as under-performing school districts. This study intends to examine the relationship among the identified school

districts and their expenditures related to money spent in professional development for the 2016-2017 (SY 2017), 2017-2018 (SY 2018), and the 2018-2019 (SY 2019) school years.

In this chapter, the research addresses the purpose of the study, research questions, and the null hypotheses. The participants in the study are discussed and the sampling process that was used will follow. The research setting, research design, and procedures used during the research are also outlined. Finally, the instrumentation utilized and the data analyses are discussed in detail.

### **Purpose of the Study**

The purpose of this quantitative, correlational study is to test the theory that increased spending in district-level professional development expenditures is related to district-level student achievement scores in ELA and mathematics. The researcher examined the 518 public schools within the state of Missouri. The researcher examined the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and mathematics on the Missouri Assessment Program (MAP), for the school years of 2017-2019. The study will determine the relationship by identifying trends that may exist among the spending

of successful Missouri school districts compared to lower performing school districts, specifically using the school district's ASBR reporting fund code 2214 (Professional Development Expenditures) in order to study the correlation between the two variables.

Missouri is a mostly rural state, located in the central United States. Districts that will be considered include kindergarten through 8<sup>th</sup> grade school districts, as well as Kindergarten through 12<sup>th</sup> grade school districts in order to consider all Missouri school districts.

Historical MAP data in English Language Arts (ELA) and mathematics, district-wide, was utilized in this quantitative, correlational study. The MAP data was a continuous variable that included all grade-level specific data for the school district, in all 518 Missouri public school districts, that was reported as the percentage of students that scored at or above proficient or advanced. Their MAP and ASBR data were considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). From the data collected to answer RQ's 1-2, data was examined and relationships were identified among the continuous variable of district-level professional learning expenditures, reported in dollars, and student achievement scores in Missouri school districts, reported in percentages of proficient or advanced student achievement. The districts' ASBR will then be examined and compared to the district-level spending on professional development and the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement.

### **Research Questions**

Questions guiding this research study were as follows:

## RQ1

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores?

RQ1a. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2017**?

RQ1b. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**?

RQ1c. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**?

## RQ2

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics Map Scores?

RQ2a. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2017**?

RQ2b. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018**?

RQ2c. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019**?

**Null Hypotheses**

H<sub>01</sub>: There is no statistically significant relationship between a school districts professional development expenditures and district level student achievement as measured by ELA Map Scores.

H<sub>01a</sub>: There is no statistically significant relationship of a school districts professional development expenditures and district level student achievement as measured by ELA Map Scores in **SY 2017**.

H<sub>01b</sub>.: There is no statistically significant relationship of a school districts professional development expenditures and district level student achievement as measured by ELA Map Scores in **SY 2018**.

H<sub>01c</sub>.: There is no statistically significant relationship of a school districts professional development expenditures and district level student achievement as measured by ELA Map Scores in **SY 2019**.

H<sub>02</sub>: There is no statistically significant relationship between a school districts professional development expenditures and district level student achievement as measured by Mathematics Map Scores.

H<sub>02a</sub>.: There is no statistically significant relationship of a school districts professional development expenditures and district level student achievement as measured by Mathematics Scores in **SY 2017**.

H<sub>02b</sub>.: There is no statistically significant relationship of a school districts professional development expenditures and district level student achievement as measured by Mathematics Map Scores in **SY 2018**.

H<sub>02c</sub>.: There is no statistically significant relationship of a school districts professional development expenditures and district level student achievement as measured by Mathematics Map Scores in **SY 2019**.

### **Participants**

Missouri is a mostly rural state, located in the central United States. Districts that will be considered include kindergarten through 8<sup>th</sup> grade school districts, as well as kindergarten through 12<sup>th</sup> grade school districts in order to consider all Missouri school districts. Although the state of Missouri is mostly rural, all 518-public school districts were considered for the study.

Historical MAP data in English Language Arts (ELA) and mathematics, district-wide, was utilized in this quantitative, correlational study. The MAP data was a continuous variable that included all grade-level specific data for the school district, in all 518 Missouri public school districts, that was reported as the percentage of students that scored at or above proficient or advanced. Their MAP and ASBR data were considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). From the data collected to answer RQ's 1-2, data was examined and relationships were identified among the continuous variable of district-level professional learning expenditures, reported in dollars, and student achievement scores in Missouri school districts, reported in percentages of proficient or advanced student achievement. The district's ASBR will then be examined and compared to the district-level spending on professional

development and the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement.

The study did this by identifying trends that may exist among the spending trends of successful Missouri school districts compared to lower performing Missouri school districts, specifically using the school district's ASBR reporting fund code 2214 (Professional Development Expenditures) to compare their successes. School districts will be examined by utilizing historical MAP data in English Language Arts (ELA) and mathematics district-wide. The MAP data used will include all grade-level specific data for the school district. The district's ASBR will then be examined and compared to the district-level spending on professional development and correlated against the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement. All 518 Missouri public school districts and their MAP/ASBR data was considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). From the data collected to answer RQ's 1-2, a list of successful and unsuccessful school districts was identified and examined in order to research whether or not expenditures in professional development have a correlation to student achievement.

### **Selection/Sampling**

School districts considered to be successful and unsuccessful, according to the Missouri Department of Elementary and Secondary Education (MODESE) and the accountability systems in place set forth by the MODESE and the Missouri State Board of Education, will be examined in detail regarding professional development and other

imperative data, such as MAP, to develop an understanding of the impact of spending practices on professional development and how it might affect student achievement. The list of successful school districts will evolve from year-to-year and will be fluid, depending on the district's performance for the school year(s) being examined upon by the specific research question. Total population sampling (TPS) was used in the study due to the populace characteristics. For the purpose of this study, TPS was chosen due to the specific locations of the districts and qualities that may affect pertaining to the student learning outcomes (McMahon & Hatton, 2019).

Achievement data for this study was collected through the utilization of the Missouri Department of Secondary Education's (MoDese) Missouri Comprehensive Data System (MCDS portal) which can be found through the web applications public menu on MoDESE's website and a data request made through MoDESE.

School finance data was collected through the Annual Secretary of the Board Reports (ASBR), reported by MoDESE, and downloaded from the MoDESE MCDS portal. A data request was also made through MoDESE. Such data included:

1. Total Instruction expenditures for the selected years for public school districts in the state of Missouri.
2. Professional Development expenditures for the selected years for public school districts in the state of Missouri.

### **Research Setting**

Missouri is a mostly rural state, located in the central United States. Data included kindergarten through 8<sup>th</sup> grade school districts, as well as kindergarten through 12<sup>th</sup> grade school districts. Public school in Missouri is comprised of 518 Missouri public schools,

which includes 567 high schools, 341 middle or junior high schools, and 1,229 elementary schools, all of which encompasses approximately 881,000 students (DESE, n.d.d.). These public schools are represented by a top three demographics as approximately 70% White/Caucasian, 15% African American, and 7 % Hispanic (DESE, n.d.d.). Nearly 49% of Missouri students are considered to be students whom qualify for the federal Free and Reduced Lunch Program (DESE, n.d.d.). Missouri statistically spends an average of approximately \$11,000 per pupil to provide a free and appropriate education during the years of the study (2017-2019) (DESE, n.d.d.) All public schools and their professional development expenditure code 2241 were then correlated to their MAP data during the quantitative, correlational study. Professional Development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) will be divided by the Total Instruction expenditure code 1999, found on the ASBR, to compute a percentage of funds spent on professional development for all 518 school districts for the years chosen. This will provide appropriate data to determine the difference among achievement and the percentage of funds that was spent on professional development for the school districts.

### **Research Design**

The research study followed a quantitative method with a correlational research design. Quantitative design was chosen due to the nature of the research. In a quantitative study, the research generally follows firm research standards that are generally utilized in organizing data and finding relationships among variables (Opoku et al., 2022; Metcalfe, 2019). The data collected for determining the relationships between variables is standardized in nature and assumed to be reliable from its sources (Bloomfield & Fisher,

2019). The quantitative method of research was fitting for this study, as quantitative research is a study on the basis of the relationships among variables (Gay, et al. 2009). Causal-comparative design was chosen due to determining differences among to already existing groups (Newton, 2020). Experimental design was not chosen for the study due to the nature of ex post facto data and that treatment was not withheld from one group. In this study, both variables have already occurred and both groups were examined with equal treatment. Thus, stating that all Missouri school district were required to have data entry pertaining to professional development expenditures and student data was valid and given to all qualifying students in the state of Missouri, thus said to be ex post facto (Gay, et al. 2009; Metcalfe, 2019). The data sets determined to be the independent and dependent variables were previously compiled, just not for the purpose of research.

The variables studied are continuous in the nature of the data, meaning numeric values can be infinite between the two values. The study was intended to investigate the relationship if any, among the professional development expenditure amounts and the computed percentage of funds spent on professional development, per Missouri public school, and the relationships to the student achievement outcomes on the MAP for ELA and mathematics during the school years 2017, 2018, and 2019.

### **Instrumentation**

Data for this quantitative, correlational study were obtained by using MODESE's open access Missouri Comprehensive Data System (MCDS) portal and written data requests through MODESE's website. The MCDS system allowed for the researcher to obtain district-wide MAP achievement data for the school years of 2017, 2018, and 2019. MAP achievement data that was received were English

Language Arts and mathematics for the specified years for all public-school district in Missouri.

During all of the MAP testing years utilized in the study, the Data Recognition Corporation (DRC) was hired to develop and conduct the MAP test. Alignment to the Missouri Learning Standards were required by the State of Missouri and was part of the contractual agreement for its development (Data Recognition Corporation, 2018). The State of Missouri, MODESE, and DRC pursued to offer an assessment that is both valid and reliable (DRC, 2018). A study that was conducted and reported through the 2018 MAP Grade Level Assessment Technical Report claimed that the reliability of the MAP test was confirmed through Cronbach's coefficient alpha (DRC, 2018). Scores obtained through Cronbach's alpha range can range from 0 to 1; Cronbach values with a .70 and above are considered good, a .80 and above is considered to be better, and .90 and above is best (Stadler et al., 2021). The Cronbach alpha range for the MAP test in 2018 for example, was between .89-.92 for ELA and between .90-.93 for Mathematics (DRC, 2018).

Data was obtained from the written DESE request included Professional Development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) the Total Instruction expenditure code 1999, found on the ASBR, for school years 2017, 2018, and 2019. This data was divided to compute a percentage spent on professional development during the years of the study. All data utilized in the study was public knowledge and therefore did not require any special

permissions to be used, thus reflecting the impact upon a budget in a percentage rather than total dollars spent.

### **Procedures**

Data collection and analysis were handled systematically and with meaning. The researcher retrieved a list of Missouri public schools, totaling 518, for the school years of 2017, 2018, and 2019 through the MCDS public portal on DESE.mo.gov. As is required by Southwest Baptist University in regard to research concerning humans, approval for the study was obtained from the Research Review Board (RRB) of the university. The approval needed to complete the study ensures the protection of human participants in a research study. Once approval was obtained from the RRB, data regarding the percent of students scoring proficient and advanced on the district-wide MAP assessment was collected from the MCDS web applications on the MODESE open access website. School finance data was collected through the Annual Secretary of the Board Reports (ASBR), reported by MODESE, and downloaded from the MODESE MCDS portal. A data request began this data collection through the MODESE request system. The data requested was later emailed to the researcher. Such data included total instruction expenditures for the selected years for public school districts in the state of Missouri and professional development expenditures for the selected years.

This data was received by the researcher via email from DESE through the data request. The list was downloaded into a Microsoft Excel spreadsheet and their professional development expenditure code 2241 was provided for each Missouri public school as well as their Professional Development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR). These two expenditure codes were then

divided by the Total Instruction expenditure code 1999, found on the ASBR, to compute a percentage of funds spent on professional development for all 518 school districts for the 2017, 2018, and 2019 school year for both ELA and mathematics. Private and parochial schools were deleted from the list, as they are not required to follow the same assessment requirements. Student achievement scores were then added to the Excel document for each of the school years that were studied for each of the two subjects (ELA and mathematics). The data regarding the percent of students scoring proficient and advanced on the district-wide MAP assessment was collected from the MCDS web applications on the MODESE open access website.

The timeline for data collection, analysis, and completion of Chapter Four, and Chapter Five was June 2022 through July 2022. Because data collection was limited to each district's total percentage of students scoring proficient and advanced on the MAP, student and teacher identities were protected by utilizing all Missouri public schools for the years 2017, 2018, 2019, which eliminated the risk of bias or conflict of interest by the researcher.

The researcher uploaded the spreadsheets into SPSS statistics software and utilized a Pearson product-moment correlation coefficient test to measure the strength and direction of the relationships among the two variables. Pearson's correlation coefficient,  $r$ , determined sufficient data through the interpretation of the SPSS report to write Chapter Four and Five.

### **Data Analysis**

The purpose of this quantitative, correlational study is to test the theory that increased spending in district-level professional development expenditures is related to

district-level student achievement scores in ELA and mathematics. The researcher examined the 518 public schools within the State of Missouri. The researcher also examined the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and mathematics on the Missouri Assessment Program (MAP), for the school years of 2017-2019. The study will determine the relationship by identifying trends that may exist among the spending of successful Missouri School Districts compared to lower performing Missouri school districts, specifically using the school districts ASBR reporting fund code 2214 (professional development expenditures) in order to study the correlation between the two variables.

Missouri is a mostly rural state, located in the central United States. Districts that will be considered include kindergarten through 8<sup>th</sup> grade school districts, as well as Kindergarten through 12<sup>th</sup> grade school districts in order to consider all Missouri school Districts. Although the State of Missouri is mostly rural, all 518 public school districts were considered for the study.

The researcher developed research questions aimed to examine the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and Mathematics on the Missouri Assessment Program (MAP), for the school years of 2017-2019. The study attempting to identify trends that may exist among the spending of successful Missouri School Districts compared to lower performing Missouri school districts, specifically using the school districts ASBR reporting fund code 2214 (Professional Development Expenditures) in order to study the correlation between the two variables.

Historical MAP data in English Language Arts (ELA) and Mathematics, district-wide, was utilized in this quantitative, correlational study. The MAP data was a continuous variable that included all grade-level specific data for the school district, in the 518 Missouri public school districts that was examined. This data was reported as the percentage of students that scored at or above proficient or advanced on the annual MAP assessment. The District's MAP and ASBR data were considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). The districts ASBR was then examined and compared to the district-level spending on professional development and the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement. Data that was obtained for the study was cleaned through the use of Microsoft Excel. The research data was then uploaded to the IBM Statistical Package for Social Sciences (SPSS) software for data analysis

### **Summary**

This chapter outlined the process and methodology for this study by utilizing the DESE MCDS open access data base portal to identify specific ASBR expenditure codes and district-level MAP percentages. A test to determine the relationship between professional development expenditures and student achievement was later completed on the data collected by the researcher.

Chapter One contained an overview of the current problem to be examined in this study. It developed a theme that school resources are fickle and it is imperative that they are spent appropriately to develop a school district best leverage for student achievement. In Chapter Two of this paper, a literature review was provided of existing research

discussing the development of educational equity and accountability for the state of Missouri, funding backgrounds, and important details pertaining to professional development. It also discussed details about specific portions of the ASBR. Chapter Four will offer a presentation of the findings mentioned for examination in Chapter Three. Chapter Five will provide a summary of this project and the educational implications and significance of these findings for educational decisions and future studies.

The researcher anticipates that it will be fairly simple to find the statistical analytics required to support that the state documents (ASBR, achievement data included in the APR including contracted testing companies) utilized in the studies are both reliable and valid. It is also believed that the successful school's approach to selecting the districts to be studied will provide a large enough sample size to give the reader of this dissertation a reliable conclusion and recommendation of the relationship among district-level professional development spending and the success within the student outcome achievement data found on the mathematics and ELA MAP test.

Common misconceptions of an amateur author are obviously going to change the methodology and description of this study as more articles and details are studied and included in this research. However, I do not feel that it will change my instrumentation or methodology (e.g. Pearson,  $r$ ). A correlational relationship will still ultimately be the focus of the author in order to reject his hypothesis.

## **CHAPTER FOUR**

### **ANALYSIS OF DATA**

#### **Introduction**

The purpose of this quantitative, correlational study is to test the theory that increased spending in district-level professional development expenditures is related to district-level student achievement scores in ELA and mathematics. The researcher examined the 518 public schools within the state of Missouri and also examined the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and mathematics on the Missouri Assessment Program (MAP) for the school years of 2017-2019. The study will determine the relationship by identifying trends that may exist among the spending of successful Missouri school districts compared to lower performing Missouri school districts, specifically using the school district's ASBR reporting fund code 2214 (professional development expenditures) in order to study the correlation between the two variables.

Missouri is a mostly rural state, located in the central United States. Districts that will be considered include kindergarten through 8<sup>th</sup> grade school districts, as well as kindergarten through 12<sup>th</sup> grade school districts in order to consider all Missouri school districts. Although Missouri is mostly rural, all 518 public school districts were considered for the study.

Historical MAP data in English Language Arts (ELA) and Mathematics, district-wide, was utilized in this quantitative, correlational study. The MAP data was a continuous variable that included all grade-level specific data for the school district, in all

518 Missouri public school districts, that was reported as the percentage of students that scored at or above proficient or advanced. Their MAP and ASBR data were considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). To answer RQ's 1-2, data was examined and relationships were identified among the continuous variable of district-level professional learning expenditures, reported in dollars, and student achievement scores in Missouri school districts, reported in percentages of proficient or advanced student achievement. The districts ASBR will then be examined and compared to the district-level spending on professional development and the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement. Walberg's theory claims that the quantity and quality of instruction a student receives (Walberg, 1980) does affect a student's immediate environment and directly influences their educational outcomes (Reynolds & Walberg, 1992). Chapter Four will provide a brief review of the research process. Chapter Four will also include an analysis of data, as discussed in Chapter Three, to address the research questions of the study.

It is exceedingly difficult to meet the financial needs of school districts when deliberating the parity of school finance because one would think that there are only two choices: equal and unequal. However, there is a contention that both apply (True-Frost, 2018; Awwad, 2018). Therefore, research tends to suggest that equity may be "the notion that students should be treated according to their different learning needs and characteristics" (Bandaranayake, 2013, p. 193). Within the correspondence of equity, poverty rates, disabilities, and any other specific needs a child need to be considered

(Corcoran, 2012). Therefore, the definition of equitable education might change for each individual (True-Frost, 2018).

Since the implementation of the ESEA and NCLB laws, as well as the development of the Missouri School Improvement Program (MSIP) and the Missouri Assessment Program (MAP), there have been many divergent views of how to spend resources available to Missouri school districts. These variances among educational philosophies and state-level revenues may affect the quality instruction of a district (Hung et al., 2020). District revenues can directly affect the outcomes of achievement through the lack of teacher professional learning (Awwad, 2018). Teacher efficacy is strongly presented as a positive variance among a student's achievement by Hattie (2003). Williams (2016) claimed that the relationship between teachers and the professional development in which they participate in are so apparent that further research should be continued. Accordingly, the purpose of this research was to develop an understanding among the relationships between district-level professional development expenditures and district-level student achievement scores in ELA and mathematics.

The researcher developed research questions aimed to examine the relationship between professional development expenditures and district-level student achievement scores (proficient and advanced percentages) in ELA and mathematics on the Missouri Assessment Program (MAP), for the school years of 2017-2019. The study attempting to identify trends that may exist among the spending of successful Missouri school districts compared to lower performing Missouri school districts, specifically using the school districts ASBR reporting fund code 2214 (Professional Development Expenditures) in order to study the correlation between the two variables.

Historical MAP data in English Language Arts (ELA) and mathematics, district-wide, was utilized in this quantitative, correlational study. The MAP data was a continuous variable that included all grade-level specific data for the school district in the 518 Missouri public school districts that was examined. This data was reported as the percentage of students that scored at or above proficient or advanced on the annual MAP assessment. The district's MAP and ASBR data were considered for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19). The district's ASBR was then examined and compared to the district-level spending on professional development and the student achievement data for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) to determine the effect of district level spending on student-level achievement.

Data that was obtained for the study was cleaned through the use of Microsoft Excel. The research data was then uploaded to the IBM Statistical Package for Social Sciences (SPSS) software for data analysis. Chapter Four will provide for a narrative regarding the analysis of the data. Chapter Four also describes the sample and demographics of the participants, methods used to clean the data, and a descriptive analysis regarding possible correlations will be discussed.

### **Research Questions**

Questions guiding this research study were as follows:

RQ1

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores?

RQ1a. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2017**?

RQ1b. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**?

RQ1c. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**?

## RQ2

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores?

RQ2a. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2017**?

RQ2b. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018**?

RQ2c. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019**?

## **Null Hypotheses**

H<sub>01</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores.

H<sub>01a</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP Scores in **SY 2017**.

H<sub>01b</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**.

H<sub>01c</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**.

H<sub>02</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores.

H<sub>02a</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2017**.

H<sub>02b</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018**.

H<sub>02c</sub>: There is no statistically significant relationship of a school-districts professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019**.

### **Data Analysis and Findings**

This quantitative, correlational study examined the relationship among school districts considered to be successful and unsuccessful for the years of 2017 (SY 16-17), 2018 (SY 17-18), and 2019 (SY 18-19) and their spending trends for district-level professional development. This was decided upon their district's average proficient and advanced percentages for ELA and mathematics and compared to The Annual Secretary of the Board Reports for each Missouri public school for the school years 2017, 2018, and 2019.

Achievement data for this study was collected through the utilization of the Missouri Department of Secondary Education's (MoDESE) open access database the Missouri Comprehensive Data System (MCDS portal,) which can be found through the web applications public menu on MoDESE's website, and a data request was made through MoDESE. Through these public access applications, the percentage of Proficient and Advanced student achievement data was obtained for all 518 public schools in Missouri. School finance data was collected through the Annual Secretary of the Board Reports (ASBR), reported by MoDESE, and downloaded from the open access data base from MoDese MCDS portal. A data request was also made through MoDESE. Such data included:

1. Total instruction expenditures for the selected years for public school districts in the state of Missouri.

2. Professional development expenditures for the selected years public school districts in the state of Missouri.

Professional development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) will be divided by the total instruction expenditure code 1999, found on the ASBR, to compute a percentage of funds spent on professional development for all 518 school districts for the school years 2016-2017 (SY 2017), 2017-2018 (SY 2018), and 2018-2019 (SY 2019). This will provide appropriate data to be examined through the SPSS system to determine the correlation among student achievement and the amount of funding spent on professional development for the school districts that were examined. A correlational design was determined to be appropriate in order to investigate the relationship between increased spending in district-level professional development expenditures and district-level student achievement scores. The MAP data and the professional development percentage will be analyzed with a Pearson  $r$ , correlational test. The research data was then uploaded to the IBM Statistical Package for Social Sciences (SPSS) software for data analysis in order to develop statistical significance reports that were interpreted to identify any trending data collected by the researcher. This research was used to determine the relationship or degree of relationship between the two constant variables.

### **Samples**

A method of total population sampling was used to collect and examine data used in the study by collecting the MAP and ASBR data for all Missouri public schools for the school years of 2017, 2018, and 2019. Five hundred and eighteen school districts were used in the final determination of the study. School districts identified as charter, private,

parochial were not included in the study, only Missouri public schools were considered. K-8 and K-12 school districts were treated the same throughout the study. Research data was downloaded from DESE's open access database (MCDS), entered into SPSS, and the results were then examined pursuing any potential relationships between increased spending in district-level professional development expenditures and district-level student achievement scores.

### **Demographics**

All data utilized in this study was obtained through the open access data portal on The MoDESE Education website. All data obtained and utilized for this study was available to the public through historical data and considered appropriate and reliable to the study through the inclusion of all public school districts in the state of Missouri.

Missouri is a mostly rural state, located in the central United States. The school districts that make up the Missouri Department of Elementary and Secondary Education encompass 518 identifiable districts with 567 high schools, 341 middle/junior high schools, and 1,229 elementary schools. There are approximately 881,000 students (DESE, n.d.d.) enrolled in Missouri public schools. The top three demographics represented among these schools is as approximately 70% White/Caucasian, 15% African American, and 7 % Hispanic (DESE, n.d.d.). Nearly 49% of Missouri students are considered to be students whom qualify for the federal Free and Reduced Lunch Program (DESE, n.d.d.). Missouri statistically spends an average of approximately \$11,000 per pupil to provide a free and appropriate education during the years of the study (2017-2019) (DESE, n.d.d.)

## **Data Cleaning**

Data collection and analysis were handled systematically and with meaning. The researcher retrieved a list of Missouri public schools, totaling 518, for the school years of 2017, 2018, and 2019 through the MCDS public portal on DESE.mo.gov. As is required by Southwest Baptist University in regard to research concerning humans, approval for the study was obtained from the Research Review Board (RRB) of the university. The approval needed to complete the study ensures the protection of human participants in a research study. Once approval was obtained from the RRB, data regarding the percent of students scoring proficient and advanced on the district-wide MAP assessment was collected from the MCDS web applications on the MoDESE open access website. School districts that were identified as charter, private, or parochial were not included in the study, only Missouri public schools were considered. School finance data was collected through the Annual Secretary of the Board Report (ASBR), reported by MoDESE, and downloaded from the MoDESE MCDS portal. A data request began this data collection through the MoDESE request system. The data requested was later emailed to the researcher. Such data included total instruction expenditures for the selected years for public school districts in the state of Missouri and professional development expenditures for the selected years.

This data was received by the researcher via email from DESE through the data request. The list was downloaded into a Microsoft Excel spreadsheet and their professional development expenditure code 2241 was provided for each Missouri public school as well as their Professional development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR). These two expenditure codes were then

divided by the total instruction expenditure code 1999 found on the ASBR to compute a percentage of funds spent on professional development for all 518 school districts for the 2017, 2018, and 2019 school year for both ELA and mathematics. Private and parochial schools were deleted from the list, as they are not required to follow the same assessment requirements. Student achievement scores were then added to the excel document for each of the school years that were studied for each of the two subjects (ELA and mathematics). The data regarding the percent of students scoring proficient and advanced on the district-wide MAP assessment was collected from the MCDS web applications on the MoDESE open access website.

The timeline for data collection, analysis, and completion of Chapter Four, and Chapter Five was June 2022 through July 2022. Because data collection was limited to each district's total percentage of students scoring proficient and advanced on the MAP, student and teacher identities were protected by utilizing all Missouri public schools for the years 2017, 2018, 2019, which eliminated the risk of bias or conflict of interest by the researcher.

The researcher uploaded the excel spreadsheets into SPSS statistics software and utilized a Pearson product-moment correlation coefficient test to measure the strength and direction of the relationships among the two variables. Pearson's correlation coefficient,  $r$ , determined sufficient data through the interpretation of the SPSS report.

## **Research Question Analysis**

### **Research Question 1**

A Pearson's  $r$  correlation was utilized to determine if there was the statistical relationship in Research Question 1: What is the relationship of a school district's

professional development expenditures and district level student achievement as measured by ELA MAP Scores for the school years of 2017, 2018, and 2019? The data was then run to determine if/any relationships were present between district-level professional development expenditures and ELA MAP scores for each year.

Table 1

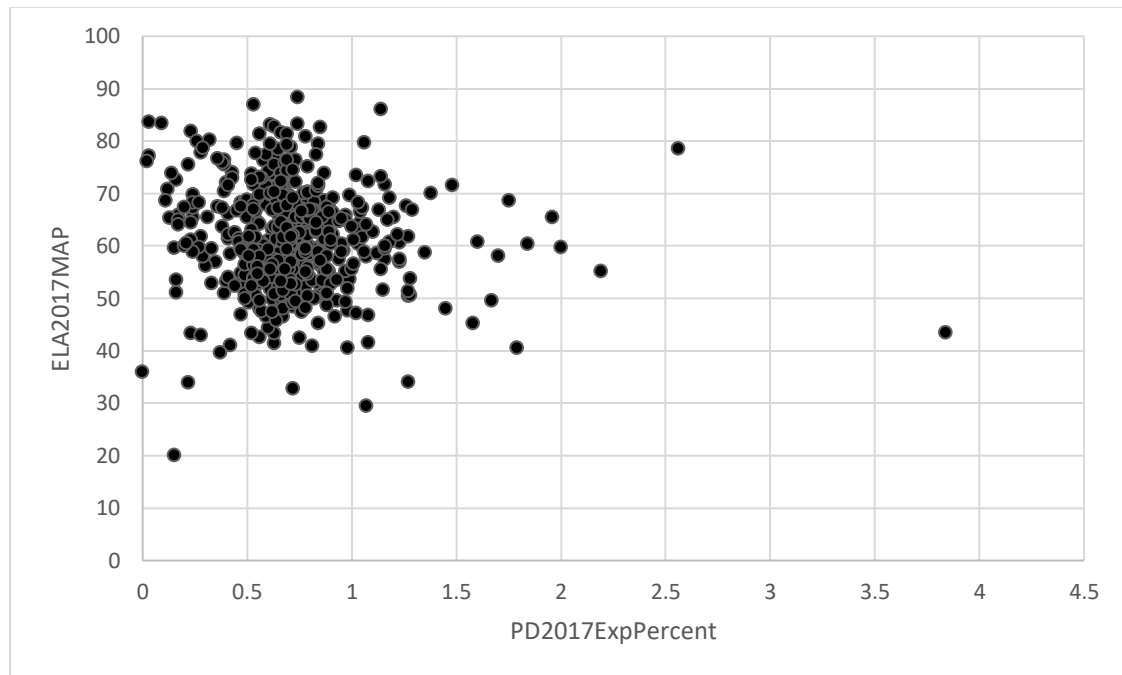
*Pearson r Correlation Research Question 1 SY 2017 ELA: Correlations*

ELA2017MAP	Pearson Correlation	ELA2017MAP	PD2017ExpPercent
	Sig. (two-tailed)	1	-.111*
	<i>N</i>	499	499
PD2017ExpPercent	Pearson Correlation	-.111*	1
	Sig. (2-tailed)	.013	
	<i>N</i>	499	499

\*. Correlation is significant at the 0.05 level (2-tailed).

Figure 1

*Scatter Plot of 2017 ELA MAP Scores by 2017 PD Expenditure Percentages*



## Analysis of 2017 ELA data

What is the relationship of a school district’s professional development expenditures and district level student achievement as measured by ELA MAP Scores for the SY 2017?

Null: There is no statistically significant relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA MAP scores in SY 2017.

There was a statistically negative significant correlation between district-level professional development expenditures in SY 2017 and district-level student achievement ELA MAP scores in SY 2017,  $r(497) = -.111, p = .013$ . District-level professional development expenditures statistically explained 1.2% of the variability in the student achievement ELA MAP scores, thus the researcher rejects the null hypothesis due to the  $p$ -value is less than .05.

Table 2

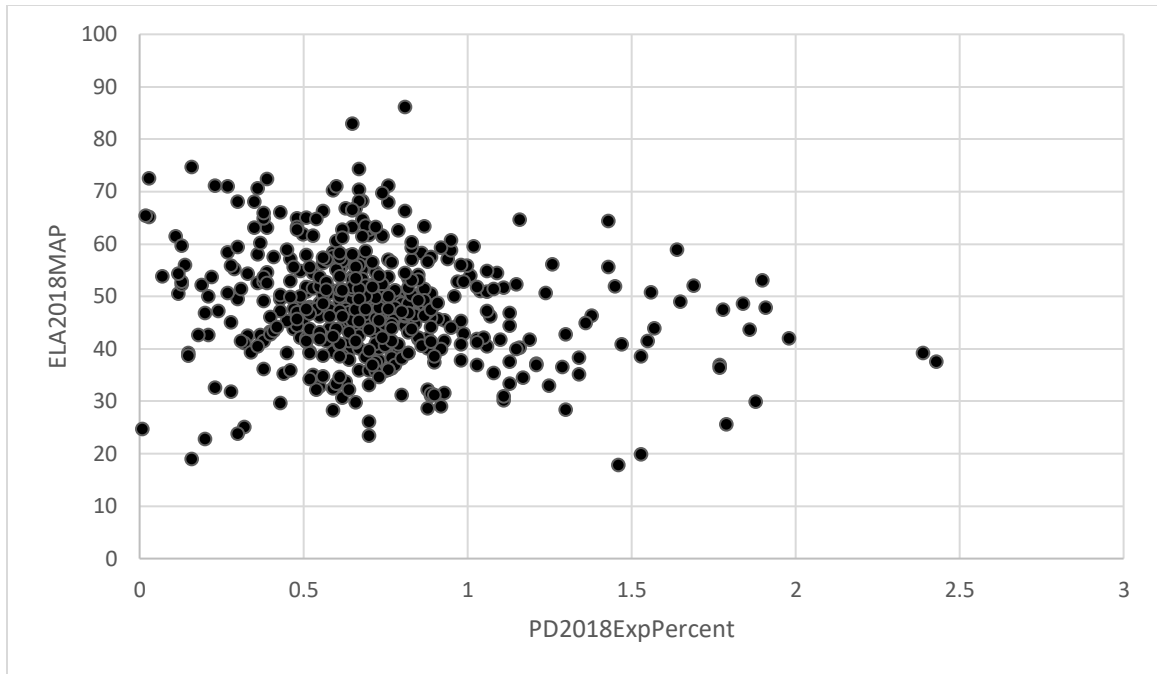
*Pearson r Correlation Research Question 1 SY 2018 ELA: Correlations*

ELA2018MAP	Pearson Correlation	1	PD2018ExpPercent
	Sig. (two-tailed)		-.209**
	<i>N</i>	499	<.001
PD2018ExpPercent	Pearson Correlation	-.209**	1
	Sig. (2-tailed)	<.001	
	<i>N</i>	499	499

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Figure 2

*Scatter Plot of 2018 ELA MAP Scores by 2018 PD Expenditure Percentages*



### Analysis of 2018 ELA data

What is the relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**?

Null: There is no statistically significant relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**.

There was a statistically negative significant correlation between district-level professional development expenditures in SY 2018 and district level student achievement ELA MAP scores in SY 2018,  $r(497) = -.209, p = <.001$ . District-level professional development expenditures statistically explained 4.4% of the variability in the student achievement ELA MAP scores, thus the researcher rejects the null hypothesis.

Table 3

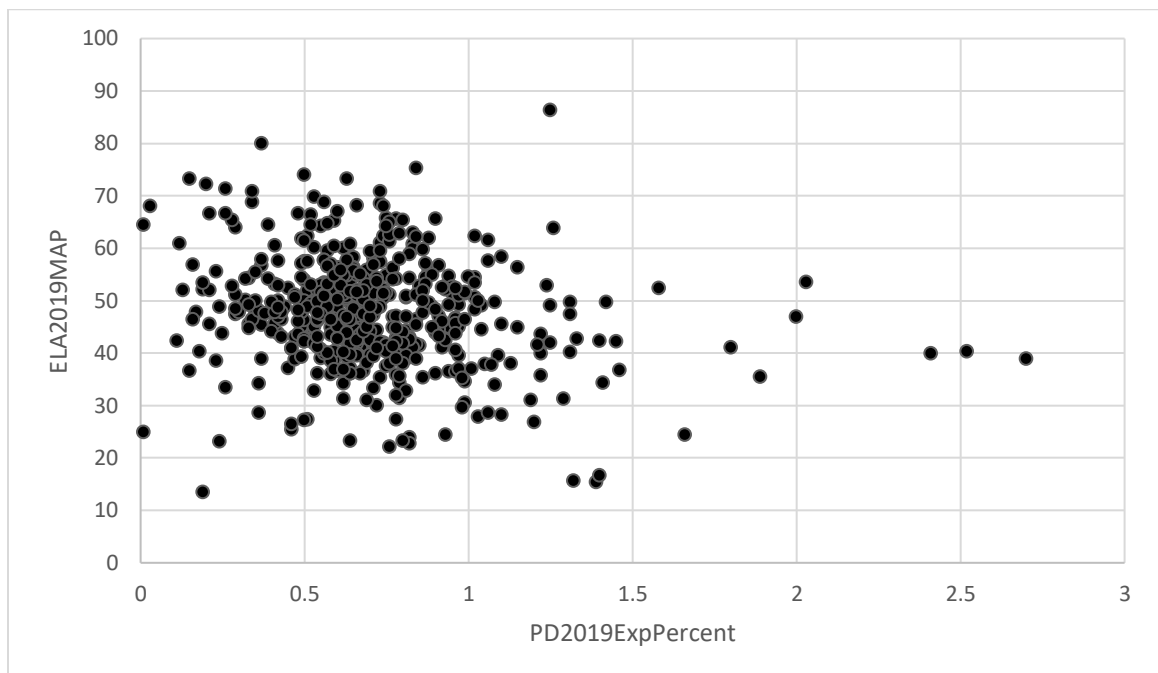
*Pearson r Correlation Research Question 1 SY 2019 ELA: Correlations*

ELA2019MAP	Pearson Correlation	ELA2019MAP	PD2019ExpPercent
	Sig. (two-tailed)	1	-.192**
	<i>N</i>	499	498
PD2019ExpPercent	Pearson Correlation	-.192**	1
	Sig. (2-tailed)	<.001	
	<i>N</i>	498	513

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Figure 3

*Scatter Plot of 2019 ELA MAP Scores by 2019 PD Expenditure Percentages*



### **Analysis of 2019 ELA data**

What is the relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**?

Null: There is no statistically significant relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**.

There was a statistically negative significant correlation between district-level professional development expenditures in SY 2019 and district-level student achievement ELA MAP scores in SY 2019,  $r(496) = -.192, p = <.001$ . District-level professional development expenditures statistically explained 3.7% of the variability in the student achievement ELA MAP scores, thus the researcher rejects the null hypothesis.

### **Research Question 2**

A Pearson's  $r$  correlation was utilized to determine if there was the statistical relationship in Research Question 1: What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores for the 2017, 2018, and 2019 school years? The data was then run to determine if/any relationships were present between district-level professional development expenditures and mathematics MAP scores for each year.

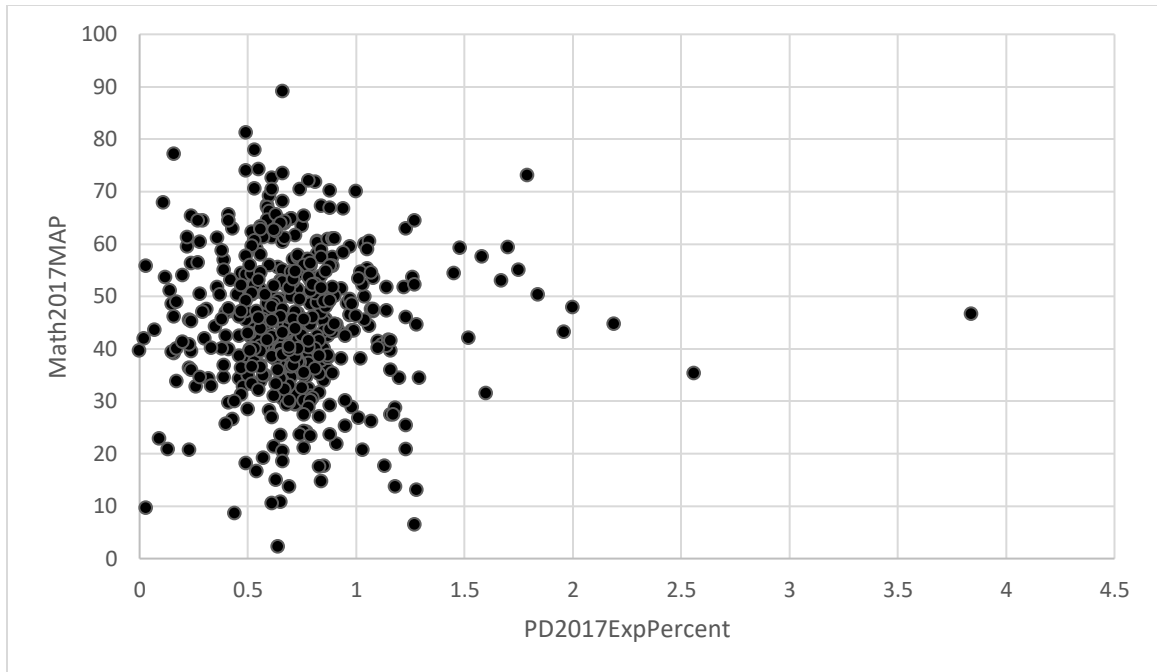
Table 4

*Pearson  $r$  Correlation Research Question 2 SY 2017 Mathematics: Correlations*

		PD2017ExpPercent	Math2017MAP
PD2017ExpPercent	Pearson Correlation	1	-.014
	Sig. (two-tailed)		.759
	<i>N</i>	514	495
Math2017MAP	Pearson Correlation	-.014	1
	Sig. (2-tailed)	.759	
	<i>N</i>	495	495

Figure 4

*Scatter Plot of 2017 Mathematics MAP Scores by 2017 PD Expenditure Percentages*



### Analysis of 2017 Mathematics data

What is the relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA and mathematics MAP scores for the **SY 2017**?

Null: There is no statistically significant relationship of a school district’s professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2017**.

There was no statistically significant correlation between district-level professional development expenditures in SY 2017 and district-level student achievement mathematics MAP scores in SY 2017,  $r(493) = -.014, p = .759$ . District-level professional development expenditures statistically explained 0.2% of the variability in the student achievement mathematics MAP scores, thus the researcher failed to reject the null hypothesis.

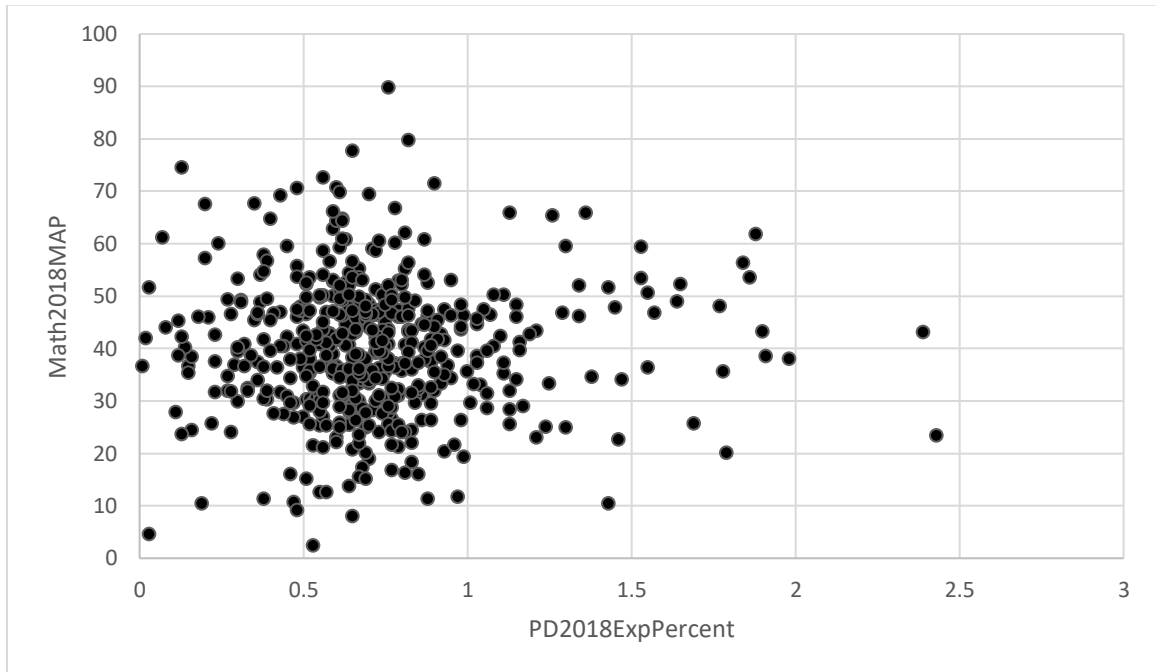
Table 5

*Pearson r Correlation Research Question 2 SY 2018 Mathematics: Correlations*

		PD2018ExpPercent	Math2018MAP
PD2018ExpPercent	Pearson Correlation	1	.012
	Sig. (two-tailed)		.791
	N	514	495
Math2018MAP	Pearson Correlation	.012	1
	Sig. (2-tailed)	.791	
	N	495	495

Figure 5

*Scatter Plot of 2018 Mathematics MAP Scores by 2018 PD Expenditure Percentages*



**Analysis of 2018 Mathematics data**

What is the relationship of a school district’s professional development expenditures and district-level student achievement as measured by ELA and mathematics MAP scores for the **SY 2018**?

Null: There is no statistically significant relationship of a school district’s professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018**.

There was no statistically significant correlation between district-level professional development expenditures in SY 2018 and district-level student achievement mathematics MAP scores in SY 2018,  $r(493) = .012, p = .791$ . District-level professional development expenditures statistically explained 0.1% of the variability in the student achievement mathematics MAP scores, thus the researcher failed to reject the null hypothesis.

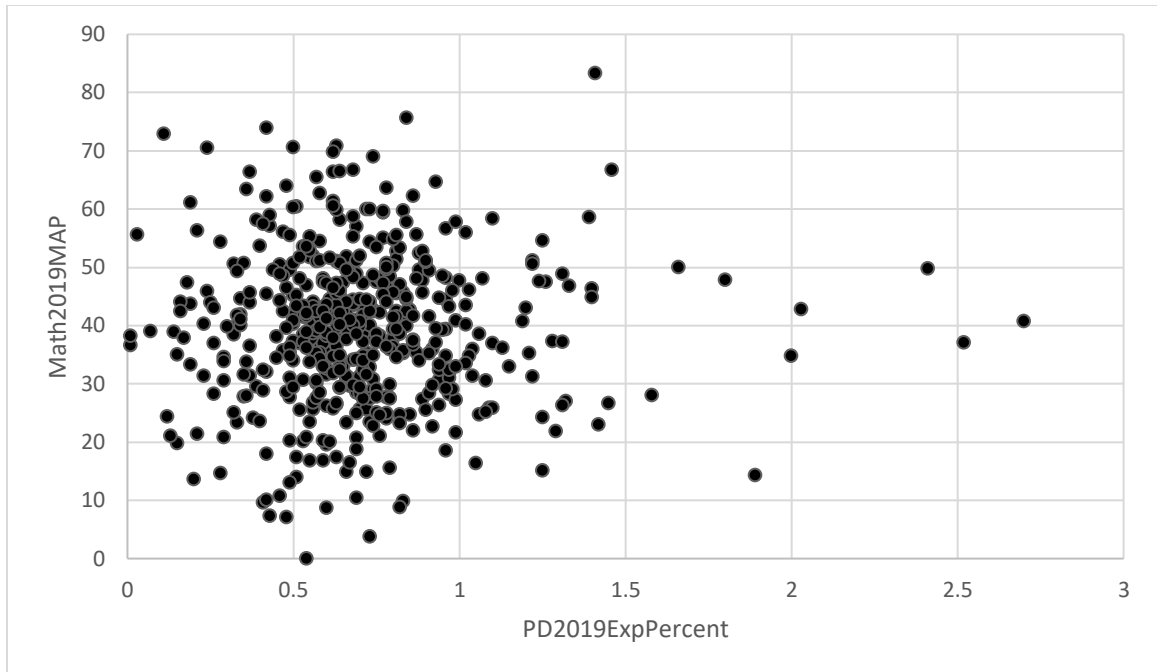
Table 6

*Pearson r Correlation Research Question 2 SY 2019 Mathematics: Correlations*

		PD2019ExpPercent	Math2019MAP
PD2019ExpPercent	Pearson Correlation	1	.032
	Sig. (two-tailed)		.476
	<i>N</i>	513	495
Math2019MAP	Pearson Correlation	.032	1
	Sig. (2-tailed)	.476	
	<i>N</i>	495	496

Figure 6

*Scatter Plot of 2019 Mathematics MAP Scores by 2019 PD Expenditure Percentages*



### Analysis of 2019 Mathematics data

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA and mathematics MAP scores for the **SY 2019**?

Null: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019**.

There was no statistically significant correlation between district-level professional development expenditures in SY 2019 and district-level student achievement mathematics MAP scores in SY 2019,  $r(493) = .032, p = .476$ . District-level professional development expenditures statistically explained 0.1% of the variability in the student achievement mathematics MAP scores, thus the researcher failed to reject the null hypothesis.

## Summary

The statistical analysis and findings of this study investigating the possible relationship between increased spending in district-level professional development expenditures and district-level student achievement scores in ELA and mathematics on the MAP test for the SY's of 2017-2019 were presented in this chapter. Two null hypotheses were tested:

H<sub>01</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores.

H<sub>01a</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2017**.

H<sub>01b</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**.

H<sub>01c</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**.

H<sub>02</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores.

H<sub>02a</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level

student achievement as measured by mathematics MAP scores in **SY 2017.**

H<sub>02b</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018.**

H<sub>02c</sub>.: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019.**

Statistical significance was noted with regard to the relationship among ELA MAP scores and district-level professional development expenditures in the years of 2017, 2018, and 2019. There were no other statistically significant relationships among the questions researched or null hypotheses tested. Chapter Five will present a summary of findings, recommendations for future research on the tested topic, professional implications, and conclusions to the data.

## CHAPTER FIVE

### CONCLUSIONS AND RECOMMENDATIONS

#### **Introduction**

The purpose of this quantitative, correlational study is to test the theory that increased spending in district-level professional development expenditures is related to district-level student achievement scores in ELA and mathematics. In the process of collecting data on these two variables, the researcher was able to determine whether a relationship exists between increased spending in district-level professional development expenditures and district-level student achievement scores in ELA and mathematics. Chapter Five will discuss the significance of these relationships and the recommendations that follow. This chapter includes a summary of the research questions and corresponding null hypotheses, a summary of methods, findings, implications for educational practices, and recommendations for future research.

#### **Research Questions**

Through the examination of data collected through the DESE MCDS public portal the following questions were answered:

##### RQ1

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores?

RQ1a. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2017**?

RQ1b. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**?

RQ1c. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**?

## RQ2

What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores?

RQ2a. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2017**?

RQ2b. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018**?

RQ2c. What is the relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019**?

## **Null Hypotheses**

H<sub>01</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores.

H<sub>01a</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2017**.

H<sub>01b</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2018**.

H<sub>01c</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by ELA MAP scores in **SY 2019**.

H<sub>02</sub>: There is no statistically significant relationship between a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores.

H<sub>02a</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2017**.

H<sub>02b</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2018**.

H<sub>02c</sub>: There is no statistically significant relationship of a school district's professional development expenditures and district-level student achievement as measured by mathematics MAP scores in **SY 2019**.

## **Summary of Methods**

The stated research questions and hypothesis were examined through a quantitative analysis, using a Pearson Product-Moment Correlation (Pearson correlation coefficient) to investigate the relationship, if any, among the professional development expenditure amounts and the computed percentage of funds spent on professional development, per Missouri public school, and the relationships to the student achievement outcomes on the MAP for ELA and mathematics during the school years 2017, 2018, and 2019. Data for this quantitative, correlational study were obtained by using MoDESE's open access Missouri Comprehensive Data System (MCDS) portal and written data requests through MoDESE's website. The MCDS system allowed for the researcher to obtain district-wide MAP achievement data for the school years of 2017, 2018, and 2019. MAP achievement data that was received were English Language Arts and mathematics for the specified years for all public-school districts in Missouri.

Data was also obtained from a written DESE request included professional development expenditure code 2214 found on the Annual Secretary of the Board Report (ASBR) the total instruction expenditure code 1999, found on the ASBR, for school years 2017, 2018, and 2019. This is the same data that can be retrieved manually from the MCDS portal. This data was divided to compute a percentage spent on professional development during the years of the study. All data utilized in the study was public knowledge and therefore did not require any special permissions to be used, thus reflecting the impact upon a budget in a percentage rather than total dollars spent. The researcher uploaded the spreadsheets into SPSS

statistics software and utilized a Pearson product-moment correlation coefficient test to measure the strength and direction of the relationships among the two variables. Pearson's correlation coefficient,  $r$ , determined sufficient data through the interpretation of the SPSS report.

### **Summary of Findings**

The purpose of this quantitative, correlational study was to examine the relationship between district-level professional development expenditures and district-level student achievement as measured by ELA and mathematics MAP scores for the school years of 2017, 2018, and 2019. The researcher attempted to determine if there was a statistically significant relationship between the two variables. Through the use of SPSS statistics software, a Pearson product-moment correlation coefficient test was utilized to measure the strength and direction of the relationship(s) among the two constant variables. Pearson's correlation coefficient,  $r$ , determined sufficient data through the interpretation of the SPSS report. The following sections provide explanation of findings and how each research question was addressed.

#### **Research Question 1**

The Pearson  $r$  coefficient and  $p$  values for Research Question 1 (RQ1), and sub-questions RQ1a, RQ1b, and RQ1c, were  $r(497) = -.111, p = .013$  in the year 2017,  $r(497) = -.209, p = <.001$  in the year 2018, and  $r(496) = -.192, p = <.001$  for the year of 2019. Based on the results, found in table 7, in 2017 there was a negative relationship between the variables and the correlation was significant at the 0.05 level (2-tailed) and the district-level professional development expenditures

statistically explained 1.2% of the variability in the student achievement ELA MAP scores, thus the researcher rejected the null hypotheses  $H_{01a}$  due to the p-value is less than .05.

Table 7

*Pearson r Correlation Research Question 1 SY 2017 ELA: Correlations*

		ELA2017MAP	PD2017ExpPercent
ELA2017MAP	Pearson Correlation	1	-.111*
	Sig. (two-tailed)		.013
	<i>N</i>	499	499
PD2017ExpPercent	Pearson Correlation	-.111*	1
	Sig. (2-tailed)	.013	
	<i>N</i>	499	499

\*. Correlation is significant at the 0.05 level (2-tailed).

Table 8 illustrates in 2018 there was also a negative relationship and the correlation was significant at the 0.01 level (2-tailed) and the district-level professional development expenditures statistically explained 4.4% of the variability in the student achievement ELA MAP scores, thus the researcher rejected the null hypotheses  $H_{01b}$ .

Table 8

*Pearson r Correlation Research Question 1 SY 2018 ELA: Correlations*

		ELA2018MAP	PD2018ExpPercent
ELA2018MAP	Pearson Correlation	1	-.209**
	Sig. (two-tailed)		<.001
	<i>N</i>	499	499
PD2018ExpPercent	Pearson Correlation	-.209**	1
	Sig. (2-tailed)	<.001	
	<i>N</i>	499	499

\*\*. Correlation is significant at the 0.01 level (2-tailed).

In Table 9 the data demonstrated that there was also a negative relationship for 2019 data and the correlation was significant at the 0.01 level (2-tailed) and the district-level professional development expenditures. This statistically explained 3.7% of the variability in the student achievement for 2019 ELA MAP scores thus the researcher rejected the null hypotheses  $H_{01c}$ .

Table 9

*Pearson r Correlation Research Question 1 SY 2019 ELA: Correlations*

ELA2019MAP	Pearson Correlation	1	PD2019ExpPercent
	Sig. (two-tailed)		-.192**
	<i>N</i>	499	<.001
PD2019ExpPercent	Pearson Correlation	-.192**	1
	Sig. (2-tailed)	<.001	
	<i>N</i>	498	513

\*\* . Correlation is significant at the 0.01 level (2-tailed).

In all three years of study there was a negative relationship between district-level professional development expenditures and district-level student achievement as measured by ELA MAP scores for the school years of 2017, 2018, and 2019; meaning, as professional development expenditures were increased, the student achievement levels actually went down.

### **Research Question 2**

The Pearson  $r$  coefficient and  $p$  values for Research Question 2 (RQ2), and sub-questions RQ2a, RQ2b, and RQ2c, were  $r(493) = -.014, p = .759$  in the year 2017,  $r(493) = .012, p = .791$  in the year 2018, and  $r(493) = .032, p = .476$  for the year of 2019, explaining 0.2% of the variability in the student achievement in 2017 mathematics MAP scores, as can be seen in Table 10.

Table 10

*Pearson r Correlation Research Question 2 SY 2017 Mathematics: Correlations*

PD2017ExpPercent	Pearson Correlation	1	Math2017MAP
	Sig. (two-tailed)		-.014
	<i>N</i>	514	495
Math2017MAP	Pearson Correlation	-.014	1
	Sig. (2-tailed)	.759	
	<i>N</i>	495	495

, The variability in 2018 only explained 0.1% of the study. This can be represented through the  $r$  coefficient and  $p$  value found in Table 11.

Table 11

*Pearson r Correlation Research Question 2 SY 2018 Mathematics: Correlations*

PD2018ExpPercent	Pearson Correlation	1	Math2018MAP
	Sig. (two-tailed)		.012
	<i>N</i>	514	495
Math2018MAP	Pearson Correlation	.012	1
	Sig. (2-tailed)	.791	
	<i>N</i>	495	495

The variability of the study was explained at 0.1% in 2019. The weak relationship represented by the data can be found on Table 12.

Table 6

*Pearson r Correlation Research Question 2 SY 2019 Mathematics: Correlations*

PD2019ExpPercent	Pearson Correlation	1	Math2019MAP
	Sig. (two-tailed)		.032
	<i>N</i>	513	495
Math2019MAP	Pearson Correlation	.032	1
	Sig. (2-tailed)	.476	

Based on the results of the data there were no statistical relationship(s) between district-level professional development expenditures and district-level student achievement as measured by mathematics MAP scores for the school years of 2017, 2018, and 2019; meaning, as professional development expenditures were increased, the student achievement levels had no statistical relationships pertaining to mathematics. Thus, the researcher failed to reject the null hypotheses  $H_{02a}$ ,  $H_{02b}$ , and  $H_{02c}$ .

### **Discussion**

Prior chapters within this research stressed the importance of professional development and the quality of the teachers that educate our students. The researcher based this quantitative correlation study on Walberg's Theory of Academic Achievement. Walberg's theory claimed that the quantity and quality of instruction a student receives (Walberg, 1980) does affect a student's immediate environment and directly influences their educational outcomes (Reynolds & Walberg, 1992). Other prominent researchers have also made the claim that quantity and quality matters. Hattie (2003) stated that, "We should be asking where the major source of variance in student's achievement lie. Teachers can account for a staggering 30 percent of variances among a student's achievement at school making expenditures related to teacher quality very significant and we should concentrate on enhancing these sources of variance to truly make the difference (pg. 4)."

The literature review of this study seems to be contradictive to the results of the study itself. Darling-Hammond et al. (2017) claimed that in order for districts to be

successful, they must continuously provide and nurture opportunities that will support the desired quality of the educator. Park et al. (2019) supported this notion by stating that a highly qualified teacher(s) will demonstrate quality pedagogy and utilize effective instructional strategies. According to Mammadov and Cimen (2019) a highly qualified teacher is defined as someone that encompasses strong professional and pedagogic aptitudes that are focused on the improvement of a student's learning environment, which enables an increasingly successful learning process. Superior professional development nurtures a climate that supports opportunities for teacher and supports collaboration of the organization (Jensen, 2016; Darling-Hammond et al., 2017; Donohoo & Katz, 2017). Therefore, the results of the study seem inconsistent with popular researchers' beliefs.

In conjecture with the opinions of well-known and respected researchers, there must be some merit to the beliefs of such researchers. Thus, the inconclusive results of this study may still be in the support of developing and investing in quality educators in order to acquire higher student achievement levels. The amount of resources spent on professional learning may not be a complete representation of the quality of the professional learning that educators receive (Osborne et al., 2019). Consequently, still making the variance of the teacher and the quality of the teacher to be an imperative indicator of student achievement. However, the research questions that were designed for this study were focused on the professional development expenditure themselves and not of the quality of that professional development itself. Precise, internationally known, researched based, practical professional learning strategies should be used to gain a more desirable student outcome (Marzano, 2007).

The most impactful limitation of this study is believed to be Senate Bill 287, (2005) which installed a provision to Missouri school districts requiring them to a standard of spending 75 percent of 1 percent of their state formula revenues on professional development annually. This stipulation caused many school districts to spend the minimum 75 percent of the 1 percent instead of an amount proficient to the district's professional development needs in order to save money. The research in this study did not account for the impact that this provision may have had on the results. When verifying this hypothesis, it is seen that the majority of Missouri school districts, for the years of the study, rarely spent over the 1% minimum that is required by law (SB 287, 2005). Further research related to this topic could allow for further research among the districts that fund professional development at higher levels and seek out their plans that are specific to the needs of the district instead of a set percentage of funds to be spent as a common practice. Another limitation that occurred during the study that may have had an effect on the results was that ASBR coding and professional learning decisions at the district level are not all uniform. While there are many thresholds put into place to ensure equity and quality to the coding systems of school districts, there is still various variables that cannot be identified or controlled. This variance will be very hard to design out of future studies; however, it is a limitation that I feel is needed to fully understand the possible results.

For further methods of research, it may be beneficial to examine the data in this study with a different lens of study. The data could be discerned in a manner that would disseminate the lower performing school districts and the higher performing school districts. The researcher could then develop a deeper understanding of what each of those

groups are doing similar to each other and also examine their dissimilar attributes related to their professional development practices. All the data utilized within this study could be used for such an investigation. This would allow for a researched explanation of what high-performing Missouri school districts as well as lower-performing school districts are doing.

Further research, such as what has been suggested, would allow for further support of the theoretical framework for this study. In Walberg's Theory (Walberg, 1980), the quantity and quality is mentioned. This study really only tested one of these variables. I believe that Walberg was correct when he stated that professional development will in fact effect the immediate environment and directly influence our student outcomes (Reynolds & Walberg, 1992).

### **Implications for Educational Practice**

The results of the study were unexpected to the researcher, there are a few professional implications that can be quickly identified by the negative relationship between district professional development spending and student achievement scores in ELA alongside the results from the mathematics MAP scores. There were no statistical relationships indicated by the Pearson  $r$  coefficient between district professional development spending and student achievement scores for the subject of mathematics. However, the study was broad in the scope of the variables studied. Researchers could infer that studying all school districts in the state would allow for any overarching trends in relationships among professional spending and student achievement scores, however there are many strategic budgetary practices that could have impacted the results of the study.

The 30 percent variance (Hattie, 2003) that a teacher possesses in the educational process should be maintained and protected. This study does promote the opinion that Missouri school administration should focus on the quality of the professional learning that they provide instead of the cost (within budgetary limitations). The results of this study did not directly support this statement nor the hypothesis of the researcher, it did clarify how professional development expenditures should be categorized. The reader should view the data of this research as contradictory to the original notion of the researcher, which initially set out to explain the importance of investments in professional learning. However, the investments were interpreted with a monetary value in the initial hypotheses. The results conversely developed an example of data that might define the investment as the “actual” learning that takes place in the professional development opportunity, not the amount spent on the learning. Therefore, while rejecting the majority of the original null hypotheses, the results can still be inferred to support the original theoretical framework of the study.

### **Recommendations for Future Research**

After completing the study, there are many opportunities for continued research on the topic that was examined. The researcher recommends further research within the actual funding sources of the professional development framework at the organizational level and how they may interact with the relationship(s) to student outcomes. This research could be designed in a manner that would identify specific quality/research proven professional learning opportunities/practices and their effects on student learning outcomes. The monetary advantages/disadvantages could be researched specifically through the lens of the quality of the “actual” professional learning. The 2017-2019

school years could still be used for the study and the same academics thresholds if the researcher was able to identify the variables such as types and quality of the training.

Another opportunity for extended research pertaining to this study, is the possible future effects created by RSMo Section 168.021, which implemented on August 28, 2022. RSMo Section 168.021 allows for full certification for teachers or teacher candidates who do not pass the Missouri Educator Gateway Assessment(s) (MEGA) if they have good evaluations and recommended by the district for the certification being sought (RSMo 168.021.1(3)(b)b.(ii) i-iii). Section 168.021 could have an impact to this study in regards of using professional development as a means of developing teacher candidates choosing to take advantage of this new law and track the student achievement levels taught by those identified teachers throughout their certification pathway.

School districts that did show a positive relationship between an increased practice of higher professional learning expenditures and their student's achievement outcomes need extra research. It is much easier to recognize the reasons behind polar opinions of resource allocation, referenced in the literature review, after the study took place. It is very easy to become disoriented within the study due to the abundant variables that can be in play with student and teacher variances.

Another opportunity for research that this study could lead towards is the outlying data points found among the data. There are several school districts that showed higher percentages of spending in the realm of professional development, yet remained to show little to flat student outcome data. Such a trend seems to lead me to believe that further research at the district-level needs to occur. There could be several reasons for such a phenomenon. One thought is that the district could have had previously low scores and

they were required to spend a higher amount on professional development. This would explain the lower scores after higher percentages of resources expended.

A deeper understanding of what is occurring within the data also seems needed. I believe that the higher professional development expended school districts and the higher functioning school districts can be examined. This may lead to a deeper qualitative study, which may include the decision-making process of what professional development was chosen and why, the perception of the chosen professional development, and possibly the ability of the district to fully implement the initiative.

Consequently, the study, while it was trying to develop a current temperature of professional learning spending habits of the entire state's public schools, was statistically designed as a very broad piece of research in order to address the research questions within the research. The relevant need to understand and define the actual professional learning that is to be utilized by a district seems to be much more significant than that of which is spent on professional development. Therefore, the study leaves many research opportunities as "low lying fruit" for other researchers.

## **Summary**

This study focused on the relationship between increased spending in district-level professional development expenditures and how it may have been related to district-level student achievement scores in ELA and mathematics on the Missouri Assessment Program (MAP). Educators cannot control the variances that students arrive within our schools across the world. However, the teacher is approximately 30 percent of the variance of a student's education (Hattie, 2003). Environmental and cultural factors play an intracell role in the quality of learning

that a student has access to. This can include the quality of educator that teaches them. This study was polarizing in the researcher's opinions. It was originally inferred that the more money that was invested into an educator may create higher achievement test scores. However, in the context of this study's research questions, it actually determined, in this case, school district's that had higher professional development expenditures actually had showed there was a negative relationship between the variables and the correlation was significant at the 0.05 level regarding the achievement of students. Further research into the effects of professional development and what types of professional development are actually effective in increasing student achievement scores is still believed to be an imperative step towards effectively stewarding tax payer money, but further research is needed to suggest student outcomes.

The gap in literature filled by the study, related to the contention that higher levels of spending in resources and/or professional development generates higher student achievement scores, is that PD spending did not show a close relationship to student achievement within this study's parameters. The body of research in the field of district-level expenditures specific to professional development and student achievement in Missouri can still be examined as either resources matter, or resources may not affect student achievement. It is still believed, by many researchers, that professional learning may have a direct influence on student achievement outcomes, more research is needed to establish a deeper understanding of professional learning and its effects (Williams, 2016).

The researcher's purpose for this study was to determine whether or not there was a significant relationship between professional development expenditures and student

achievement. However, in the quest test this theory, I found that the study did not support these claims. The research questions were developed to test Walberg's Theory of Academic Achievement where it is believed that professional development expenditures are directly related to district-level student achievement scores through the quantity and quality of instruction a student receives (Walberg, 1980). Reynolds and Walberg (1992) claimed that a student's immediate environment directly influences their educational outcomes. In order to fulfill the purpose of this study, additional research need to be designed. Otherwise, it is the researcher's conclusion that the relationship between professional development expenditures and student achievement outcomes have little to no relationship that is useful in determining how to spend professional development monies.

Although the study did not explicitly support that spending directly affects student achievement in Missouri, it does not disqualify that resources, such as professional development, may have other positive effects on the framework of public education. The theoretical framework for this study was centered on Walberg's Theory of Academic Achievement. The research questions presented within the study intended to focus on the claim of Walberg's Theory, that a student's immediate environment is directly influenced, thus producing effects on their educational outcomes (Reynolds & Walberg, 1992). However, at the completion of this study, I continue to inquire about another portion of Walberg's claim stating that the quantity and quality of instruction a student receives may be the reason for the direct influence instead of the cost of that instruction (Walberg, 1980). Thus, fully developing the need for further research.



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