THE EFFECT OF PRINCIPAL INSTRUCTIONAL CHARACTERISTICS ON THE ACADEMIC GROWTH OF LOWER SOCIOECONOMIC STUDENTS

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Submitted to the Department of Educational Leadership and Policy Studies and the Faculty of the Graduate School of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Education

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Abstract

As states move to include assessment data to be used in principal evaluations, there is a debate as to whether the principal has an effect on student achievement. Research on the principal in the past started as qualitative studies and moved to quantitative studies to identify specific behaviors in a principal that led to greater student achievement. Modifications and refinements to the research have been performed; however, mixed results have allowed the debate to continue.

The purpose of this study was to investigate the effect of principal instructional management characteristics on the growth of lower SES students. Utilizing the Principal Instructional Management Rating Scale (PIMRS) (Hallinger, 1983), 128 teachers in a single school district rated the principals of their building. Results of the principals in these nine schools on the PIMRS were used as predictor variables for the normed growth of the lower socioeconomic status (SES) students on the Acuity® Predictive assessments.

The findings of this research was that only one characteristic of the principal had an effect on the growth of the lower SES students. The characteristic of protecting instructional time showed a -0.177 coefficient meaning that as a principal protected instructional time with more frequency, growth of academic scores in lower SES students decreased.

Dedication

This dissertation is dedicated to the bravest person I know, my son, Charlie. Through all his adversity in his young life, he still laughs daily and reminds me of what is important. It is because of him that I found the strength to keep going when I felt like this would be an impossible task. Little did I know when I started this journey three years ago how my life would change, and it is because of my son that I found the focus and strength to persevere.

Acknowledgements

I would like to thank several people for helping me see my goal come to light. First, I would like to thank Dr. Rick Ginsberg, my dissertation committee chair for his constant suggests and tireless reading to help bring the ideas and tables to the words on the page. This dissertation would never have been finished with the quality in it without his encouraging efforts.

To Dr. Argun Saatcioglu, who helped me through many classes to choose my idea early in the coursework, to refine the idea, and to keep pushing me to find the right method of analyses. His encouragement and gentle pressure helped me to stay focused and on track to complete the dissertation within three years.

I would also like to thank the University of Kansas doctorate cohort for educational leadership and policy studies of 2009. Their friendship has meant so much to me in these last three years, and their debate of educational policy has allowed me to constantly re-examine my educational philosophy.

Finally, I want to thank Dr. Daniel Lewis, lead researcher for Acuity® at CTB/McGraw-Hill. His encouragement and helping me to figure out reliabilities got me back on track and helped me to complete my analyses.

Table of Contents

1.0 Introduction 1

1.1 Statement of the Problem 1

1.2 Overview of the Study 3

1.3 Limitations of the Study 4

1.4 Significance of the Study 6

1.5 Purpose of the Study 7

2.0 Review of Literature 9

2.1 History of the Principal 9

2.2 Previous Research on the Principal and Student Achievement 14

2.3 Critiques of Leadership and Student Achievement Research 18

2.4 Arguments for the Principal Affecting Achievement 21

2.5 Connection between the Principal and Culture 25

2.6 Connection between Culture and Achievement 28

2.7 The Gap between Lower Socioeconomic Status (SES) and Higher SES 29

2.8 The Dimensions of Leadership 31

2.9 Summary 37

3.0 Data and Methodology 39

3.1 Data Used 39

3.2 Sample 40

3.3 Procedures 41

3.4 Acuity® InFormative Assessment 43

3.5 Principal Instructional Management Rating Scale 44

3.6 Variables 48

4.0 Results 53

4.1 Summary 59

5.0 Conclusions and Recommendations 60

5.1 Results 60

5.2 Discussion of Findings 60

5.3 Discussion of Limitations 68

5.4 Discussion of Conclusions 70

5.5 Discussion of Practical Implications 72

5.6 Future Research 73

5.7 Summary of Conclusions 75

References 77

Appendix A 88

Appendix B 94

Appendix C 96

List of Tables and Figures

Figure 2.1 – Research Levels of Leadership 1880-2010 17

Figure 2.2 – Research Levels of the Principal and Student Achievement 1980-2010 18

Figure 2.3 – Ouchi Grid of Organizational Control Types 26

Figure 2.4 – PIMRS Leadership Dimensions 34

Table 3.1 – School Demographic Data 41

Table 3.2 – Reliability Results of the PIMRS 47

Table 3.3 – Variables Used in the Study 49

Table 3.4 – Federal Guidelines for Free and Reduced Lunch Eligibility 52

Table 4.1 – Principal Characteristics Regression Analysis Results 54

Table 4.2 – Regression Models of the PIMRS Characteristics – Individually 58

1.0 Introduction

1.1 Statement of the Problem

Since the beginning of modern K-12 education in America, the principal has been a key member of the school community. Beginning as the "principal" teacher in the school, this person was in charge of hiring and management of staff, management of the budgets, and the management of the students. The role of the principal became formalized near the turn of the 20th century as principals started professional organizations. From that movement, the principal's role in the building remained fairly stable for nearly seventy years. The role of the principal began to change in the mid-1970s and became very public in the mid-1980s. With the release of "A Nation at Risk" (1983), school principals were no longer considered "good" just because there were few management problems in the school. Principals were also expected to be instructional leaders and produce effective schools. This role strengthened under Goals 2000 (1994) in the Clinton administration, and most recently, became high stakes under the No Child Left Behind Act (NCLB) of 2002. With these three actions of the federal government, schools were expected to run smoothly and also to perform academically to imposed accountability standards.

The issue with the principal was that the role morphed from just being a building manager to an instructional leader while still handling all the managerial duties within the building. Principals, in many cases, were held responsible for the success or lack of success of a building as defined by the assessments given within the states. This led to a

daunting and almost nearly impossible task given the guidelines set forth by NCLB (2002) to have 100% of the students proficient on the state tests by 2014. Not only did a school have to achieve academically overall, it also had to have each subgroup within that school perform at the same minimum level to close what was deemed the "achievement gap" or the difference in the percent of students performing at proficient, between all subgroups.

Historically, one subgroup of students that typically performed lower than other students were the free and reduced lunch status students or those students from lower socioeconomic status (SES) (Coleman, et al., 1966; Sirin, 2005; Caldas & Bankston, 1997). These students underperformed for many reasons including lack of support at home, lack of academically enriching experiences outside of school, lack of basic necessities not being met, or limited parental experience with higher education (Sirin, 2005; Barton, 2003; Okpala, et al., 2001). It is not that these students cannot learn but instead that they typically come to school academically behind their higher SES peers due to one or several of the reasons already listed. In this case, it is up to the teachers and the principals to try to close the achievement gap.

Study of the linkage between student achievement and the principal began in the late 1970s and early 1980s. These studies used qualitative methods in order to find out what were some common things about principals in successful schools (Edmonds, 1979; Bossert et al, 1982; Bridges, 1982). One of the flaws with these studies was that there was little agreement as to what comprised a successful school (Biester, et al, 1984). Critics of this work claimed that principals were just too far removed from the students to really affect achievement (Murphy, 1988). Quantitative studies built on the work of this

qualitative research to attempt to find a linkage between specific characteristics of a principal and the achievement of students (Glasman, 1984; Cuban, 1984). Again, the results were inconclusive, and so the debate about whether the principal affected student achievement continued.

1.2 Overview of the Study

This research will contribute to the study of student achievement and the principalship. It will investigate the relationship between the instructional management characteristics of principals and the academic growth of lower socioeconomic status students as defined by free and reduced lunch status. In addition, this dissertation will aid districts in identifying specific qualities for hiring principals in school buildings with a higher rate of lower socioeconomic status students. Specifically, this study will look at the relationship between teachers' ratings of their principals on the Principal Instructional Management Rating Scale (PIMRS), as developed by Hallinger (1983), and the Acuity® assessment scale score normed growth of students on free or reduced lunch status within a suburban Kansas City, Missouri school district. Using data from 2009-2010, a regression analysis was conducted to find if there are instructional management characteristics in school principals that effect growth in students of lower socioeconomic status.

The design of this study included the framework set out by Leithwood and Maschall (2008) where a survey was given to teachers and the results were used compared to student achievement. A survey was given to a sample of teachers in all of the elementary schools within the district of study. This survey, developed by Hallinger (1983), is known as the Principal Instructional Management Rating Scale (PIMRS).

These teachers were asked to rate their principals on ten different categories of instructional management by the use of five different questions for each category. The results were then aggregated to give an average category score for each principal.

These scores were used as a predictor in a multiple regression analysis for the outcome of normed growth for the lower SES students within the principal's building. The normed growth was used to replace the achievement scores that previous studies used (Glasman, 1984; Heck, et al. 1991; Leithwood, 1994). The purpose of using growth scores instead of achievement scores was due to the historically lower scores by lower SES students (Coleman, et al., 1966; NAEP, 2011). The use of growth scores helps to show the effect of the principal and other variables on students' achievement rather than the background from which the students come. This method was designed to show that a principal can have an affect on the students through actions such as influencing the culture of a school, hiring of teachers, and monitoring of academic goals even though the principal was not in a classroom teaching students. The model controlled for variables such as for student background, principal factors, and building demographics.

1.3 Limitations of the Study

There are four main limitations to this study regarding the effects of the characteristics of principals on the academic growth of lower SES students. These will be discussed in further detail in chapter four. The first was the use of only one district. Results and conclusions from this study may not be generalized to all districts. While the use of one district does help to account for differences in the needs, culture, and resources between districts, a larger number of schools from a variety of districts would help to increase the reliability of the study.

The second limitation was a lack of the randomized assignment of students whose test scores were used and teachers that rated their principals. The scores came from the lower SES students that lived in the area of the school. The teachers were not taken from a pool of teachers and then randomly assigned to the schools. The lack of randomization limits the true experimental design; therefore, some of the students and teachers may have more experience with the principal than others.

The third limitation was the PIMRS tool. The tool was designed to find levels of principal instructional management characteristics and track them over time. The tool was not designed to make a value judgment. According to Hallinger (2008), the characteristics measured in the instrument do not imply that more of a trait is better. The ratings must be looked at as a treatment for a particular school. Therefore, a higher rating for a principal on a particular characteristic's frequency may mean it was the correct amount for that school to function more efficiently.

The fourth limitation was that it was not done over several years in order to make general conclusions about principal characteristics. This study was completed using a single year of achievement data and perceptions about the principal. There may have been confounding factors in each school or in the events surrounding the school year that could have influenced the data. A longitudinal study of the results of both the principals' characteristic scores and the student growth scores would help to make generalizations about the regression results for other schools. While multi-year results could be difficult due to an unmatched cohort of principals, teachers, and students, longitudinal results would help to mitigate any outliers in the data.

1.4 Significance of the Study

The literature on leadership focuses on theories like situational leadership (Blanchard, et al, 1985), contingency theory (Feldman, 1976), transformational leadership (Tichy & Ulrich, 1984), servant leadership (Greenleaf, 1977), transactional leadership (Burns, 1978) and others, but these theories never directly address the whole matter of the effectiveness of any particular style. Recent scholarship on the various frames of leadership (Bolman & Deal, 2011) and the large literature on instructional leadership also do not focus on specific effectiveness measures. With the growing significance of student academic performance highlighted by NCLB (2002) and other state and federal demands, this research is significant because it focuses on the impact of the principal on the effectiveness of students, as measured by a performance growth model.

There is a debate as to whether the principal matters for the achievement of students in the classroom. One side would say that there is little evidence to suggest that the principal matters in the academic achievement of the students (Murphy, 1988; Bridges, 1982). These researchers would say either the principal is too far removed from the classroom or that the research done on this matter is not conclusive because of the different approaches to studying the subject. The other side argues that the principal has an impact on the academic achievement of his or her students (Heck, 2000; Marks & Printy, 2003). These researchers would say that there is a measureable affect even though it may be an indirect influence. This study attempts to resolve these issues by using a tool to identify principal behaviors and analyze their effects on academic growth.

Furthermore, while research has previously examined the link between the

principal and the school's achievement as a whole, little has been done to investigate individual subgroups within the school. This research examines one subgroup within the school. This subgroup is the lower socioeconomic status (SES) students as defined by the No Child Left Behind Act (2002) for free and reduced lunch. According to this act, it is expected for all subgroups to perform at a minimum proficiency level. This research will look at the behaviors of the principal that will encourage greater academic growth in these students because of a history of achievement disparity between lower SES students and higher SES students (NAEP, 2011).

Finally, while achievement levels have shown a gap between lower and higher SES students (NAEP, 2011), this research is significant because it uses a normed growth to measure effectiveness rather than just an achievement level. While students may come to school at different academic achievement levels, a more fair evaluation of what the school's effect on the student is a growth measure. The normed growth takes into account that students at an initial lower achievement levels have more room to growth than those at a higher one.

1.5 Purpose of the Study

The purpose of this study is to add to the discussion on the connection between the principal and student achievement. The study utilized the a subset of the entire student population and used a growth measure rather than achievement levels on only one assessment. This study explored if leadership not only affected student achievement in lower SES students, but also which characteristics of a principal had the greatest impact on the academic growth of these students. Therefore, this study set out to answer two questions. The questions were:

1. Do a principal's instructional characteristics have an effect on the academic growth of lower SES students?
2. What specific instructional characteristics of a principal have an impact on academic growth?

What follows examines previous literature, methodology, results, and conclusions related to the principal and student achievement. Chapter 2 reviews the prior literature starting with the history of the principal and continuing on to discuss the prior research regarding the link between the principal and student achievement. Following the review of the previous research, there is a review of the critiques of the research of principals' effect on student achievement and the arguments for the connection between the two. There is also a review of the literature on the connection between the principal and school culture and between school culture and student achievement. Finally, chapter 2 reviews the literature about why students of lower SES typically perform lower on standardized achievement tests.

This review sets the stage for the methodology section in chapter 3 to describe the data and methods used to analyze the data. Chapter 4 describes the results from the research to answer the two research questions guiding the study. Finally chapter 5 discusses the conclusions and contributions to the literature.

2.0 Review of Literature

There has been a debate among researchers as to whether or not principals affect the achievement of students in schools. One side claims principals are too far removed from the classroom to make a direct contribution (Witziers, Bosker, & Kruger, 2003) while others, like Hallinger (2008), Heck (2000), Leithwood (2006), argue that leadership definitely matters and has an effect on student achievement. This review of the literature will cover why people began studying the principal and the previous studies that attempted to link the characteristics of the principal with student achievement. This literature review will also show that while some may say there is no direct connection with the principal and student achievement, there is a connection between the principal and school culture and that school culture has an impact on student achievement.

This review of the literature will also show that there is a gap in the study of the principal and student achievement. For the most part, large studies have only been done when taking into account the entire student body. This review will highlight the need for this study to focus on the subgroup of lower socioeconomic status students as defined by the No Child Left Behind Act of 2002 with the status of free or reduced lunch. It will also show that the principal is connected to student achievement through the influence on school culture.

2.1 History of the Principal

In order to understand the effectiveness of the principal and his or her relationship to student achievement, it is important to review the evolution and goals of the position. While teachers are directly linked to the achievement of students, the principal does not

have the same sustained and direct contact with students in the classroom. Nevertheless, the importance of the principal for student success is widely accepted. As Kafka (2009) argues, “A growing body of literature suggests that there is a discernible relationship between school leaders’ actions and student achievement” (p. 318). This brief history will examine how the principalship originated and why it is not a foregone conclusion that the principal affects student achievement.

Historians have not typically examined the rise of the position of principalship due to a focus on the political or institutional history of schools (Kafka, 2009). For this reason, either the principal was not considered as part of district level leadership or not in the classroom dealing with the direct education of the students. Therefore, in some senses, it is only in the last three decades of the 20th century that the principal began showing up in the literature to study principal effectiveness and student achievement. As Rousmaniere (2007) asserts, it was as if the principal did not exist. There is some research that would suggest that the position of the principal informally rose to its current position in the school due to the nature of a lead teacher developing into a manager and then evolving into an instructional leader (Brown, 2005; Cuban, 1988; Rousmaniere, 2007).

In the last half of the 19th century schools in cities began growing beyond the one or two teacher model and these larger schools were exposed to the need for clerical type work in order to run the day-to-day operation of the school buildings. The schools identified a “principal teacher” in order to maintain the school building and that person was almost always a male teacher (Kafka, 2009). This teacher eventually lost teaching

responsibilities to focus full time on being a building administrator. By the end of the 19th century, in most of the major cities, the role was institutionalized in that no one questioned the need for or the role of the principal with official duties and power in the school community. Some superintendents even went as far as calling the principal the chief reason for a school's individual success (Pierce, 1935).

One of the official roles of the principal included being an effective building manager, but their duties extended beyond this role. It was at the turn of the 20th century that principals were even relieved of some of their clerical duties in order to spend more time in the classrooms observing teachers and providing support for teachers who were either new or lacked proficiency in one area or another (Pierce, 1935). By the late 1800s, the principalship looked very similar to the position and responsibilities that people associate with the principalship today. With the changes that have occurred in society, both nationally and internationally, the basic grammar of schooling, including structure and leadership, has, "remained remarkably stable over the decades" (Tyack and Cuban, 1995, p. 85).

Principals moved to legitimize their roles by forming professional associations. For example, in 1916, they formed the National Association for Secondary School Principals (NASSP) and in 1921 the National Association for Elementary School Principals (NAESP). Both organizations came under the umbrella of the National Education Association (NEA) which helped give the role of principals a formally recognized power and position (Principal, 1996). With this legitimized power, principals could operate as professionals within the larger bureaucracy of large school systems. So

it developed that school systems became, “large bureaucracies without strict bureaucratic controls” due to having a professional principal running the schools (Rowan, 1990, p. 355). Through this professional position, principals could loosen the association with the district in order to get the changes and programs they desired for their school. This enabled the principal to have an extraordinary amount of autonomy because the principal was legitimate enough to be considered a professional from both the teachers and leaders of the district. According to Kafka (2009), “The notion that principals were independent was essential (p. 321).” As the bureaucracies of school systems increased, so did the autonomy of the principals where the principals had less connection with the district office and more control over their respective schools.

Today the principal role has become more political than ever before (Knapp, et al., 2003). Growing in importance since widespread compulsory education legislation in the early part of the twentieth century, students were forced to be in the classrooms, and schools replaced churches as the major source for socialization and Americanization of immigrants (Kafka, 2009). Principals had to do more in a building besides being a good manager to define their success. As summarized by the Institute for Educational Leadership (2000):

> Being an effective building manager used to be good enough. For the past century, principals mostly were expected to comply with district-level edicts, address personnel issues, order supplies, balance program budgets, keep hallways and playgrounds safe, put out fires that threatened tranquil public relations, and make sure that busing and meal services were operating smoothly. And principals still need to do all those things. But

now they must do more (p. 2).

A major change in the perception of the principal started in the 1980s with the release of “A Nation At Risk” (1983). This report argued that American schools were failing to prepare students to become competitive in a global workforce. The reason “A Nation At Risk” said this was happening was due to failures in teaching and learning. The principal was part of the solution to make sure the teachers were competent in the academic disciplines. Most recently, the role of the principal has been influenced by the NCLB Act (2002) which is the guiding student achievement and accountability legislation in the United States, at least until 2014 (Jennings & Rentner, 2006). This act forced schools to examine achievement for all students, whether aggregated for a school district or as members of subgroups within the district and schools. For those schools that did not make adequate yearly progress towards the goal of 100% proficiency in math and language arts by 2014, sanctions including changing the principal have been and can still be enacted (NCLB, 2002). Driven by research on school effectiveness (Hallinger & Heck, 1996; Stoll & Fink, 1996) principals had to become the “principal instructional leader” in schools, especially under NCLB (2002) due to highly publicized consequences for schools that are not performing. Some research suggests that 25% of the variability in student achievement is influenced by the principal (Kafka, 2009).

Thus principals, while starting as teachers, have evolved over time into leaders with variable roles. First they were essentially neglected in the literature in terms of effectiveness and achievement because there was little thought to the connection with students. Over time, however, the role of the principal became more managerial and professional. With this review of the past, it is clear that the principalship has evolved.

Now more than ever before the principalship is seen as key for the success of a school and that the role is important for student success (Leithwood, 2008).

2.2 Previous Research on the Principal and Student Achievement

Narrowing the focus from the study of the principal to the connection between the principal and student achievement, this section will focus on the past research done in an attempt to determine the effect of the principal in a school building on the achievement of the students. Also key characteristics of the principal regarding student success are examined.

The factors influencing student achievement have been debated and researched with greater sophistication over the last forty years. Early attempts to find out how students achieve at higher levels began with case studies. These studies looked at the school as a whole and did little to delineate what specific factors could be translated into success for the individual student (Weber, 1971; New York State, 1974). Venezky and Winfield (1979) started looking at principal and teachers' expectations as part of the factors that influence student achievement but showed that students could perform beyond expectations. In the late 1970s, researchers attempted to define the potential link between the principalship and the achievement of students. These studies spawned from the research done in the business sector to attempt to find leaderships' role in profitability (Bass, 1963; Bowers and Seashore, 1966). This naturally evolved into how the principal of a school could increase student achievement. Exploration into leadership effects on student achievement showed mixed results because the basis for leadership in the business sector assumed the principal has a connection to test scores just as earlier

researchers connected leadership styles to profits within a company. Research in the late 1970s began mostly with qualitative studies of a principal and his/her role in being the instructional leader of the school (Edmonds, 1979; Bossert et al., 1982). These and other contemporary studies looked at the role of the principal and the style that the principal exhibited. They found that there might be a connection with certain characteristics of the principal and student achievement and that strong leadership, according to their different definitions, made a difference.

The early case studies evolved into more in depth qualitative and ethnographic studies focusing on specifics of principal effectiveness (Donmoyer, 1985; Dwyer, Lee, Rowan, and Bossert, 1983). These researchers searched out lower performing schools that made large gains over a relatively short amount of time and looked at the instructional leadership style of the principal. Their findings showed that principals who were strong instructional leaders and focused on making teachers have clear objectives with high expectations usually showed the largest gains in student achievement. The main role of the principal, according to these studies, was to function as a buffer in that he or she would set the boundaries for teaching and then keep everything else away from the teachers in order to enable them to do their work. While these studies showed a mixed relationship for student achievement, with some reporting a very strong relationship and others showing little or no relationship, the shortcoming was that the focus was only on the principal as the locus of leadership in a building with disregard for the complexity of the role of the principal as a manager, collaborator with teachers, and a partner with parents (Bossert et al., 1982; Bridges, 1982).

These studies were followed by more quantitative designs that limited the

concerns about bias and replicability in the earlier studies. Thus began the attempts at quantitatively measuring leadership and its influence on student achievement. One problem that researchers faced was creating a measureable definition of effective leadership and comparing the results to measureable gains in student achievement (Biester, et al, 1984; Glasman, 1984). Cuban (1984) tried this type of comparison but admitted that the results were limited and showed little or unreliable connection due to a key shortcoming of almost all the previous studies. All of the prior research only used one year of data to complete their correlations or interpret their findings; therefore, findings could not be generalized due to the specific nature of the data to the study.

This early research, however, did provide a contribution to the research community in identifying the importance of principals. However, the conceptualization of the principal evolved since researchers began studying the role and better measures came out of these studies (Hallinger, 1992). Leithwood, Seashore Louis, Anderson, and Wahlstrom (2004) pointed out the shortcomings of the previous research focused on the style of the leader but not the components or practice. They advocated that it is the practice of the principal that makes him or her successful. With the identification of this inadequacy, a few researchers began to identify behaviors of principals to measure the connection to success (Hallinger, 1983; Hallinger & Murphy, 1985).

The behaviors these researchers started to define began to get at the complexity of the life of the principal (Hallinger & Murphy, 1986). While a principal was a manager of the building, he or she also helped to set academic direction, hire staff, and serve as an instructional leader. Therefore, some of the contributions a principal made to the achievement of students were indirect (Heck, 1993). Some of these contributions to

improve student achievement were framing goals for the school, setting the goals, and sustaining the goals (Heck, et al, 1990). Heck's research (1993) went on to show that more flexibility and collaborative decision-making with the principal resulted in higher student achievement. While these behaviors did not directly impact instruction to the students, the principal had a profound influence over outcomes for all students.

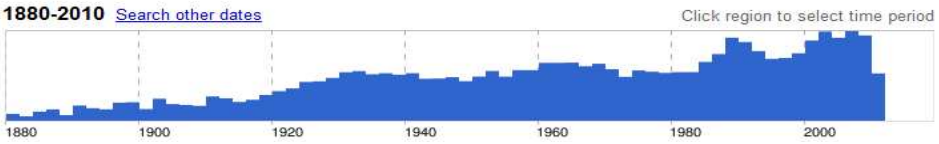
Research on the principal, however, was not the beginning of the focus on leadership. In the business world, as in the field of education, researchers have been debating and explaining the benefits of focus on the leader of an organization. In a recent Google search of the archives of news articles and research on April 24, 2010, the following graphs were produced to show the overall increasing interest in the topic since 1880.

600,000

300,000

0

Figure 2.1 Research levels of leadership 1880 – 2010



A simple search of articles on "leadership" (Figure 2.1) produced 4,010,000 results over the last 120 years. The highest result in one year's time was 589,000 in 2006 (news.google.com/archivesearch, 2010). When the search was narrowed to the principal

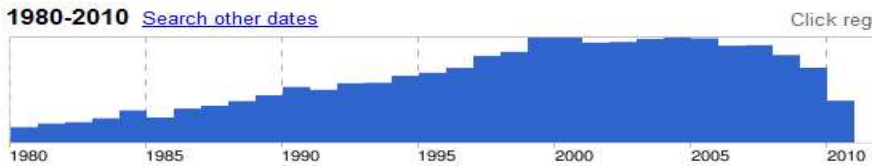
and student achievement (Figure 2.2), results indicated a significant number of articles appeared since 1980 (38,100 articles) with the highest year in 2000 (1,070 articles) (news.google.com/archivesearch, 2010). This search in Figure 2.2 was narrowed to 1980 because only a small amount of research was done prior to that. What these two graphs show is the ever increasing research in the leadership over the last 100 years and the spike in research for the principal and student achievement beginning around 1980 and peaking in 2000. The decline after 2000 may be due to the research and enactment of NCLB in 2002.

1,100

550

0

Figure 2.2 Research levels of the principal and student achievement 1980 – 2010



In summary, the early attempts at making a connection between the principal and student achievement began as an extension of research in the private sector where the leader could be connected to profitability. When educational researchers looked at this issue, they used qualitative methods because they had not operationalized school

leadership or exact quantitative measures by which to evaluate student achievement. As quantitative researchers tackled this issue in the early 1980s, they started to identify characteristics of leadership and measures of student achievement or success. As Figures 2.1 and 2.2 show, research examining the principal and student achievement has grown significantly over time and especially in the last thirty years.

2.3 Critiques of Leadership and Student Achievement Research

While the sophistication and complexity of the study of the connection between the principal and student achievement has increased over the last almost half century, there has always been a critique of this research and its findings. A review of all this historical literature led to some mixed findings regarding the link to student achievement. While looking at the leadership as a whole, some researchers have been skeptical about the direct influence the principal has on the achievement of students. A direct link between the school building-level leadership and student achievement on a large scale has remained elusive (Witziers et al, 2003). With that in mind, methodologies have looked to understand the levels of interaction and influence by the school's leadership on student achievement (Hallinger & Heck, 1996). This led to confusion in the research because leadership became a nebulous idea. Previously, there was no agreement on the concept of educational leadership (Pounder, Ogawa, & Adams, 1995), leading to inconsistencies in the research.

Through a review of the literature of the late 1970s and early 1980's on school leadership (Leithwood & Montgomery, 1982), the effective principal came to the forefront as an instructional or educational leader who affects school climate and student achievement. In Leithwood and Montgomery's (1982) appraisal of research, a study of

effects on student achievement cannot be done without looking specifically at the principal of a building. With the reported mixed results in student achievement from Leithwood and Montgomery's review (1982), it was those schools with an effective administrator that showed success in student achievement. However, these findings were juxtaposed to other researchers and their analyses of the research. Murphy (1988), for example, critically analyzed many of the same material and came up with different results. Murphy claimed that the research failed to show that the principal even mattered when it came to student achievement. His contention was that the principal of a building was so far removed from the classroom that his or hers efforts could not be made to show an effective connection.

Other critics of the research on the connection between the school's leadership and student achievement have taken a variety of approaches in their studies and, therefore, achieved mixed results when the studies were replicated (Bridges, 1982). In more recent times, many are not denying that there is a connection between the principal and student achievement, but they wonder how much and to what extent the connection occurs. Leithwood and Jantzi (2000) argued that the effects of the principal are difficult to measure because the effects are largely indirect. Results also change from study to study even when the results show a positive connection. The problem is that the size and effect of the leadership results are not consistent across the research (Hallinger & Heck, 1996; Hallinger & Leithwood, 1994).

What are some of the reasons for these mixed results? Part of the confusion could be the lack of rigor in the studies or the absence of common methodologies (Heck & Hallinger, 2005). Another explanation for the divergence is the incorrect application of

the theoretical models of studying the principal and student achievement; however, even where the correct models were used, there were applications of wrong analytics to study the issue which yielded uneven results (Hallinger & Heck, 1996). Also, Hallinger and Heck (1996) cited problems with overly simplistic statistical analyses, faulty questionnaires, and differing definitions of administrator effectiveness. Another explanation in the differences in results was due to the cultural context of the leadership because different schools had different situations and, therefore, different leadership needs (Heck, et al, 1991). One of the limitations of the prior studies was that there was limited academic achievement evidence especially for low income or minority students (Snipes, Doolittle, and Herlihy, 2002). This confusion for how to study, what to study, and how to analyze the effects of the principal on student achievement can inhibit future study on the topic because of the variance of the research methods (Heck and Hallinger, 2005). Witzier, et al (2003) gave probably the best summation of the critique of the research on the connection between the principal and student achievement. They argued, "Given the divergence in these results, the question of whether school principals matter remains unresolved" (p. 399). In summary, the research examining the relationship of the principal and student achievement has some distinct flaws. These flaws include centering on the lack of common language and measurement while more recently these flaws involve the disconnection between the principal and the students and the lack of replicability of results across studies.

2.4 Arguments for the Principal Affecting Achievement

This section will explore the argument for researching the connection between the principal and student achievement as it looks at issues of school improvement and

effective schools in spite of the prior studies. Even with some mixed and contradictory results, research is showing that a principal can influence the culture of a school and can influence the achievement of students (Heck & Marcoulides, 1996). One of the reasons why this topic has continually been researched is the attempt by policy makers to justify and correct apparent gaps of student achievement among different groups and prescribing a corrective action to deal with the problem from an administrative perspective (Organisation for Economic Co-operation and Development, 2001; NCLB, 2002). Nonetheless, through primary analyses or meta-analyses, researchers have found little *direct* connection between leadership and student achievement. Witziers' study (2003) reported an average effect (reported as *z* score) of 0.02 which suggests practically no relationship. To help solve a potential problem, Pitner (1988) identified five theoretical approaches to studying administrator effects on student achievement. They include: direct-effects, moderated-effects, antecedent-effects, mediated-effects, and reciprocal-effects models. Many of the researchers adopted one of these alternate models to identify different dimensions of leadership that can be measured and compared to student achievement (Leithwood, Seashore Louis, Anderson, and Wahlstrom, 2004; Robinson, Lloyd, and Rowe, 2008; Waters and Marzano, 2006).

Taking this form of the indirect connection model and dimensions of leadership, results have, in some cases, shown a moderate to strong relationship to define the relationship between the principal and student achievement. Robinson, Lloyd, and Rowe (2008) discussed this in their analysis of differential effects of leadership types. They identified five sets of leadership dimensions that impact academics outcomes. They include: establishing goals and expectations; resourcing strategically; planning,

coordinating, and evaluating teaching curriculum; promoting and participating in teacher learning and development; and ensuring an orderly and effective environment. With these, mild to moderate effects were found in some of the leadership set dimensions regarding student achievement (Heck, 2000; Griffith, 2004; Marks & Printy, 2003).

What does the principal then do for the school that would lead one to believe there is a connection between the principal and student achievement? The principal sets the academic tone or climate that enables the full effect of teaching to take place. The principal is paramount in defining what the mission is of the school, managing the instructional program including hiring and evaluating teachers and ensuring the fidelity of the curriculum delivery, and promoting the climate of the school in all areas. (Hallinger & Murphy, 1985). The principal can also be the catalyst for improving enthusiasm for academic programs (Keller, 1998). Great principals are visible to the students and teachers to promote high expectations while also evaluating their needs. With this knowledge, direction can be given as to the types and extent of professional development needed at a particular building. This directly influences the pedagogy of teachers and indirectly affects the quality of instruction for students. Principals that are most effective in these efforts are the ones that use their central authority to decentralize power to make meaningful, positive changes in a school. These principals utilize distributed leadership with lead teachers. Basically, the more formal leadership the principal gives away, the more they obtain influence over the instruction of students (Leithwood & Mascall, 2008).

However, a shortcoming of this research shows that it only examines the effect of leadership on the school's student achievement as a whole. Only more recently has

research addressed differentiation in student populations and achievement (Organisation for Economic Co-operation and Development, 2001) as well as the effects of leadership dimensions on student achievement. This research, however, fails to address whether certain types of leaders are more effective working with students of different backgrounds. In the era of school accountability and NCLB, certain segments of a school's population cannot be ignored even if the school as a whole is achieving at a high levels due to sanctions placed upon schools for achievement gaps of their sub-populations. This achievement gap exists in a school where one group (usually majority) is achieving at the specified level while another group (usually a minority based on ethnicity or socioeconomic status) is achieving below the standard on a collective scale.

Another shortcoming of this research is the focus on the achievement levels of students and not taking growth of students into consideration. While students come from a variety of backgrounds, the use of a growth measure examines what happens within the building for the academic year (Heck, 2000). Heck (2000) argued that individual states, at that time, were beginning to include growth as part of the considerations for teacher effectiveness. One possibly fairer way to look at a school's effectiveness would be to use a value-added approach, where expected achievement based on prediction is compared to actual achievement, or a growth approach, where a pre- and post-test difference is utilized. When looking at achievement levels only, a school could appear less effective because the composition and past history of its students are not taken into account (Willms & Kerckhoff, 1995). Little research has been done in this area, especially as it pertains to examining student achievement for subgroups. With the recent rewarding of

Race to the Top grants (2010) an inclusion of a growth model must be used in teacher and principal evaluation. While growth models and value-added models offer promising approaches to more fair evaluations of schools, these approaches still need to be tested further especially when it comes to high stakes decisions like teacher and principal evaluations (Baker, et al, 2010; Martineau, 2006)

In summary, recent research looking at the connection between the principal and student achievement did not yield many positive results because the unit of analysis had not been operationalized at a narrow and specific level. Once researchers started to identify measurable traits of the principal, the link between the principal and student achievement showed a mild to strong connection. However, this research tends to look at the student body as a whole and rarely has research examined specific student populations or if there is a need for specificity in the characteristics of a principal that would be more effective in enhancing student performance.

2.5 Connection between the Principal and Culture

With the critique of former studies of the principal's effect on student achievement due to an indirect connection between the principal and the student, it still remains that there may be connections between these variables. The bridge between the principal and student achievement may be the culture of a school. The culture of a school could be defined as a system of thinking throughout the school that influences what people do and how they plan in the building (Engels, et al, 2008). Culture is defined as the deep values and structure that guide a school (Heck, et al, 1996). Perhaps Schein (1990) explained it best when he described culture as the concept that envelopes the

beliefs and values of any organization. As the leader of the school and its "principal teacher," the principal is likely the one individual that has the most influence on the culture of a school. While there are many other factors that influence culture, no other resides in a single position (Heck, 2000). The principal directs the hiring of staff, the review of teacher performance, and the evaluation of programs held within the building in many school districts to different degrees. The principal is also paramount in setting a clear mission for the school. This mission guides the school in it practice and goals, and the principal helps to monitor and direct attainment of those goals. In this way the principal has a keen influence in the school's effectiveness (Hallinger, et al, 1996).

It is this direction by the principal joined with the organizational theory of loose coupling (Weick, 1976) that would help to define the relationship between the principal and the teacher and the principal with the district's central office. Weick (1976) saw loose coupling as the relationship between trusted professionals. His theory was that as a bureaucracy becomes more complex with the professionals, there is a greater amount of trust and autonomy given to employees. On the opposite, the more micromanaging the central office does, there is less trust and tighter coupling. Ouchi (1980) combined the idea that there is greater trust and autonomy when all the employees within an organization (including principals and teachers) have a common purpose, traditions, and common values and beliefs. Ouchi defined this as the clan mentality for organizational control. In the Figure 2.3, Ouchi's work outlines which organizational control is most effective for different situations.

Figure 2.3 Ouchi Grid of Organizational Control Types

Performance Ambiguity

Goal Incongruence

(Opportunism)

As Ouchi explains (see Figure 2.3), there are three types of organizational control that are tied to goal incongruence and performance ambiguity. As goal incongruence or opportunism increases, it gives rise for the idea that people have different goals in an organization and that can lead to individual advancement. As performance ambiguity increases, it allows for people to try different ways beyond the accepted approach to achieve a goal. In a bureaucracy, for example, an individual may have a goal different from others in the organization for completing a task and have a lot of freedom in which to achieve that goal. In a market, there would be more set parameters on how that goal could be achieved.

In school districts where the school building is loosely coupled from the school district office, there is little opportunity for job advancement for teachers in a building and the teachers' evaluations are subjective to the principal of that building. Weick (1976) would have described this condition of loose coupling when the teachers were given decision-making abilities. There would be less oversight and more autonomy given to a person considered to be more effective (effective in terms of reaching the stated goals) which would make for a more loosely coupled organization. An effective principal would define the goals in terms of student achievement and view the teachers as professionals. This would engender trust from the employees because the principal would allow teachers to do what they need to do without strict oversight and loosely couple the organization within the school. In this paradigm, the principal's most effective control is

that of “clan” where the principal creates opportunities for team building and trust among the staff (Peterson, 1984).

In summary, the principal can affect the culture of the school by providing the leadership and common vision. The common vision would permeate the entire school and allow every action to work towards achieving that goal for the common good. Ouchi (1980) would describe the organization where the principal rallies everyone to focus on the achievement of the student as a “clan” mentality. Due to the loose coupling between the district office and the principal, all teachers within the building have the common goal set by the principal with little need for strict oversight to do what needs to be done. In this regard, the principal has a most profound affect on the culture of a school.

2.6 Connection between Culture and Achievement

With the teacher being the instructor in the classroom, it is only logical to assume that a teacher has a profound affect on the education and academic success of the students in that classroom. While examining the academic success of students, researchers have asked what variables, in addition to teachers, affect student achievement. School culture is one such variable. Numerous studies have been conducted to explain the connection between academic achievement and culture of a school (Erikson, 1987; Lipka, 1994; Hoy, et al, 2006). However, there has been a debate as to exactly what culture is and how is it different from school climate. There have been differences in definition and considerable overlap that ranges from differing methodological approaches to philosophical operationalizing of the terms (Denison, 1996). Climate is defined as the relatively temporary perception of the social organizational environment (Denison, 1996). This is to say that climate is a lot like the

mood of an organization that can change relatively quickly depending upon extraneous factors. Culture, as shown previously, is defined as the beliefs and values of the school, teachers, and students in the system (Schein, 1990). In more basic terms, it is the reason and way people do things in a school. The culture of a school can be positive or negative.

Culture creates a mindset in the teachers and students that instruction and experiences happen on purpose and that there is a deeper meaning to them. When the culture is positive, teachers can view themselves as agents of change, and culture increases the efficacy of the teachers (Lipka and McCarty, 1994). That increase in teacher efficacy increases the students' belief in their own efficacy which leads to increased achievement. However, as mentioned before, the culture of a school can have a negative impact on the attitudes and achievement. Where there is cognitive dissonance between teachers and students by way of expectations not clearly being defined, students can engage in resistance (Erickson, 1987). This culture, unless systematically changed, keeps students from learning from the teachers not because of lack of ability but due to a resistance based on principle. In order to enact a positive change in culture, transformation of routine educational practice is essential. In this regard, expectations of the students and teachers must be clear, and they must speak the same language at all times (Erickson, 1987). In the research done by Halawah (2005), principals that had the culture of greater communication with the school, increase achievement within the school. Therefore, there is a direct and positive relationship between the culture in a school and the achievement of its students (Halawah, 2005).

In summary, the way a school is set up has an impact on how the students will achieve. What teachers believe about themselves and their efficacy has a profound effect

on how students believe they will achieve. That belief is impacted by the culture of the school. This general, overall feeling within a school has either a positive or negative impact on the academic success of its students. Culture, therefore, may be a reason for student success.

2.7 The Gap between Lower Socioeconomic Status (SES) and Higher SES

As a result of the No Child Left Behind Act of 2002, schools were forced to look at different subgroups of students and close the achievement gap between them. Students from the lower socioeconomic status (SES) subgroup, historically, have performed below their peers overall (NAEP, 2011). Most recently "The Nation's Report Card" (2011) from the National Assessment of Educational Progress (NAEP) showed that while the gap for reading has closed in four states, it is widened in seven other states since 2003. Why exactly there is a gap in achievement because of socioeconomic status of a student is something that researchers have been examining for years. While there is a philosophical disagreement regarding the conceptual meaning of SES, agreement about the components of SES comes from Duncan, Featherman, and Duncan's (1972) definition. They identify three branches of SES that include family income, parental education, and parental occupation as the main indicators of a family's status. Individual states set standards for SES and most schools adhere to these standards by identifying students in their schools as a part of lower SES by those that are eligible to receive free or a reduced price on school lunch. Family SES, however, helps to set the foundation for academic achievement by providing support, resources, and the necessary social capital for future success (Sirin, 2005). For the purposes of this paper, students of lower SES will be defined by eligibility for free and reduced lunch which is the general definition used in

research (Harwell & LeBeau, 2010).

Schools also with a high percentage of low SES students (low SES schools) appear to be different in achievement and attitude than schools with a low percentage of low SES students (high SES schools). In a qualitative study by Brown, et al. (2004), teachers in low SES schools had a more adversarial role with the principal than those of higher SES schools. They believed that they were alone in the classroom with limited support because the principal is locked away in his or her office much of the time. When curriculum in low SES schools is presented to the teachers, teachers typically do not agree with the imposition on their classroom because it is not what the teachers think the students need. Another possibility is that the teachers think students cannot live up to the expectations of the curriculum and tend to make the content easier for students so that the students feel like a success in their academic endeavors (Brown, et al., 2004). Because of these types of dissidence issues between teachers and principals, as well as the many challenges facing students from low SES, more and more focus needs to be given to the achievement gap. However, since the passage of the No Child Left Behind Act there has not been a significant decrease in the achievement gap even though that is one of its main goals (Mintrop, 2009; NAEP, 2011). Students of lower SES background fight an uphill battle when viewed as a group. Many researchers agree that it is not because of lack of ability but due to lack of availability and access to resources and support (Coleman, et al., 1966; Tate, 1997).

In summary, there are many factors including those of the student background and the relationships within schools that help to determine why students of lower SES achieve lower on standardized tests than their higher SES peers. While researchers have

attempted to examine this relationship, the NCLB law mandates that all students need to achieve at certain academic levels regardless of background, and that there should be a significant closure of the gap in achievement.

2.8 The Dimensions of Leadership

As mentioned previously, the dimensions of leadership of a principal have become the standard by which recent studies examine the role of the principal. These studies provide a blue print for future research and how these dimensions can be used to define effectiveness when it comes to the connection between the principal and student achievement. In a meta-analysis of the previous research, Robinson, et al. (2008) identified five overall dimensions of leadership on which most of the twenty-two studies they analyzed focused. These five dimensions included establishing goals and expectations; strategic resourcing; planning, coordinating, and evaluating teaching and the curriculum; promoting and participating in teacher learning and development; and ensuring an orderly and supportive environment. According to Robinson, et al (2008), a sixth dimension of interpersonal skills would naturally be included. It would be understood that without that particular skill, the other five dimensions of leadership would not be effectively deployed due to a principal's need to relate to teachers and promote a trusting environment. The following is a definition and a brief overview of each of the dimensions.

Dimension 1: Establishing goals and expectations – This dimension includes the setting of goals, communicating those goals, and the monitoring the implementation of those goals. While controlling for all the background factors, clear directions and setting of academic goals allows students and teachers to have purpose in the classroom with

benchmarks for measurable progress towards the goals (Heck, et al., 1991). Principals at low performing schools are found to not have academic excellence as one of their top five goals for the school (Goldring and Pasternak, 1994).

Dimension 2: Strategic resourcing – This dimension includes the principal's selecting and allocating resources aligned with the priorities of teachers in his or her respective building. This also includes the resource of expertise from teacher recruitment. This dimension is important because it can limit how ambitious an academic goal buildings set due to the limitations of the staff (Brewer, 1993).

Dimension 3: Planning, coordinating, and evaluating teaching and the curriculum – While many would argue that all principals are involved in these areas, this dimension takes into account the direct involvement of the principal in evaluating teachers including frequent classroom visits and providing formative and summative feedback. Also important is the direct oversight of curriculum and coordination of its implementation across the building both within grade levels and between grade levels. These principals and their staff work together to review and improve teaching throughout the building. This dimension explores the idea of shared instructional leadership (Marks and Printy, 2003).

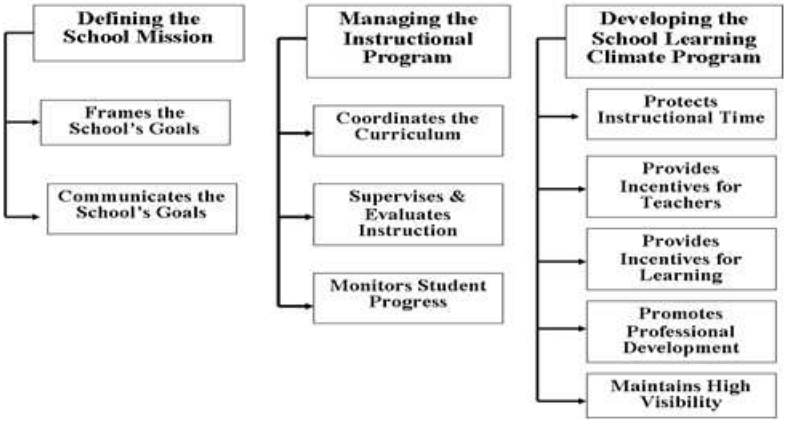
Dimension 4: Promoting and participating in teacher learning and development – This is where the principal directly promotes and participates with teachers in formal or informal professional learning. These principals are the "first learners" in their buildings. Research shows that when student background factors are controlled, the more that teachers report the principal to be an active participant in teacher learning and development, the higher the report of student outcomes (Andrews & Soder, 1987;

Bamburg & Andrews, 1991).

Dimension 5: Ensuring an orderly and supportive environment – This dimension involves the ability of principals to manage and support factors around teaching. This would include protecting time for teaching and learning by reducing external distractions and interruptions. The dimension also includes the principal's ability to establish an orderly and supportive environment both inside and outside classrooms. In one study that surveyed teachers, parents, and students (Heck, 2000), reports were consistent across all three groups that the more positive the reaction to the extent to which they felt safe, comfortable, and cared for, the higher the quality of the school and the higher the student achievement levels.

The dimensions, identified by Robinson, et al (2008), play into the works of Hallinger (1983) and Heck (2000) for the purposes of this study. Hallinger proposed using a survey of the characteristics of teachers in order to determine the activity in ten different categories of instructional management characteristics. He worked, both alone and collaboratively, to show that these characteristics had a link to the achievement of the students (Hallinger, 1983, 2005, 2008; Hallinger & Heck, 1996, 1998; Hallinger and Murphy, 1985). As part of his original works, he developed the Principal Instructional Management Rating Scale (PIMRS). This was first done by Hallinger alone in 1983 and refined with Murphy in 1985 (Hallinger & Murphy, 1985). This survey of teachers was divided into ten categories, and these categories covered three dimensions of leadership as shown in Figure 2.4 (Hallinger & Murphy, 1985).

Figure 2.4 – PIMRS Leadership Dimensions



The goal of this survey was to determine what specific behaviors affect instructional management. Hallinger and Murphy (1985) reported in their initial findings that the content validity of each characteristic of the principal was at least 0.80 among a group of raters and Cronbach's Alpha reliability of at least 0.75. These reported findings were intended to show the frequency of the characteristics and not to imply effectiveness (Hallinger & Murphy, 1985). Numerous studies have been done using the PIMRS tool in order to link these behaviors to student achievement (Hallinger, 2008). Hallinger found in his initial hypothesis with Murphy (1985) that success of a principal depends on conditions and definitions of goals. What Hallinger argued in each of his studies was that the principal and leadership mattered (Hallinger & Heck, 1998). The principal helped to set the vision, carry out the vision, select staff, motivate staff, monitor achievement, and

make necessary changes. Hallinger's work from 1983 through 2012 has been to research how the dimensions of the principal have had an effect on the students and the school in general.

Heck (2000) examined the impact of school quality on school outcomes. This study used value added measures in order to study effectiveness rather than the use of achievement scores. Value added takes into account a school's differences, including size and demographics as control variables, and attempts to determine, using the historic scores of the student, how much value a school added to a student's educational experience. Value added is similar to a growth measure because it is not just a snap shot of an achievement level but a measure that uses achievement over time to report results. Value added compares performance to predicted performance, while true growth measures can be a simple subtraction of a past achievement level from a more recent one. Heck argues that value added would be a better measure of school performance than just achievement scores, yet this method is not used often because of the complexity in explaining it to parents and policymakers. Heck's research (2000) attempted to find a more equitable way to compare schools. Indeed, this research used this finding to attempt to find a more equitable way of comparing students rather than just achievement levels.

However, use of value-added measures is not without scrutiny. Value-added must use a vertically scaled test, and some researcher question whether two tests can measure the exact same thing (Martineau, 2006). Also, value-added depends on the random assignment of students (which almost never happens in a school district, or does not take into account what happens outside of the school such as enrichment activities with parents, family resources, and influence of neighborhood peers) (Baker, et al, 2010).

Researchers and psychometricians feel very uncomfortable using these measures as a sole indicator of teacher or school effectiveness or for high stakes decisions (Baker, et al, 2010).

In summary, using primary research and meta-analysis, researchers have found that links may be made between the principal and student achievement when the researchers used specific characteristics of the principal. Hallinger (1983) developed the PIMRS specifically to show the frequency of the characteristics of principals. These characteristics can be categorized in five dimensions of the principal which are establishing goals and expectations; strategic resourcing; planning, coordinating, and evaluating teaching and the curriculum; promoting and participating in teacher learning and development; and ensuring an orderly and supportive environment. These broad categories of characteristics of principals influence how teachers view their principals' abilities.

2.9 Summary

The beginning of American formal education in the 1900s included movement of the principal from a teacher with administrative duties to becoming a formal position in a school. Principals grew to become more than managers of buildings to part of the educational experiences of students. As businesses in the 1970s started to see profitability tied to leadership, researchers attempted to do the same with the principal and student achievement. These early attempts only had moderate success because of non-standardization of research terms and methods. Over time specific characteristics of principals were identified and used to measure the effect of the principal's efforts on

student achievement. As these characteristics were identified, analysis of the research showed there are certain characteristics that matter most when it comes to student achievement. Research in the last twenty years has examined levels of achievement for categories of students. The student achievement variable has been modified recently to look at the principal's effect of value-added rather than just the levels of achievement.

This research will build upon the studies by Hallinger (1983, 2005) and Heck (2000). They found that to study the principal, individual behaviors must be identified and that using value-added measures is a more equitable way to compare the effectiveness between schools, but value-added measures have numerous shortcomings. Using the model of growth of student achievement along with specific principal characteristics, this study examines a specific subgroup of the students, specifically lower SES students. Controls for building factors such as population size, principal experience, and student demographics are taken into account.

This literature review also shows that the research on the principal's effect on student achievement has two gaps. First is the focus on students in the lower SES subgroup. While overall student achievement is a concern, recent laws require attention to subgroups as well. Very few of the prior studies specially examine this population. Second is the focus on student growth. With the literature examining students from lower SES backgrounds showing lower achievement, many of those reasons for lower achievement do not have to do with the school a student attends.

3.0 Data and Methodology

This dissertation will research the following questions:

1. Do a principal's instructional characteristics have an effect on the academic growth of lower SES students?
2. What specific instructional characteristics of a principal have an impact on academic growth?

To answer these questions, this research will examine the ratings of the principals on the Principal Instructional Management Rating Scale (PIMRS) and their effects on the normed scale score growth of the Acuity Informative® assessments created by the CTB/McGraw-Hill Corporation while controlling for school, principal, and student demographic variables.

In order to do this study, an *expos facto* or causal-comparative design was used where students were not randomly assigned to schools within a district. Also, no specific treatment was performed, but instead the participants were from a medium-sized suburban school district in Kansas City, Missouri. This research examined if the teachers' assessment of the instructional management of their principals in the elementary schools of this district had an effect on the academic growth of the students in the single NCLB subgroup of free and reduced lunch students. The results of the instructional management ratings were used in a regression to predict the normed growth of lower SES students while controlling for student background, school, and principal factors.

3.1 Data Used

The data included the ratings, by teachers, of each elementary principal on the

PIMRS in a suburban school district within Kansas City, Missouri. These data were collected from a 39% sample (128) of the 330 elementary teachers. These data also included individual level student achievement data, in the form of scale scores, from the Acuity® Predictive Assessments given in that district three times within a year which resulted in 958 individual student scores from lower SES students. These data were provided upon request from the director of research, evaluation, and assessment from the 2009-2010 school year. The school district is located in the northern part of Kansas City and at the time of collection had approximately 10,200 students. There are nine elementary schools that participated in this study. The participation of only these schools, and not across several districts, helped to control for curricular, district climate, quality of staff, and resources differences between districts.

3.2 Sample

The participants of this study were broken into two groups. The first are the students that qualify for free and reduced lunch in grades 3 through 5. These students were chosen because they all take the same assessment across the district in the nine different elementary schools. The demographic and descriptive data for these schools can be found in Table 3.1. This tables shows the averages for each school for raw growth scores, normed growth scores, enrollment of the school, percent of students on free and reduced lunch, percent of the students who were non-Caucasian in the school, and the years of experience of the principal. These data were used for the analyses discussed in chapter 4.

The second group of participants was the elementary teachers within these nine elementary schools who completed surveys about their principals. These are not a

selection of the teachers based on subject matter or specialty areas within the schools but a random cross-section of the entire school. This included a total of 128 teachers across all the schools assessing their principals with an average of 14 per school and a range of 12 to 17.

Table 3.1 – School Demographic Data

School Code
Average Raw Growth
Average Normed Growth
Enrollment
Low SES Percent
Percent Minority
Principal Experience
S1
16.04
0.0709
522
28.7
27.0
9
S2
24.73
0.12
534
31.0
25.1
6
S3
32.625
0.1686
444
23.1
12.2
9
S4
26.64
0.1065
493
22.1
18.5
1
S5

19.24
0.0818
563
19.2
25.4
1
S6
30.16
0.1446
532
19.8
19.9
3
S7
24.47
0.0888
492
34.6
35.0
12
S8
48.79
0.2103
469
41.2
33.5
6
S9
13.54
0.0525
483
9.9
5.8
5

This district was chosen because it historically has had high student achievement with a changing demographic from mostly Caucasian and middle income to a more diversified ethnicity and a growing population of the students that qualify for free and reduced lunch. Only students that took both the Acuity® Predictive A (the first assessment) and Predictive C (the last assessment) for language arts and mathematics

were included in the data set for this research.

3.3 Procedures

The elementary teachers within this study were taken from a 50% random selection of the 330 elementary teachers within the district by listing all teachers by building alphabetically and then assigning a number according to their alphabetical listing. All teachers with an even number were then chosen to be part of the initial invitation. The Principal Instructional Management Rating Scale (PIMRS) developed by Hallinger was delivered to this random sample of teachers by email invitation through the use of Zoomerang, the online survey tool (www.zoomerang.com). Of the 165 teachers that were invited to participate in a confidential questionnaire, 128 teachers chose to voluntarily complete the rating of their principals. The response rate was 77.6%. The teacher participants were asked to rate the instructional characteristics of their principal on a Likert scale where a 1 equaled “Almost Never” and 5 equaled “Almost Always.” (See Appendix C for a copy of the PIMRS.)

In order to find comparable data for this study, only nine elementary schools within one district were analyzed to help account for curricular differences between schools, pay differences for teachers, teacher recruiting differences, community values, different district resources, and different expectations placed on teachers from a central office. Within these nine elementary schools, 2,366 unique students took either a Predictive A or C assessment in either mathematics or language arts. For purposes of this research only the scores of students who took both a Predictive A and C in both mathematics and language arts were analyzed. This brought the number of students to 2,135 students. When limited to only students of lower SES, as defined by free or

reduced lunch, the number of students in this study was narrowed to 479 students with 958 student scores in total.

The scale score for the Acuity® Predictive A, the initial assessment, was subtracted from the scale score for the Acuity® Predictive C, the final assessment. For this study the normed growth will be $G_N = (S_L - S_i)/(S_x - S_i)$ where G_N is the normalized scale score growth, S_i is the initial scale score on Predictive A, S_L is the last scale score for Predictive C, and S_x is the highest obtainable scale score for the assessment. This formula was used because those students that start at a lower scale score for the Predictive A assessment had more opportunity to increase his or her score for the Predictive C assessment. Normalizing the score allowed for growth to be compared within the remaining opportunity to increase in score.

In order to answer if principal characteristics have an effect on the academic growth of lower SES students, a causal comparative study was done by comparing the effect of the characteristics of the PIMRS to the normed growth of lower SES students found in each building. This was done by using linear multiple regression of the predictors and the outcome. The variables for the regression can be found in Table 3.3. Layered models of the study were completed to show the effects of the different controls on the coefficients of the variables. The formula used in the regression was:

Normed_Growth = *f* (Initial Score, Principal Characteristics, Student demographics, Principal controls, School controls)

3.4 Acuity® InFormative Assessment

The Acuity® InFormative Assessments, just known as Acuity® Predictives, are a series of three predictive/benchmarking assessments created by the CTB/McGraw-Hill Corporation. These series of assessments, delivered online, creates a benchmarking tool for students and teachers to know the academic strengths and opportunities for improvement for each student in the areas of English Language Arts and Mathematics. The assessments are aligned to the Missouri state standards in order to assist in the instructional changes needed in the classroom and to predict performance on the Missouri NCLB Grade Level Assessment (GLA). The Acuity® assessments are co-scaled across the year and grade-levels. With the production of the scaled score, students and teachers are able to set measureable goals for the next administration of the assessment with the ultimate goal of enhancing the performance on the Missouri Assessment Program's (MAP) GLA. The Acuity® Predictive assessment, that takes about 30 minutes to complete, consists of between 30 and 32 multiple choice items (depending on the grade-level and subject) and two constructed response items that are graded by the classroom teacher through the use of a rubric and exemplars. The technical qualities for the Acuity® Predictive assessments can be found in Appendix B.

The school district administers the Acuity assessments three times throughout the year: September (Predictive A), November (Predictive B), and February (Predictive C). They chose these times because the data that Acuity® produces are used to modify instruction for the ultimate goal of proficiency for every student on the MAP GLA in April. The results for the Acuity assessments have been defined to the teachers as formative only in nature. Currently, results for the assessment are not used in any formal

teacher evaluation or merit pay procedures. However, the results for the assessments are used at an aggregate level for grade-level, school, and district in order to point out opportunities for improvement and to build upon current strengths. In addition, these results are used for an internal balanced scorecard for each school which contribute, in part, to a principal's informal evaluation.

3.5 Principal Instructional Management Rating Scale

The Principal Instructional Management Rating Scale is a survey tool designed and tested by Hallinger (1983). This is a survey of teachers consisting of 50 questions that cover 10 different areas of instructional management with five questions for each characteristic. The PIMRS has been in use for over 25 years, and its research was summarized by Hallinger (2008) in a paper to the annual meeting of the American Educational Research Association. At that point, the PIMRS had been used in over 100 dissertations or studies with over another 100 studies well underway. His review of the studies showed that variances in the results occurred because of statistical technical abilities of the researchers within the studies. Overall, a small but statistically significant effect on student achievement is shown which aligns to the research of Hallinger and Heck (1996, 1998), Leithwood and Riehl (2003), and Leithwood (2004) in their research of leadership and student achievement.

Originally the PIMRS was developed by Hallinger (1983) to provide a measurement of the leadership in a school building. This form of the PIMRS had eleven different categories, but after further research it was narrowed to the final ten categories. There were also parallel forms of the PIMRS developed to include a supervisor and a self-evaluation. Subsequent research found that the teacher evaluation form is the most

valid (Hallinger and Murphy, 1985; Krug, 1986; O'Day, 1984). The teacher form with ten categories has a high standard of reliability with the all categories exceeding a .80 using Cronbach's test of internal consistency (Hallinger, 1983). The categories and their explanation were included in Hallinger's work (1983) and the version 2.2 resource manual provided by Hallinger when the PIMRS was purchased for this study. The ten categories of principal instructional management are:

1. Framing the School Goals – This measures the degree to which the principal determines the school goals and allocates the resources.

2. Communicating the School Goals – These survey items measure how much the principal communicates the goals to students, teachers, parents, and the community in both formal and informal communication such as conversations, bulletins, and letters to parents.

3. Supervision and Evaluation of Instruction – This category is how the principal makes sure the school goals are being translated into practice in the classroom which involves coordinating with teachers and monitoring instruction.

4. Curricular Coordination – This category measures how much the principal makes sure the school objectives are closely aligned with the curriculum being taught.

5. Monitoring Student Progress – This set of items measures the teachers perception about how the principal collects and shares student achievement data, in a timely fashion, with the school and individual teachers.

6. Protecting Instructional Time – This is the effort of the principal to minimize interruption to instructional time such as announcements, requests from the office, and removing students for administrative requests.

7. Visibility – This is the amount of time the principal is seen which may increase interactions between teachers and students as well.

8. Incentives to Improve Teaching – This measures how much a principal provides formal and informal ways of recognizing the efforts of teachers including monetary rewards and praise.

9. Promoting Professional Development – This category asks the degree to which the principal promotes teacher's efforts to improve instruction.

10. Providing Incentives for Learning – Creating a school climate where student achievement is highly valued. This category measures how much a principal provides incentives for student achievement. The incentives can be as simple as recognition in front of peers or the whole school.

This research, as Hallinger's (1983) did, utilized a one-way ANOVA for the average responses of the teachers on the PIMRS. In order to assess the reliability, the method suggested in the PIMRS resource manual from Ebel (1951) was utilized to give an inter-rater reliability of responses. The formula to determine the reliability coefficient for each subscale is: $r_x = (M_x - M)/M_x$ where r_x is the reliability, M_x is the between-groups variance, and M is the within-group variance. The results of the reliability are in the Table 3.2.

Table 3.2 – Reliability Results of the PIMRS

	Sum of Squares	df	Mean Square	F	Sig.	Reliability
Category 1						
Between Groups						9.906

		8
		1.238
		3.335
		.002
		0.7001743
Within Groups		
		44.179
		119
		.371
Total		
		54.085
		127

Category 2

Between Groups		
		12.910
		8
		1.614
		3.194
		.003
		0.6869388
Within Groups		
		60.119
		119
		.505
Total		
		73.029
		127

Category 3

Between Groups		
		13.584
		8
		1.698
		2.938
		.005
		0.6596484
Within Groups		

		68.771
		119
		.578
Total		
		82.355
		127
	Category 4	
Between Groups		
		8.744
		8
		1.093
		1.779
		.088
		0.4379135
Within Groups		
		73.110
		119
		.614
Total		
		81.855
		127
	Category 5	
Between Groups		
		7.051
		8
		.881
		1.729
		.099
		0.4215594
Within Groups		
		60.671
		119
		.510

Total	
	67.722
	127

Category 6

Between Groups	
	12.445
	8
	1.556
	3.761
	.001
	0.7340913
Within Groups	
	49.227
	119
	.414
Total	
	61.672
	127

Category 7

Between Groups	
	18.305
	8
	2.288
	2.911
	.005
	0.6564888
Within Groups	
	93.535
	119
	.786
Total	
	111.840
	127

Category 8

Between Groups	11.409
	8
	1.426
	1.607
	.130
	0.3778314
Within Groups	105.590
	119
	.887
Total	116.999
	127

Category 9

Between Groups	7.144
	8
	.893
	1.618
	.127
	0.3820596
Within Groups	65.670
	119
	.552
Total	72.815
	127

Category 10

Between Groups	12.301
	8
	1.538
	2.478
	.016

		0.5964733
Within Groups		
		73.838
		119
		.620
Total		
		86.139
		127

The reliability of six of the ten categories is at or above 0.60. The highest reliability is Category 6, Protecting Instructional Time, at 0.734. The other four categories are near 0.40. The results of this reliability do not fall in line with the reliability measures reported by Hallinger (2008). As a follow up to this research on the PIMRS instrument, an exploratory factor analysis was performed. Using SPSS 18.0, the software automatically showed seven factors for which to group the 50 questions. After further review of the data and the Scree Plot, the data with four factors were analyzed because they were the only factors that included at least four items per category. The results with only four factors did not produce statistically significant results; therefore, the original ten categories were included in the study despite the weak reliability values.

3.6 Variables

The variables included in this study were used in an attempt to analyze the impact of the principal's instructional management characteristics on the academic growth of lower SES students. A list of the outcome, controls, and predictor variables are in Table 3.3.

Table 3.3 – Variables Used in the Study

Variable Name

Description

Outcome

Normed Growth

The normed growth of scale scores to account for differences in opportunity to growth. This is the Acuity Growth/(HOSS-Initial Score).

Controls

Initial Score

The scale score for the student for the Acuity assessment given in August and September

Final Score

The scale score for the student for the Acuity assessment given in February

Acuity_Growth

The difference of Final Score – Initial Score

Grade_Level

The grade level of the student

Minority

This is an indicator of whether or not a student is identified as Caucasian 1=Minority 0=Caucasian

Gender

This is an indicator of whether the student is male or female 1=Male, 0=Female

School_Size

Population size of the school

Percent_Minority

Percent of the school that is non-Caucasian

Percent _F/R

Free or Reduced Lunch percentage for the school

Principal_Experience

Number of years the principal has been a principal

Economic Status

Indicator of the student's participation in the Free or Reduced Lunch program 1=F/R Lunch 0=Not

Predictors

PIMRS_1

PIMRS: Frame School Goals

PIMRS_2

PIMRS: Communicate the Goals

PIMRS_3

PIMRS: Supervise and Evaluate Instruction

PIMRS_4

PIMRS: Coordinate the Curriculum

PIMRS_5

PIMRS: Monitor Student Progress

PIMRS_6

PIMRS: Protect Instructional Time

PIMRS_7

PIMRS: Maintain High Visibility

PIMRS_8

PIMRS: Provide Incentives for Teachers

PIMRS_9

PIMRS: Promote Professional Development

PIMRS_10

PIMRS: Provide Incentives for Learning

The control variables were included in order to account for differences in schools, student background, and principal factors. The rationale for inclusion of each control variable was as follows:

1. Initial Score – This variable was used to control for the starting scale score of each student. This was the scale score the students received on the Acuity

Predictive A assessment. The idea behind this was that those students that start at a lower scale score may get more intense help throughout the year and, therefore, increase their scale score disproportionately due to the use of a Response to Intervention (RtI) system used in the school district.

2. Final Score – This was not used in the regression models except to calculate scale score growth. This was the scale score the students received on the Acuity Predictive C assessment.
3. Acuity Growth – This was a simple subtraction of the Initial Score minus the Final Score. While for purposes of reporting in this study, this control was not used as an outcome variable, the Acuity Growth was analyzed for comparison purposes which confirmed the normed growth findings included in this study.
4. Grade Level – This was an inclusion of the grade level of the student in order to help account for differences between the grade levels. This student control was three, four, or five depending on the individual student's grade level.
5. Minority – To help account for historic gaps in achievement in this district, this control variable was used. A student was included in the minority category if he or she self-reported any ethnicity other than Caucasian on the enrollment form.
6. Gender – The last of the three student level control variables, this was an attempt to account for gender differences in academic growth.
7. School Size – This was the first of three school level control variables. The inclusion of this was to determine if the overall size of the school had an effect on the academic growth of lower SES students.

8. Percent Minority – This variable was used to determine if the percent of students across the school that reported themselves to be non-Caucasian had an effect on academic growth.
9. Percent Free and Reduced Lunch – This, like the percent minority control, was used to determine if the percent of students on free and reduced lunch for the entire school had an influence on the academic growth. Both this variable and percent minority measure the homogeneity of the school.
10. Principal Experience – Inclusion of this principal variable was used to help determine if the number of years the person had been a principal had an effect on the academic growth of students.
11. Economic Status – The use of this variable was not used except as a filter for the model. Only students reported by the school district as part of the free and reduced lunch program were included for this study.

Students on free and reduced lunch were used as a proxy for lower SES. The reason behind this selection was due to their historically performing lower than their higher SES peers. This can be documented as far back as the Coleman Report (1966). However, for the purposes of this study both free lunch and reduced lunch students are categorized as one group. Federal guideline from the US Department of Education Register Notice (2009) volume 74 number 58 on page 13,412 spells out the eligibility of the students for free or reduced lunch (Table 3.4). The annual income eligibility depends upon the size of the household. This is based on the federal poverty guidelines. As the number of people in the household increases, the limit for household income eligibility increases. For example, if a household of four people make less than $40,793 then the

students would be eligible for a reduced lunch in school but not a free lunch until they made less than $28,665.

Table 3.4 – Federal Guidelines for Free and Reduced Lunch Eligibility

Household Size	Reduced	Free
1	$20,036.00	$14,079.00
2	$26,955.00	$18,941.00
3	$33,874.00	$23,803.00
4	$40,793.00	$28,665.00
5	$47,712.00	$33,527.00
6	$54,631.00	$38,389.00
7	$61,550.00	$43,251.00
8	$68,469.00	$48,113.00
Each add'l family member	$ 6,919.00	$ 4,862.00

4.0 Results

A multivariate linear regression model was conducted using the SPSS 18.0 statistical software program. The data from the mid-sized suburban school district in Kansas City, Missouri were analyzed to determine if the principals' instructional characteristics, as measured by the teachers completing the PIMRS, had an effect on the growth of lower SES students on the Acuity Predictive assessments. Fifteen regression models were established in order to determine if, after the control variables were introduced, a statistically significant effect occurred on the academic growth by any of the principal instructional characteristics. These models included only the free and reduced lunch students and analysis was done on the standardized coefficients produced. Due to the nature of the PIMRS results, each category of instructional characteristics were run separately and then all together. In the final model, the statistical software excluded some of the categories of characteristics due to collinear results. Comparative models were also run on unstandardized coefficients, non-free and reduced lunch students, and all students (both free and reduced lunch and non-free and reduced lunch) compiled together. The results for these comparative models are included in Appendix A.

Question 1: Do a principal's instructional characteristics have an effect on the academic growth of lower SES students?

The purpose of the first model was to get a baseline result to compare if the initial score on the Acuity assessment had any effect on the normed growth of the students. This model did not contain any controls for student, school, or principal. The model returned an adjusted $R^2 = 0.040$ explaining that 4.0% of the normed growth on the Acuity®

Predictive assessment was due to the initial score (See Table 4.1 for full results of the hierarchical models). The initial score has a significant predictor of growth where the B = -.203, p < .001. The constant produced a significant positive coefficient of B = 0.0460, p < .001. What this indicated was that as the initial scale score on the Acuity® assessment was lower, the growth tended to be greater. For every point that the scale score decreased, the expectation was that the normed growth increased by 0.203.

Table 4.1 – Principal Characteristics Regression Analysis Results

	1	2	3	4	5
Initial Score	-0.203***	-0.254***	-0.260***	-0.254***	-0.259***
	(.000)	(.000)	(.000)	(.000)	(.000)
Grade Level	0.089**	0.104**	0.101**	0.097**	
	(.009)	(.009)	(.009)	(.009)	
Gender	0.057	0.059	0.061*	0.070*	
	(.014)	(.014)	(.014)	(.014)	
Minority	-0.103***	-0.116***	-0.115***	-0.104**	

	(.014)
	(.015)
	(.015)
	(.015)
Enrollment	
	0.029
	-0.034
	-0.169***
	(.000)
	(.000)
	(.000)
F/R Lunch Percent	
	0.352***
	0.334***
	0.143*
	(.002)
	(.002)
	(.002)
Percent Minority	
	-0.250**
	-0.189*
	(.002)
	(.002)
Principal Experience	
	-0.117**
	-0.200**
	(.002)
	(.005)
Category 2	
	0.062
Communicate the Goals	
	(.082)
Category 3	

Supervise and Evaluate Instruction	-0.148
	(.075)
Category 4	
Coordinate the Curriculum	0.247
	(.213)
Category 6	
Protect Instructional Time	-0.177**
	(.042)
Category 10	
Provides Incentives for Learning	0.043
	(.071)
(Constant)	
	0.46***
	0.454***
	0.266
	0.482*
	0.600*
	(.053)
	(.057)
	0.175)
	(.188)
	(.252)
Adjusted R^2	
	0.040
	0.056
	0.084
	0.092
	0.101
F-value	
	41.086
	15.198
	13.524
	13.116
	9.967

N

958

p<.001 *** p<.01 ** p<.05 * Standard Errors are in parentheses

The second model began to add factors for control for the students. The added control variables accounted for the grade level (3rd through 5th grade), gender (1 for male, 0 for female), and minority status (1 for minority, 0 for Caucasian). By adding these controls, this model increased the explanation for the percent of the variability of the growth score to an adjusted $R^2 = 0.056$. By adding these controls, the initial score increased its coefficient to $B = -0.253$, $p < 0.001$. While gender had no statistically significant effect, both grade level and minority status had a coefficient of $B = 0.089$ ($p < .01$) and $B = -0.103$ ($p < 0.001$) respectively. This would indicate that there would be more growth at a higher grade in this district and that being a minority would tend to lead to less growth. While the coefficient for grade level is relatively small, the ethnicity of a student would have a meaningful difference for academic growth. The constant for this model remained steady and significant at $B = 0.454$, $p < 0.001$.

The third model added controls for the school environment. This was used to determine if the enrollment size of the school, the percent of the school on free and reduced lunch, or percent of minorities in the school had an effect on academic growth. The inclusion of these controls again increased the adjusted R^2 to 0.084. While the enrollment of the school did not yield any significant results, the percent of free and reduced lunch and the percent minority had relatively large and statistically significant coefficients. The free and reduced lunch percent had a coefficient of $B = 0.352$, $p < .001$.

This would indicate that as a school had an increase in the percentage of students on free and reduced lunch, academic growth would increase. Interestingly, the percent of minority students had a negative coefficient of $B = -0.250$, $p < 0.01$. This result would indicate that as the percentage of minority students in a school increased, the growth of the students would decrease. The initial score's coefficient remained relatively steady at $B = -0.260$ and stayed near this mark for the remainder of the models. The constant for this model's coefficient was not statistically significant.

The fourth model was the final model that added controls before adding predictors. This model included a control for the principal. This model examined the total years of principal experience for each principal. This had a significant and negative coefficient of $B = -0.117$, $p < 0.01$. Shown in this model, the greater the experience of the principal, the less growth tended to occur for the students in the building. For this model, the adjusted $R^2 = 0.092$, and the constant coefficient was $B = 0.482$, $p < 0.05$. Before using the predictors, 9.2% of the variance of the growth was explained by the controls in these four models.

Model 15 (labeled model 5 in Table 4.1 for continuity purposes) was used to answer the primary research question of whether principal characteristics had an effect on the academic growth of the lower SES students. When all the characteristics were added, some characteristics were left out by the statistical software due to co-linearity; however, there was a statistically significant coefficient for Category 6 of $B = -0.177$ ($p < .01$). The R^2 for this model was 0.101 which would show that given the added variables, 10.1% of the variance of the growth scores were explained by using these predictors. The answer

to the research question was yes, the characteristics of the principal do have an effect on the academic growth of lower SES students, but the effect was a negative effect. This would say that as the teacher's perceived the principal increased by one point for frequency of protection of instructional time, students academically declined by 0.177. This would show a negative effect of a characteristic of a principal behavior on the academic growth of lower SES students.

Question 2: What specific instructional characteristics of a principal have an impact on academic growth?

In answering this question, the same models from research question one were utilized. SPSS removed some of principal characteristics due to co-linearity when Model 15 was run. The categories of principal characteristics it removed were categories one (Framing School Goals), five (Monitor Student Progress), seven (Maintain High Visibility), eight (Provide Incentive for Teachers), and nine (Promote Professional Development). This suggests that the PIMRS showed that one category yielded the same results as other categories, and the inclusion of these results would be redundant. Model 15 did show that there was a single characteristic that proved to be statistically significant. This was Category 6, protecting the instructional time. In order to be sure that some data were not omitted, each characteristic was analyzed as a single predictor. These results of these other models are shown in Table 4.2 and are a continuation of Models 1-4 in Table 4.1. Models five through fourteen added each of the ten categories of instructional management as measured by the PIMRS separately. These, when run separately, yielded only one statistically significant result. Category 6, protecting instructional time, indicated a $B = -0.106$, $p < 0.05$. This model increased the adjusted R^2

to 0.097 from the lowest R^2 of 0.091 when only the controls were used. The constant coefficient for this model was 0.709, $p < 0.001$. This would indicate that the negative relationship existed that as a principal protected instructional time more, the growth of the students decreased.

	5	6	7	8	9	10	11	12	13	14
Initial Score	-0.257***	-0.255***	-0.253***	-0.254***	-0.258***	-0.251***	-0.254***	-0.253***	-0.252***	-0.256***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Grade Level	[ii]	0.099**	0.100**	0.100**						

	0.100	0.101	0.098	0.100	0.100	0.099	0.101				
	**	**	**	**	**	**	**				
								(0.009)	(0.009)	(0.009)	(0.009)
								(0.009)	(0.009)	(0.009)	(0.009)
Gender	0.062	0.062	0.063	0.061	0.062	0.064	0.062	0.062	0.061	0.061	
	*	*	*	*	*	*	*	*	*	*	
								(0.014)	(0.014)	(0.014)	(0.014)
								(0.014)	(0.014)	(0.014)	(0.014)

											(0.014)
											(0.014)
Minority											
											-0.116 ***
											-0.117 ***
											-0.115 ***
											-0.115 ***
											-0.115 ***
											-0.106 ***
											-0.115 ***
											-0.115 ***
											-0.113 ***
											-0.115 ***
											(0.015)
											(0.015)
											(0.015)
											(0.015)
											(0.015)
											(0.015)
											(0.015)
											(0.015)
											(0.015)
Enrollment											
											-0.106
											-0.084
											0.016
											-0.012
											-0.133
											-0.013
											-0.034
											-0.064
											-0.042
											-0.037
											(0.000)
											(0.001)
											(0.000)

													(0.001)
													(0.001)
													(0.000)
													(0.000)
													(0.000)
													(0.000)
													(0.000)
F/R Lunch Percent													
	0.215												
	0.259												
	0.426 ***												
	0.368 *												
	0.199												
	0.358 ***												
	0.344 ***												
	0.296 **												
	0.330 ***												
	0.326 ***												
													(0.003)
													(0.003)
													(0.003)
													(0.004)
													(0.004)
													(0.002)
													(0.002)
													(0.003)
													(0.002)
													(0.002)
Percent Minority													
	-0.020												
	-0.081												
	-0.290 *												
	-0.227												
	-0.037												
	-0.241 **												
	-0.200 *												
	-0.162												

-0.200
*
-0.188
*

(0.004)

(0.005)

(0.004)

(0.004)

(0.004)

(0.002)

(0.002)

(0.003)

(0.002)

(0.002)

Principal Experience

-0.196
**
-0.167
*
-0.098
*
-0.100

-0.216
**
-0.034

-0.115
**
-0.104
*
-0.084

-0.129
**

(0.004)

(0.005)

(0.003)

(0.004)

(0.005)

(0.003)

(0.002)

(0.003)

(0.003)

(0.003)

PIMRS Category

0.095

0.058

	-0.048
	-0.020
	0.100
	-0.106 *
	-0.015
	-0.035
	-0.045
	0.026
	(0.053)
	(0.047)
	(0.036)
	(0.065)
	(0.085)
	(0.032)
	(0.024)
	(0.037)
	(0.055)
	(0.041)
PIMRS Category Name	
Framing School Goals	
Communicate the Goals	
Supervise and Evaluate Instruction	
Coordinate the Curriculum	
Monitor Student Progress	
Protect Instructional Time	
Maintain High Visibility	
Provides Incentives for Teachers	
Promote Professional Development	
Provides Incentives for Learning	
(Constant)	
	0.398 *
	0.503 **
	0.455 *
	0.487 **
	0.380
	0.709 ***
	0.517

	*
	0.673
	*
	0.713
	*
	0.396
	(0.197)
	(0.19)
	(0.19)
	(0.189)
	(0.203)
	(0.209)
	(0.205)
	(0.334)
	(0.31)
	(0.228)
Adjusted R^2	
	0.093
	0.092
	0.092
	0.091
	0.093
	0.097
	0.091
	0.091
	0.092
	0.091
F-value	
	11.900
	11.716
	11.768
	11.658
	11.865
	12.406
	11.669
	11.706
	11.754
	11.701

p<.001 *** p<.01 ** p<.05 * Standard Errors are in parentheses

Table 4.2 – Regression Models of the PIMRS Characteristics - Individually

4.1 Summary

The final model (Model 15), which included all characteristics, answered the first research question posed by this study. There is statistical support to claim that the instructional management characteristics of the principal have an effect on the academic growth of lower SES students even though this research showed that there was a negative effect. This model and models five through fourteen also answered the second research question. One characteristic, in particular, had a negative effect which is the principal protecting the instructional time. These findings indicate that given all the controls and the principal characteristics, nearly 10% of the variability of a student of lower SES's growth can be attributed to these variables. When studied with just raw growth scores, this characteristic also had a significant negative effect on the growth scores as it did with the normed growth scores (See Appendix A). This research also yielded significant and meaningful results for the following three control variables: percent minority, free and reduced lunch percent, and principal experience. These will be discussed further in the chapter 5.

5.0 Conclusion and Recommendations

The purpose of this study was to determine if the principal instructional management characteristics had an effect on the academic growth of lower SES students, and if there was an effect, which characteristic or characteristics had an effect.

5.1 Results

The multivariate linear regression produced statistical support to answer the question that, yes, the characteristics of the principal have a statistically significant effect on the academic growth of lower SES students. By using a hierarchical model, the coefficients for initial score and the other controls allow for isolation of the principal characteristics. The only statistically significant characteristic of the principal protecting instructional time yielded a negative coefficient ($B = -0.177$, $p < .01$). When put together, this final model accounted for 10.1% of the variability in the differences in growth scores of the students. This would show that the principal does have an effect on the growth scores of the lower SES subgroup, though the effect was negative.

5.2 Discussion of Findings

There are three major points in the results of this study that need to be discussed. The first two deal with the control factors that were introduced in the early models of the analysis that are related but not part of the research questions. The first of these is the coefficients of the free and reduced lunch percentage and the minority percentage of the school. There was also a negative effect of the minority status of the student on the academic growth of the student in models 2 through 4. The results can be seen in Table 4.1. In the case of this district, one factor of being a minority was not a proxy for the

other factor of being a participant of free and reduced lunch.

There was a negative relationship between percent minority and the growth of lower SES student; while at the same time there is a positive relationship between percent of students on free and reduced lunch in the school and the growth of lower SES students. A possible explanation for this phenomenon would be that diversity in a school makes growth more difficult. As the percent minority in a school increases so does the possibility of the amount of diversity. An approach from a teacher or principal that may work with one ethnic group may not work with another ethnic group. This hypothesis would also explain why growth occurs more with more students on free and reduced lunch. As the school becomes more homogeneous for socioeconomic status (SES), similar tactics work with a larger population of the students. This is to say that SES is not a proxy for ethnic diversity. In this district, the increase in the lower SES students may be from an increase in Caucasian students. As shown in Table 3.1, the school with the highest percentage of lower SES students also had the greatest amount of growth. Again, this may be due to less diversity in the population for free and reduced lunch and made it easier for the teachers to relate the materials to the students. However, because of the negative effects with minority percentage, there was possibly the opposite effect on the free and reduced lunch percentage. This higher percentage of minority students would have been an increase in diversity and made it more difficult for one method of teaching to relate the materials to the different ethnic groups of students. Thus, diversity may have been the issue. Where there was more diversity, academic growth waned. Where there was less diversity, academic growth increased.

The second finding of this study was the negative impact of a principal's

experience on the growth of lower SES students. There are two possible explanations for this result. The first of these relates to the research on teacher growth and effectiveness. A teacher increases in efficacy and skills (both capabilities and capacity) significantly in the first three years of teaching. After the end of the third year, a teacher may improve his or her teaching abilities, but this improvement is only marginal when compared to the first three years of teaching (Rivkin, et al., 2005). This may have been the same for principals in this study. Table 3.1 showed that of the nine principals in the study, five had six or more years experience and four had five or fewer years of experience in the role. A principal may have improved in practice within the role of the principal due to the need to acquire coping mechanisms to learn the new role. However, after the first few years, principals in this district may have found what works for him or her best and did little after the initial period to improve his or her practice. This may be why the less experienced principals had greater academic growth with the lower SES students. These new principals may have been "hungrier" for better results out of these students and attacked the issue with an open mind and different methods. Perhaps their training better prepared them for working with diverse students in ways their more experienced peers were not able to do.

A second possibility as to why principal experience had a negative effect on student growth is the changing demographics of the district. The district experienced a steady increase in the diversity of its population. A more experienced principal may have been using methods that worked well a few years ago, but no longer evaluates his or her methods to look for possible areas to improve when it comes to increasing growth with the specific population of lower SES students. Studies on leadership theory emphasize

that situation and context should impact style (Wheatley, 1992; Blake, et al, 1964; Fiedler, 1967). This could have been the crux of the issue in this case because there may not have been style change by experienced principals in spite of the contextual changes. While this explanation is related to the first hypothesis for this finding, it is different because the possibility here is that the student population changed even though the principal may have been improving in his or her practices. The practices just may not have been what that particular group of students needed.

The third was the major finding for this study. After including the control factors in the multi-regression analysis, each of the characteristic results from the principals were added to the analysis individually and then finally all the characteristic results were added at the same time. The result of the final regression model is shown in Table 4.2. Full results of all regression models can be found in Appendix A.

With some of the categories excluded due to co-linearity with other categories, the only statistically significant result was that of category 6, protecting instructional time. Interestingly, this result showed a negative effect on the normed academic growth of lower SES students. This major finding of the study prompts several discussion points and possible explanations due to the inconsistency with the literature regarding the subject. In many studies, prior research found that protection of instructional time increased student achievement (Brown & Saks, 1986; Clark & Linn, 2003; Hang, 2001). Instructional time, as operationalized here, had an opposite effect.

Given the results differing from the previous research on this subject, there are three areas to consider as reasons for these results. The first of these come from the culture research of Weick (1976) and Ouchi (1980). Weick's research discussed loose

coupling. This concept suggests that in organizations where there are many professionals, an organization can allow the professionals to work unsupervised and expect that a job will be done. The more the professionals are left alone, the more loosely coupled the organization is. Ouchi (1980) discussed three types of organizational control. In an organization where they work for a common goal, where the impediments to get a job finished are removed, and where there is much interaction between leadership and the workers, a clan mentality exists. A clan leader is dependent on the context, and the context is depended upon the valued relationships (Wheatley, 1992). In a clan, the group joins together to complete a common goal for the good of everyone in the clan. In a clan there is camaraderie, collaboration, and a common vision.

Weick (1976) and Ouchi's (1980) work may explain why protecting instructional time was not beneficial for the academic growth of the lower SES students in this study. The schools that saw the greatest normed growth were the schools that the principal used the time in school to create more of a presence in the daily academic life of the students. These schools were possibly not loosely coupled. The students and teachers knew the principal could have been in the classroom, talking with students, or making a public announcement at any time. By doing this, the coupling among faculty may have tightened to create more oversight or a reminder that the principal is involved. The statements from the PIMRS that dealt with the "Protecting Instructional Time" category were:

1. Limit interruptions of instructional time public address announcements.
2. Ensure that students are not called to the office during instructional time.
3. Ensure that tardy and truant students suffer specific consequences for missing instructional time.

4. Encourage teachers to use instructional time teaching and practicing new skills and concepts.
5. Limit the intrusion of extra- and co-curricular activities on instructional time.

By these principals not protecting instructional time, as defined by these questions, they may have created a “clan” mentality (Ouchi, 1980) where each person helped the others so that the “interruptions” to the instructional time may have been beneficial to the teachers and translated into more learning for the lower SES students. The clan may have tightened the coupling so that all members of the teaching community in the school worked together to improve achievement. This explanation would confirm the research from Hang (2001) that suggested that if the instructional time was not protected, the teachers would have focused on the essentials which was what the lower SES students may have needed most. Clark and Linn (2003) also discussed that protecting instructional time does little to help with multiple choice items. It does more for deepening knowledge for more of the constructed responses. Because the Acuity® Predictive assessments, like the GLAs, were primarily multiple choice, the tightened coupling may have focused the classroom teachers and the other educators in the building.

Another way to consider this finding derives from the research on complexity, chaos, and the new sciences (Wheatley, 1992). This research, based on studies of quantum physics and the emerging understanding of how all open systems work, suggests that leaders need to leave employees alone to work to make improvements and achieve organizational goals. If Wheatley (1992) is correct, tight control does not work. Thus, given the questions in this category on the PIMRS, it may well be that the negative

relationship of the results implies more of an empowering of teachers. Success, in this study, may have derived from completely leaving teachers alone to make teaching decisions when the students are in the classroom.

A second possible explanation for the negative relationship is the nature of the questions in the “Protecting Instructional Time” category. These questions really speak to two different concepts. One of the concepts is “Students in the Classroom.” Questions 1, 2, 3, and 5 really look at encouraging students to be in the class with the teacher and limiting the interruptions. Question 4 speaks to another concept of time-on-task. The research on time-on-task shows that protecting meaningful instructional time links to academic gains (Brown & Saks, 1986; Clark & Linn, 2003). When a teacher uses the time in class to fill it with academic instruction, students benefit the most academically (Clark & Linn, 2003). This would suggest a tool that separated out these concepts may be better for clarifying results to coincide with past research.

A third possible explanation for the third finding of a negative relationship between the principal protecting instructional time and the academic growth of lower SES students was that of specificity or lack thereof in the sample. The spectrum of free and reduced lunch was a wide range of eligibility in 2009, as shown in Table 4.1. Eligibility for free lunch to reduced lunch could have been over a $50,000 salary difference for parents. Possibly, the range for free and reduced lunch eligibility was too great to make general conclusions about normed growth. The results may have been more positive or more categories of the PIMRS may have been statistically significant had the free and reduced lunch students been analyzed separately.

The fourth possible explanation for the third finding of this study may have been

the PIMRS instrument. Because the results used in the study were reported by teachers within the school, the previous culture of the school may have played a factor in the true results of the principal characteristics. If this had been a true experimental design, teachers would have been randomly assigned to principals and training on the instrument would have taken place. In this case, the teachers had a previous school culture that they were using to judge the principal. This may have resulted in a negative relationship because it depended greatly how the teachers felt at one point in time. If the teachers were used to no interruptions with a previous principal, just a few in the year would seem like a lot and therefore influenced the results on the PIMRS.

The PIMRS instrument also had a few technical issues that are reported previously in this study. The reliability for each of the categories, using the suggested reliability method by the PIMRS technical manual 2.2, showed low reliabilities of the categories. The full results, shown in Table 3.3, showed the highest reliability around 0.73. After doing this research, an exploratory factor analysis was performed that yielded only four categories and the elimination of 17 questions from the PIMRS due to overlapping of assignments to different categories. Due to the low reliability of the PIMRS instrument, the results may have been skewed because the reported categories were not measuring what the PIMRS intended to measure.

Along with the PIMRS's reliability, there was the adjusted R^2 of the study. At its highest, the adjusted R^2 was 0.101 meaning that all the variables, both controls and predictors, only accounted for 10.1% of the variability in the normed growth scores for the lower SES students. This would mean that approximately 90% of the reasons for the

students' normed growth differences was not accounted for in this study. This could mean that the PIMRS instrument may not be accurately measuring the instructional management characteristics of the principal. After the exploratory factor analysis was completed using the PIMRS results for this study, the four new categories were analyzed using the same methods as were previously used in this study. The new results yielded no statistically significant results which may also point to the validity concerns with the instrument.

However, another possible explanation for the low adjusted R^2 for this study may be that the critics of linkage between the principal and student achievement may be correct (Witziers, et al, 2003; Bridges, 1982). These results may mean that while there was an effect of the instructional characteristics of the principal on the growth of the lower SES students, the principal's effect was very small because he or she is too far removed from the classroom to make a meaningful if not statistically significant impact on the academic growth of the lower SES students. This would also suggest that there were confounding factors that were not included as controls for this study that may have impacted the results.

5.3 Discussion of Limitations

A limitation of this study was that it took place within one school district in northern Kansas City, Missouri. The reason for this choice of only one school district was to help control for the confounding factors that occur between districts such as community priorities in education, attracting differing quality of teaching staff due to perceived status of districts, similar class sizes, and curricular quality and resources. While the students of this district were diverse and the number of scores remains high (N

= 958), a representative sample across the United States may be needed to make general conclusions about the findings.

Another limitation was a lack of randomization of lower SES students and teachers throughout the schools. Scores attributed to a principal from the Acuity® test come from students that live in the area around the schools, and some of the factors that caused them to go to that school may include parent perceptions and availability of affordable housing. The teachers that took part in the survey were also placed in that school due, in part, to the principal hiring the teacher. Because of this, the study could not be a true experimental design. Also, a treatment was not performed to the schools by the principal but rather an *expost facto* study of what effects the behaviors of the principal had on the academic growth of the lower SES students. Because of the lack of randomization, a true experimental design could not be implemented, and confounding factors may have interacted with the results.

Another limitation lies in the PIMRS tool. Created by Hallinger (1983) in order to rate a principal on their instructional management characteristics, a value judgment about the rating cannot be made. According to Hallinger (2008), these characteristics cannot be viewed as a higher number being an indicator of a more effective principal. Also, due to the reliability of the instrument (see Table 3.2), there is little evidence in this study that the instrument measured the intended characteristics. This will be discussed in further detail later in this chapter. The limitation in the tool was that it could be outdated and did not measure the correct behaviors of the principal.

Finally, a limitation of this study was that it was not done over several years in order to make general conclusions for a principal's characteristics. Due to availability of

resources and moving of teachers and principals to other roles or buildings, the difficulty would be to generate longitudinal data in order to make conclusions. A longitudinal study would have helped to provide stability to the data. Over several years, the principals would have presumably changed in the frequency of their observed characteristics. Also, the academic growth of the lower SES students would have had the chance to account for cohort differences within the schools making it less likely that outlier data would have existed in the data set. This limitation made the discussion about only one year within the district. Utilizing a multiple year study would make generalizations about the effects of the principals on academic growth within this district more confident and valid. One year's data limited the validity and generalization of the study.

Some other factors that may have influenced the results could have been the differences in teachers' level of comfort with the Acuity® assessments or the degree to which they had the students take them seriously. For the schools that struggled making Adequate Yearly Progress (AYP) under NCLB, they may have created an environment that formalized the assessments and valued the results. Indeed, some of the reasons for greater growth at the higher grade levels could have been familiarity with the Acuity® assessments. Also, academic data on a standardized test were used to show a school's effectiveness. While academic data are a measure of school effectiveness, they are only one measure and so other measures were ignored in this study.

5.4 Discussion of Conclusions

From this research, four conclusions can be reached. The first is that this research suggests that the principal does not have a lot of impact on lower SES academic growth.

Because the principal is so far removed from the classroom, there is little impact a principal really has on student achievement. This would confirm the work of Murphy (1988). The issue may be cultural in the school, and the culture is what contributes to the success of the students. Therefore, efforts should be made to research what a principal does to the culture that would encourage greater academic growth in lower SES students.

Second, there is a real problem with the PIMRS instrument. According to Hallinger (2008), the hypothesis would suggest that there would have been some impact of the principal's instructional management behaviors on the student achievement. Because it was originally developed in 1983 and refined in 1985 (Hallinger & Murphy, 1985), this instrument may need updating. This would be suggested by the reliability results in Table 3.2. With all reliabilities under 0.75, this instrument puts into doubt what exactly was measured from the principal. The lack of consistency of the confirming factor analysis with the PIMRS's factors and the lack of significant findings for the new factors also suggest validity problems with the instrument. More research may be needed in order to update this instrument.

Third, the movement from case studies to quantitative studies may not have added as much value as expected for the research. It appears that there is a need for thoughtful mixed methodology designs. Because the differences in how researchers studied the issue of the principal and student achievement with qualitative studies (Edmonds, 1979; Bossert, et al, 1982), researchers began to use quantitative methods in order to find more conclusive connections (Glasman, 1984; Cuban, 1984). Perhaps the best method for studying the questions in this research would be to follow a quantitative study with a qualitative investigation as to why certain schools achieve more. This would add to the

research to help create a better tool for measuring the principal's effect on student achievement.

Fourth, if research on school culture impacting student achievement is correct (Erikson, 1987; Hoy, et al, 2006) and the principal impacts the culture, more research is needed on school culture. This would confirm Pitner's (1988) argument that the most of the effects of the principal on student achievement are not direct. By looking at the factors in a school culture that encourage greater academic growth in lower SES students, an instrument could be reverse engineered to measure the behaviors in the principal more accurately.

5.5 Discussion of Practical Implications

While the discussion of the findings will add to the body of literature, there are a few practical implications for this study. Because the focus was on the lower SES students, those schools that have a high percentage of their students on free and reduced lunch might benefit from the findings. First, there may be implication for hiring practices. A district may want to look for a principal that creates a clan mentality whereby the prospective principal has talent at getting everyone in the school to work together to increase achievement of students throughout the year.

Another implication may be that principal experience may not be as important to effect academic growth with the lower SES students or that different skills in potential principals need to be identified for leaders of these schools. While there may be some human resources managers that want an experienced principal to run a building, this research may suggest that experience may not be as important as other factors and skills in the principal.

A final implication may lie in the essentials for students of lower SES. Teaching students the essentials may help to maximize growth on standardized tests. The findings suggest that not protecting instruction time not only did not inhibit academic growth, but it helped to improve growth. What this may suggest is that having a tighter coupling between the principal and the classroom by means of less protection of instructional time would be exactly what lower SES students need to improve achievement. Another possibility is that other issues may be more important for lower SES students to gain academically such as developing a self-concept, creating a nurturing environment, or making students feel safe.

5.6 Future Research

The results of this study suggest that further research is necessary for understanding the connection between the principal's instructional management characteristics and student growth. Future studies could look at other subgroups within the school to explore whether similar characteristics yield the same results between subgroups. The notion of exploring only one subgroup within a school brings up a unique opportunity to understand group dynamics within a school more fully. Also, a follow to this study may be best served by combining the quantitative methods used here with a qualitative study as to why the different schools yield different growth results. A case study of several schools may help to narrow what it was about the principals that got the greatest amount of growth out of their lower SES students.

Along the lines of focusing on one subgroup, one of the discussions of conclusions was that the free and reduced lunch status has too wide a variance to lump them into one category. Future research could be to replicate this study and include the

actual family incomes for those students on free and reduced lunch. It is possible that including the family income as a control variable may find more of the variance for normed growth.

Future studies could also work to create a new instrument to measure the characteristics of a principal to help refine the research in this study. While the PIMRS was developed through Hallinger's work (1983), it has not been had a major revision since before the introduction of NCLB (2002) and the culture of accountability in the United States. A new instrument with reliabilities in the 0.85 – 0.95 range could help to identify more accurate characteristics that will effect academic growth in students.

Another area of future research may be that of the principal experience and effectiveness. While this study cited that teachers reach the majority of their potential within the first three years (Rivkin, et al, 2005), future research could examine the role of the principal, what they do to improve and when they reach their potential as an instructional leader. This could be done for overall experience and experience within a building.

More research is also needed into the effect of the testing culture that pervades schools in America. How this has impacted education, and how has it affected the students within different subgroups would be a way to help determine if schools were reaching the goals they set and if the goals set for them are meaningful.

Future research could also include a longitudinal study of the teacher responses. Due to the temporal nature of teachers' responses, there could be different results on the PIMRS in the fall as opposed to the spring. Also, if these results for the PIMRS and the student growth data were taken over several years, more validity could be given to the

results, given the survey instrument of the teachers had a higher reliability.

Finally, future research could utilize the methods in this study and increase the same from within one district to multiple districts across a state or the nation. This way would help to see if the results were unique to this one district in northern Kansas City or if the results show a possible debate for the protection of instructional time. A representative sample may help to increase the accuracy of the results and make the findings applicable across the nation.

5.6 Summary of Conclusions

Examining the effect of principal characteristics on the academic growth of lower SES students is important because NCLB (2002) requires school districts to not only test all students but have all students achieve at a proficient level by 2014. Historically, there has been an “achievement gap” between students of lower SES and students of higher SES. Because of the sanctions outlined in NCLB, a principal must make sure that students are performing at the levels prescribed to make adequate yearly progress (NCLB, 2002).

This study attempted to determine if the instructional management characteristics of the principal had an impact on the growth of lower SES students. The results indicated that the characteristic of protecting instructional time did have an effect on the academic growth; however, the effect was a negative relationship. This would suggest that to increase academic growth in lower SES students, a principal does not need to protect instructional time as if it were sacred.

The overall conclusion is that the principal does have an effect on the academic growth of lower SES students even though this research showed it to be a negative

relationship. More research is needed to determine if these findings hold true if the sample was altered, if different subgroups were studied, and if a new characteristic measure instrument would be more reliable.

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Appendix A

Normed and Raw Growth Model Results for Free and Reduced Lunch Students

Normed Combined Subjects for F/R Lunch only

	1	2	3	4	5	6	7
Initial Score	-0.203 ***	-0.254 ***	-0.260 ***	-0.254 ***	-0.257 ***	-0.255 ***	-0.253 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Grade Level	0.089 **	0.104 **	0.101 **	0.099 **	0.100 **	0.100 **	
	(0.009)	(0.009)					

					(0.009)
					(0.009)
					(0.009)
					(0.009)
Gender					
					0.057
					0.059
					0.061 *
					0.062 *
					0.062 *
					0.063 *
					(0.014)
					(0.014)
					(0.014)
					(0.014)
					(0.014)
					(0.014)
Minority					
					-0.103 ***
					-0.116 ***
					-0.115 ***
					-0.116 ***
					-0.117 ***
					-0.115 ***
					(0.014)
					(0.015)
					(0.015)
					(0.015)
					(0.015)
					(0.015)
Enrollment					

					0.029
					-0.034
					-0.106
					-0.084
					0.016
					(0.000)
					(0.000)
					(0.000)
					(0.001)
					(0.000)
F/R Lunch Percent					
					0.352 ***
					0.334 ***
					0.215
					0.259
					0.426 ***
					(0.002)
					(0.002)
					(0.003)
					(0.003)
					(0.003)
Percent Minority					
					-0.250 **
					-0.189 *
					-0.020

-0.081

-0.290
*

(0.002)

(0.002)

(0.004)

(0.005)

(0.004)

Principal Experience

-0.117
**
-0.196
**
-0.167
*
-0.098
*

(0.002)

(0.004)

(0.005)

(0.003)

Category 1

0.095

Framing School Goals

(0.053)

Category 2

0.058

Communicate the Goals

(0.047)

Category 3

-0.048

Supervise and Evaluate Instruction

(0.036)

Category 4

Coordinate the Curriculum

Category 5

Monitor Student Progress

Category 6

Protect Instructional Time

Category 7

Maintain High Visibility

Category 8

Provides Incentives for Teachers

Category 9

Promote Professional Development

Category 10

Provides Incentives for Learning

(Constant)

	0.46 ***
	0.454 ***
	0.266
	0.482 *
	0.398 *
	0.503 **
	0.455 *
	(0.053)
	(0.057)
	(0.175)
	(0.188)
	(0.197)
	(0.19)
	(0.19)
R	
	0.203
	0.245
	0.301
	0.316
	0.319
	0.316
	0.317
R^2	
	0.041
	0.060
	0.091
	0.100
	0.102
	0.100
	0.100
Adjusted R^2	
	0.04
	0.056
	0.084
	0.092
	0.093

	0.092
	0.092
F-value	
	41.086
	15.198
	13.524
	13.116
	11.900
	11.716
	11.768
N	
	958

Normed Combined Subjects for F/R Lunch only					
	8	9	10	11	12
Initial Score	-0.254***	-0.258***	-0.251***	-0.254***	-0.253***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Grade Level	0.100**	0.101**	0.098**	0.100**	0.100**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Gender	0.061*	0.062*	0.064*	0.062*	0.062*
	(0.014)	(0.014)	(0.014)		

					(0.014)
					(0.014)
Minority					
					-0.115 ***
					-0.115 ***
					-0.106 ***
					-0.115 ***
					-0.115 ***
					(0.015)
					(0.015)
					(0.015)
					(0.015)
					(0.015)
Enrollment					
					-0.012
					-0.133
					-0.013
					-0.034
					-0.064
					(0.001)
					(0.001)
					(0.000)
					(0.000)
					(0.000)
F/R Lunch Percent					
					0.368 *
					0.199
					0.358 ***
					0.344 ***
					0.296 **
					(0.004)
					(0.004)
					(0.002)
					(0.002)
					(0.003)

Percent Minority	-0.227	-0.037	-0.241**	-0.200*	-0.162
	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)
Principal Experience	-0.100	-0.216**	-0.034	-0.115**	-0.104*
	(0.004)	(0.005)	(0.003)	(0.002)	(0.003)
Category 1					
Framing School Goals					
Category 2					

Communicate the Goals

Category 3

Supervise and Evaluate Instruction

Category 4

-0.020

Coordinate the Curriculum

(0.065)

Category 5

0.100

Monitor Student Progress

(0.085)

Category 6

-0.106
*

Protect Instructional Time

(0.032)

Category 7

-0.015

Maintain High Visibility

(0.024)

Category 8

-0.035

Provides Incentives for Teachers	
	(0.037)
Category 9	
Promote Professional Development	
Category 10	
Provides Incentives for Learning	
(Constant)	0.487 ** 0.380
	0.709 *** 0.517 * 0.673 *
	(0.189)
	(0.203)

					(0.209)
					(0.205)
					(0.334)
R					
					0.316
					0.318
					0.325
					0.316
					0.316
R^2					
					0.100
					0.101
					0.105
					0.100
					0.100
Adjusted R^2					
					0.091
					0.093
					0.097
					0.091
					0.091
F-value					
					11.658
					11.865
					12.406
					11.669
					11.706

Normed Combined Subjects for F/R Lunch only

	13	14	15
Initial Score	-0.252***	-0.256***	-0.259***
	(0.000)	(0.000)	(0)
Grade Level	0.099**	0.101**	0.097**
	(0.009)	(0.009)	(0.009)
Gender	0.061*	0.061*	0.070*
	(0.014)	(0.014)	(0.014)
Minority	-0.113***	-0.115***	-0.104**
	(0.015)	(0.015)	(0.015)
Enrollment	-0.042	-0.037	-0.169***

			(0.000)
			(0.000)
			(0.000)
F/R Lunch Percent			0.330 ***
			0.326 ***
			0.143 *
			(0.002)
			(0.002)
			(0.002)
Percent Minority			-0.200 *
			-0.188 *
			(0.002)
			(0.002)
Principal Experience			-0.084
			-0.129 **
			-0.200 **
			(0.003)
			(0.003)
			(0.005)
Category 1			
Framing School Goals			
Category 2			
			0.062

Communicate the Goals

(0.082)

Category 3

-0.148

Supervise and Evaluate Instruction

(0.075)

Category 4

0.247

Coordinate the Curriculum

(0.213)

Category 5

Monitor Student Progress

Category 6

-0.177
**

Protect Instructional Time

(0.042)

Category 7

Maintain High Visibility	
Category 8	
Provides Incentives for Teachers	
Category 9	-0.045
Promote Professional Development	(0.055)
Category 10	
	0.026
	0.043
Provides Incentives for Learning	
	(0.041)
	(0.071)
(Constant)	0.713 *
	0.396
	0.600 *
	(0.31)
	(0.228)
	(0.252)
R	0.317
	0.316
	0.335

R^2	0.100	0.100	0.112
Adjusted R^2	0.092	0.091	0.101
F-value	11.754	11.701	9.967

Raw Growth, Combined Subjects for Free and Reduced Lunch

	1	2	3	4	5
Initial Score	-0.364***	-0.445***	-0.447***	-0.441***	-0.444***
	(***)	(0.026)	(0.026)	(0.026)	(0.026)
Grade Level	0.156***	0.170***	0.166***	0.165***	
	(1.88)	(1.868)	(1.858)	(1.858)	
Gender	0.054	0.057	0.059*	0.060*	
	(2.82)	(2.771)			

				(2.756)
				(2.755)
Minority				
	-0.114 ***	-0.133 ***	-0.132 ***	-0.133 ***
				(2.892)
				(2.956)
				(2.939)
				(2.939)
Enrollment				
				0.012
				-0.055
				-0.115
				(0.062)
				(0.067)
				(0.093)
F/R Lunch Percent				
				0.319 ***
				0.300 ***
				0.201
				(0.463)
				(0.461)
				(0.632)

Percent Minority	-0.197 *	-0.132	0.009
	(0.457)	(0.467)	(0.795)
Principal Experience	-0.124 ***	-0.190 **	
	(0.488)	(0.858)	
Category 1			0.079
Framing School Goals			
			(10.564)
Category 2			

Communicate the Goals

Category 3

Supervise and Evaluate Instruction

Category 4

Coordinate the Curriculum

Category 5

Monitor Student Progress

Category 6

Protect Instructional Time

Category 7

Maintain High Visibility

Category 8

Provides Incentives for Teachers

Category 9

Promote Professional Development

Category 10

Provides Incentives for Learning

(Constant)	155.760 ***
	149.716 ***
	118.600 ***
	167.192 ***
	152.307 ***
	(10.628)
	(11.381)
	(34.911)
	(37.433)
	(39.205)
R	0.364
	0.408
	0.445
	0.456
	0.458
R^2	0.132
	0.166
	0.198
	0.208
	0.209
Adjusted R^2	0.132
	0.163
	0.192

	0.201
	0.202
F-value	
	145.937
	47.551
	33.523
	31.175
	27.909
N	
	958

Raw Growth, Combined Subjects for Free and Reduced Lunch

	6	7	8	9	10
Initial Score	-0.442***	-0.440***	-0.441***	-0.444***	-0.439***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Grade Level	0.166***	0.166***	0.166***	0.167***	0.164***
	(1.859)	(1.858)	(1.859)	(1.858)	(1.856)
Gender	0.059*	0.061*	0.059*	0.059*	0.061*
	(2.757)	(2.76)	(2.758)		

					(2.756)
					(2.753)
Minority					
	-0.134 ***	-0.132 ***	-0.132 ***	-0.132 ***	-0.125 ***
					(2.946)
					(2.939)
					(2.944)
					(2.939)
					(2.955)
Enrollment					
	-0.106	-0.002	-0.042	-0.137	-0.039
					(0.109)
					(0.093)
					(0.114)
					(0.116)
					(0.068)
F/R Lunch Percent					
	0.225	0.400 ***	0.321 *	0.189	0.319 ***
					(0.694)
					(0.669)
					(0.75)
					(0.701)
					(0.463)

Percent Minority	-0.023	-0.240	-0.155	-0.007	-0.172 *
	(0.92)	(0.722)	(0.831)	(0.779)	(0.48)
Principal Experience	-0.174 *	-0.103 **	-0.114	-0.206 **	-0.061
	(0.979)	(0.548)	(0.868)	(1.068)	(0.648)
Category 1					
Framing School Goals					
Category 2	0.058				

Communicate the Goals

(9.34)

Category 3

-0.052

Supervise and Evaluate Instruction

(7.158)

Category 4

-0.012

Coordinate the Curriculum

(12.949)

Category 5

0.082

Monitor Student Progress

(16.885)

Category 6

-0.081
*

Protect Instructional Time

(6.338)

Category 7

Maintain High Visibility

Category 8

Provides Incentives for Teachers

Category 9

Promote Professional Development

Category 10

Provides Incentives for Learning

(Constant)	171.715 ***
	161.145 ***
	167.798 ***
	149.317 ***
	204.232 ***
	(37.859)
	(37.803)
	(37.587)
	(40.438)
	(41.609)
R	0.457
	0.457
	0.456
	0.457
	0.460
R^2	0.209
	0.209
	0.208
	0.209
	0.212
Adjusted R^2	0.201
	0.202
	0.201

	0.202
	0.204
F-value	
	27.773
	27.863
	27.687
	27.873
	28.257

Raw Growth, Combined Subjects for Free and Reduced Lunch

	11	12	13	14	15
Initial Score	-0.440***	-0.440***	-0.440***	-0.442***	-0.446***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Grade Level	0.166***	0.166***	0.166***	0.167***	0.165***
	(1.859)	(1.859)	(1.86)	(1.859)	(1.858)
Gender	0.060*	0.060*	0.059*	0.059*	0.067*
	(2.759)	(2.759)	(2.757)		

					(2.758)
					(2.757)
Minority					
	-0.132 ***	-0.132 ***	-0.131 ***	-0.132 ***	-0.124 ***
					(2.94)
					(2.939)
					(2.95)
					(2.941)
					(2.954)
Enrollment					
	-0.055				
		-0.086			
			-0.060		
				-0.057	
					-0.167 ***
					(0.067)
					(0.086)
					(0.068)
					(0.067)
					(0.065)
F/R Lunch Percent					
	0.312 ***	0.261 **	0.298 ***	0.295 ***	0.156 **
					(0.477)
					(0.543)
					(0.462)
					(0.466)
					(0.313)

Percent Minority	-0.146	-0.104	-0.139	-0.132
	(0.488)	(0.514)	(0.471)	(0.467)
Principal Experience	-0.122***	-0.110**	-0.104*	-0.131***
	(0.492)	(0.549)	(0.669)	(0.538)
Category 1	-0.214**			
	(0.914)			
Framing School Goals				
Category 2				

0.023

Communicate the Goals

(16.278)

Category 3

-0.180

Supervise and Evaluate Instruction

(14.868)

Category 4

0.282

Coordinate the Curriculum

(42.388)

Category 5

Monitor Student Progress

Category 6

-0.143
**

Protect Instructional Time

(8.461)

Category 7

-0.018

Maintain High Visibility

(4.754)

Category 8

-0.036

Provides Incentives for Teachers

(7.378)

Category 9

-0.027

Promote Professional Development

(10.959)

Category 10

0.016

0.036

Provides Incentives for Learning

(8.253)

(14.128)

(Constant)	176.090 ***
	209.274 **
	196.146 **
	155.880 ***
	173.348 ***
	(40.887)
	(66.512)
	(61.874)
	(45.464)
	(50.235)
R	0.456
	0.457
	0.457
	0.456
	0.467
R^2	0.208
	0.209
	0.208
	0.208
	0.218
Adjusted R^2	0.201
	0.201
	0.201

	0.201
	0.208
F-value	
	27.723
	27.764
	27.730
	27.709
	21.917

Appendix B

Reliabilities from the Acuity Technical Report - Missouri

Appendix C

PIMRS

To what extent does your principal . . . ?

I. FRAME THE SCHOOL GOALS

1. Develop a focused set of annual school-wide goals

2. Frame the school's goals in terms of staff responsibilities for meeting them

3. Use needs assessment or other formal and informal methods to secure staff input on goal development

4. Use data on student performance when developing the school's academic goals

5. Develop goals that are easily understood and used by teachers in the school

II. COMMUNICATE THE SCHOOL GOALS

6. Communicate the school's mission effectively to members of the school community

7. Discuss the school's academic goals with teachers at faculty meetings

8. Refer to the school's academic goals when making curricular decisions with teachers

9. Ensure that the school's academic goals are reflected in highly visible displays in the school (e.g., posters or bulletin boards emphasizing academic progress)

10. Refer to the school's goals or mission in forums with students (e.g., in assemblies or discussions)

III. SUPERVISE & EVALUATE INSTRUCTION

11. Ensure that the classroom priorities of teachers are consistent with the goals and direction of the school

12. Review student work products when evaluating classroom instruction

13. Conduct informal observations in classrooms on a regular basis (informal observations are unscheduled, last at least 5 minutes, and may or may not involve written feedback or a formal conference)

14. Point out specific strengths in teacher's instructional practices in post-observation feedback (e.g., in conferences or written evaluations)

15. Point out specific weaknesses in teacher instructional practices in post-observation feedback (e.g., in conferences or written evaluations)

IV. COORDINATE THE CURRICULUM

16. Make clear who is responsible for coordinating the curriculum across grade levels (e.g., the principal, vice principal, or teacher-leaders)

17. Draw upon the results of school-wide testing when making curricular decisions

18. Monitor the classroom curriculum to see that it covers the school's curricular objectives

19. Assess the overlap between the school's curricular objectives and the school's achievement tests

20. Participate actively in the review of curricular materials

V. MONITOR STUDENT PROGRESS

21. Meet individually with teachers to discuss student progress

22. Discuss academic performance results with the faculty to identify curricular strengths and weaknesses

23. Use tests and other performance measure to assess progress toward school goals

24. Inform teachers of the school's performance results in written form (e.g., in a memo or newsletter)

25. Inform students of school's academic progress

VI. PROTECT INSTRUCTIONAL TIME

26. Limit interruptions of instructional time by public address announcements

27. Ensure that students are not called to the office during instructional time

28. Ensure that tardy and truant students suffer specific consequences for missing instructional time

29. Encourage teachers to use instructional time for teaching and practicing new skills and concepts

30. Limit the intrusion of extra- and co-curricular activities on instructional time

VII. MAINTAIN HIGH VISIBILITY

31. Take time to talk informally with students and teachers during recess and breaks

32. Visit classrooms to discuss school issues with teachers and students

33. Attend/participate in extra- and co-curricular activities

34. Cover classes for teachers until a late or substitute teacher arrives

35. Tutor students or provide direct instruction to classes

VIII. PROVIDE INCENTIVES FOR TEACHERS

36. Reinforce superior performance by teachers in staff meetings, newsletters, and/or memos

37. Compliment teachers privately for their efforts or performance

38. Acknowledge teachers' exceptional performance by writing memos for their personnel files

39. Reward special efforts by teachers with opportunities for professional recognition

40. Create professional growth opportunities for teachers as a reward for special contributions to the school

IX. PROMOTE PROFESSIONAL DEVELOPMENT

41. Ensure that inservice activities attended by staff are consistent with the school's goals

42. Actively support the use in the classroom of skills acquired during inservice training

43. Obtain the participation of the whole staff in important inservice activities

44. Lead or attend teacher inservice activities concerned with instruction

45. Set aside time at faculty meetings for teachers to share ideas or information from inservice

activities

X. PROVIDE INCENTIVES FOR LEARNING

46. Recognize students who do superior work with formal rewards such as an honor roll or mention in the principal's newsletter

47. Use assemblies to honor students for academic accomplishments or for behavior or citizenship

48. Recognize superior student achievement or improvement by seeing in the office the students with their work

49. Contact parents to communicate improved or exemplary student performance or contributions

50. Support teachers actively in their recognition and/or reward of student contributions to and accomplishments in class