

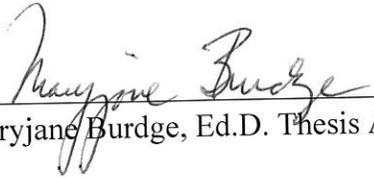
A Thesis

SUPERINTENDENT CHARACTERISTICS AND THEIR RELATIONSHIP TO
STUDENT ACHIEVEMENT IN READING AND MATHEMATICS

by

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This thesis has been approved as partial fulfillment of the requirements for the degree of Education Specialist at the University of Wisconsin-Superior by the Department of Educational Administration:



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December 16, 2015

A thesis submitted to the Graduate
Faculty of the University of Wisconsin-Superior
in partial fulfillment of the requirements for the
degree of

Education Specialist
Department of Educational Leadership

DECLARATION OF ORIGINALITY

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at the University of Wisconsin-Superior and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: _____

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Date: _____

Abstract

The relationship between superintendent longevity and student achievement has been variably shown in numerous states to have a positive correlation or no correlation. The goal of this study was to provide additional correlational research that would have a positive effect on school board hiring practices, district management, and student achievement. Publicly available data at the Wisconsin Department of Public Instruction was the source of the student achievement and superintendent data. Correlation analysis was used to determine if there was a relationship between three characteristics of superintendents – local experience, total experience, and highest degree earned – and six measures of student achievement – reading achievement scores, reading growth scores, reading gaps scores, math achievement scores, math growth scores, and math gaps scores. Understanding that there are many factors that affect student achievement, the percentage of students that were economically disadvantaged was also included in this study. Local or total experience of a superintendent was not significantly correlated with any measure of student achievement. The highest degree a superintendent earned was significantly correlated with reading gaps score and math achievement score.

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List of Abbreviations

AYP	Annual Yearly Progress
DOE	Department of Education
DPI	Department of Public Instruction
ESEA	Elementary and Secondary Education Act
NAEP	National Assessment of Educational Progress
NCLB	No Child Left Behind Act
WKCE	Wisconsin Knowledge and Concepts Exam
WSAS	Wisconsin Student Assessment System

Chapter 1 - Introduction

Introduction

The effect of teachers has been shown to improve student academic achievement (Chetty, Friedman, Rockoff, 2011) despite the many other factors that can have a much greater affect (Okpala, Smith, Jones, 2000). The effect of principals on student academic achievement has also been shown to be significant in affecting student achievement (Leithwood, Louis, Anderson, Wahlstrom, 2004). The impact of superintendents on student achievement has also been found to have a significant positive correlation (Marzano and Waters, 2006).

With a new emphasis by the U.S. Department of Education (DOE) to address the differences in achievement between subpopulations of students through results-driven accountability (U.S. DOE, 2014), the ability of a superintendent to increase student achievement and close achievement gaps is of increased importance. If there are particular characteristics of superintendents that correlate with closing gaps between subpopulations of students, then this information would be of interest to school districts, as well as superintendents themselves.

Problem Statement

Ongoing research has been conducted on the relationship between superintendent longevity and student achievement but little has been done to investigate other characteristics of superintendents or other measures of student achievement beyond proficiency on statewide, standardized tests. Given the increased focus on the achievement gap and the use of student growth as a measure of student achievement it is

increasing valuable to understand if there are characteristics of superintendents that are correlated with these outcomes.

Rational for Study

Knowing if there are characteristics of superintendents that are correlated with student achievement will allow school boards and hiring committees to make decisions related to increasing student achievement, increasing student growth, and closing the achievement gap.

Research Questions

Four research questions were asked which seek to determine if there is a relationship between the characteristics of superintendents and student achievement. The questions and the specific hypothesis are listed below.

1. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement represented by Wisconsin Student Assessment System (WSAS) reading and math scores?
2. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement when controlling for the influence of the percent of students who are economically disadvantaged?
3. What is the relationship between Wisconsin 4K-12 public school superintendent highest degree earned and student achievement represented by WSAS reading and math scores?
4. What is the relationship between Wisconsin 4K-12 public school superintendent highest degree earned and student achievement when

controlling for the influence of the percent of students that are economically disadvantaged?

Hypotheses

The following quantitative hypotheses were developed in response to the research questions there were asked.

1. A statistically significant correlation exists between Wisconsin 4K-12 public school superintendent experience and student achievement.
2. A statistically significant correlation exists between Wisconsin 4K-12 public school superintendent experience and student achievement when controlling for the influence of the percent of students that are economically disadvantaged.
3. A statistically significant correlation exists between Wisconsin 4K-12 public school superintendent highest degree earned and student achievement.
4. A statistically significant correlation exists between Wisconsin 4K-12 public school superintendent highest degree earned and student achievement when controlling for the influence of the percent of students that are economically disadvantaged.

Independent Variables

The following are the characteristics of superintendents that make up the independent variables.

Local experience: The number of years the superintendent has worked in the school district, although it may be in a variety of capacities.

Total experience: The number of years the superintendent has worked in the public school system in Wisconsin.

Highest degree earned earned: Superintendents fall in to one of three categories: M.A. or M.S., 6-year Specialist, and Ph.D. These levels are given a numerical value by the DPI with an M.A. or M.S. given a 5, a 6-year Specialist given a 6 and a Ph.D. given a 7.

Percent economically disadvantaged: The percent of students were reported as economically disadvantaged by the school district. The threshold for this measure is determined by the National School Lunch Program's income eligibility guidelines (U.S. Department of Agriculture, 2015). For a family of four in Wisconsin the federal poverty guideline was \$23,550 with free meals calculated at 130% of the federal poverty level (\$30,615) and reduced meals calculated at 185% of the federal poverty level (\$43,568).

Dependent Variables

The following are the dependent variables that were derived from the School Report Card of each district. Each of these was calculated using formulas described in the Wisconsin Department of Public Instruction's (DPI) School Report Card Technical Guide (Wisconsin DPI, 2014b). The scores are normalized to each other on a one hundred point scale for comparison and accumulation into a total score for the report card. Below is a description of the variables used in the study as taken from the Wisconsin DPI District and School Report Cards Interpretive Guide (2014a).

District reading achievement score: This is a measure of reading performance level profiles for the "all students" group in the WSAS. The score is based on how

students are distributed across the four WSAS performance levels, and it takes three years worth of test data into account.

District math achievement score: This is a measure of math performance level profiles for the “all students” group in the Wisconsin Student Assessment System (WSAS). The score is based on how students are distributed across the four WSAS performance levels, and it takes three years worth of test data into account.

District reading growth score: This score reflects the degree to which students are on target to move from their starting reading scale scores to higher (or lower) reading performance levels within a three-year period, based on their Student Growth Percentile (SGP).

District math growth score: This score reflects the degree to which students are on target to move from their starting Math scale scores to higher (or lower) math performance levels within a three-year period, based on their (SGP).

District reading gaps score: A score based on the rate of change in reading achievement from one year to the next among key student groups.

District math gaps score: A score based on the rate of change in math achievement from one year to the next among key student groups.

Limitations

Factors that restricted the study and cannot reasonably be dismissed are listed below.

Publicly available data – The data used for this study was the data made publicly available by the DPI. There is some further data that may be of use to determine the impacts on closing achievement gaps but is not readily accessible.

Delimitations

In order to constrain the scope of this project to those factors, which were most relevant, the following delimitations have been put in place.

School grades – Only those schools that operate a fourth grade Kindergarten to 12th grade school district were included. All superintendents have a similar scope of responsibility as a result.

Full-time superintendent – Only school districts whose superintendents operated on a full-time basis, in one capacity or another, in their school district were included.

Closing gaps data – Some school districts did not have closing gaps data and these were removed from the study.

Summary

There is research that shows the effects of student demographics, teachers, principals and superintendents on student achievement. Given the movement towards increased accountability through standardized tests and in particular the U.S. DOE's focus on results driven accountability, it is continually important to find individuals who are able to lead for success. The research question for this study stated, is there a correlation between superintendent characteristics and student achievement? This quantitative study examined the correlation between the characteristics of superintendents and different measures of student achievement in reading and math. The data used for the

study was gathered from publicly available databases on the Wisconsin Department of Instruction website. Understanding if there is a correlation between the characteristics of superintendents and student achievement is important in selecting the best possible leaders for school districts.

Chapter 2 – Literature Review

Introduction

Over the last decade, there has been a growing body of research on the relationship between the superintendent and student achievement. This research has been made possible largely as a result of the public availability of statewide student achievement data that was mandated by the enactment of the No Child Left Behind Act (NCLB) of 2001. To receive federal funding for education under NCLB, common student assessments must be used for all students, data must be published in school report cards, disaggregated for student demographics, and annual yearly progress (AYP) must be made. This surplus of data, along with locally available data related to the characteristics of superintendents has created an opportunity for high quality, qualitative research on the relationship between the superintendent and student achievement. The focus has been on longevity and student achievement but research has also been conducted on race, gender, local experience, student growth, and student achievement gaps.

The Superintendent's Impact on Student Achievement

A seminal meta-analysis on the superintendent's impact on student achievement was conducted by Marzano and Waters (2006) and demonstrated a significant correlation between district leadership and achievement. However, they also found there to be great variation in the strength of the relationship with a range of effects from 0.54 to -0.13. Their research found five factors to correlate significantly with student achievement: the goal-setting process, non-negotiable goals for achievement and instruction, board

alignment with and support of district goals, monitoring the goals for achievement and instruction, and use of resources to support the goals for achievement and instruction.

Research done prior to, and after, Marzano and Waters' (2006) meta-analysis found other factors important in student achievement as well. The following have all been shown to have effects on student achievement: implementation of NCLB (Petersen and Young, 2004), hiring of school principals (Rammer, 2007), school board turnover (Alsbury, 2008), self-efficacy (Whitt, 2009), leadership for instructional development (Al-Fadhi and Singh, 2011), and internal accountability and humility (Hough, 2014).

A study conducted on rural Texas' superintendent leadership practices, derived from Marzano and Waters' (2006) report, and student achievement found no correlation between the two (Gearheart, 2013). However, this was ascribed to such high levels of concurrence with the leadership practices in question. If these behaviors are so prevalent, then student achievement would be going up across the board. Between Marzano and Waters' (2006) meta-analysis and the subsequent research that has been conducted in this area, it is clear that the superintendent can have a positive effect on student achievement.

Superintendent Longevity and Student Achievement

An additional, "bonus" finding of the Marzano and Waters' (2006) study was a relationship between superintendent longevity and student achievement. The study found that "longevity of the superintendent has a positive effect on the average academic achievement of students in the district," (Marzano and Waters, 2006). The caveat to this finding is that there were only two studies that examined this correlation. Superintendent longevity has the capacity to enhance student achievement through consistency of effort.

Consistency over many years in hiring and retention of teachers, supporting and providing resources for professional development and the removal obstacles all play a role in increased student achievement (Sybrant, 2012). Due to the implications of these findings, numerous additional studies on superintendent longevity and student achievement have been conducted.

A 2006 study indicated that, “superintendent tenure may also be effective in predicting scores and passing rates,” (Sorgi, 2006). This study was conducted in large urban school districts and used the number of superintendents that served in a period of time a proxy measurement for longevity. Additionally the Sorgi (2006) study found that other factors, such as ethnicity and gender of superintendents did not correlate to student achievement.

Three other quantitative studies conducted in Texas (Jacobs, 2009), Kansas (Myers, 2010), and Illinois (Libka, 2012) have also found a positive correlation between superintendent longevity and academic achievement, however, each has their own caveat as well. The Jacobs (2009) study found that the effects of tenure could be seen as early as the second year and made a recommendation that most superintendents should remain in the district for at least three years. Meyers (2010) found that “as the length of tenure of a superintendent increased so did the percentage of students who scored “Proficient” or better” (p. 68). An interesting finding in the Meyers (2010) study found that as the number of years serving as a superintendent decreased, the percentage of students who scored “proficient” increased creating an interesting conflict between longevity in a single position vs. longevity as a superintendent. Libka (2012) also found a positive and

statistically significant correlation between superintendent longevity and student achievement for both reading and math. This study also found a positive and significant influence on the longevity-achievement correlation for district poverty level and urban locations but not for district size.

Four quantitative studies conducted in Indiana (Metcalf, 2007), New Jersey (Plotts, 2011), Iowa (Berlau, 2011), Florida and North Carolina (Chingos, Lindquist, Whitehurst, 2014), found no correlation between superintendent longevity and student achievement. A finding that arose from the Metcalf (2007) study was the, “variability students’ achievement decreases as the superintendent spends more time in one position” (p. 62). This is an indication that longevity could lead to consistency of scores as opposed to changing of scores over time. While the focus of the Plotts (2011) study was superintendent tenure continuity and longevity, the only factor found to be statistically significant as it related to student achievement was experience in New Jersey. The author hypothesizes that an individual from New Jersey, “is more likely to understand the politics and culture” (p. 95) than one from outside of the state. The Berlau (2011) study found that superintendent longevity was not a statistically significant predictor of reading or math proficiency in Iowa school districts. Socioeconomic status and district enrollment, however, were both found to be significant predictors of student achievement in reading, math, and science.

These eight studies, conducted in numerous states and multiple large, urban school districts do not present a unified picture of the relationship between superintendent longevity and student achievement. Student achievement in these studies has also been

simplified to academic achievement as it relates to proficiency on state or national standardized tests.

Superintendent Longevity and Student Growth

Another way that achievement can be measured is through growth. A study conducted in Kentucky (Simpson, 2013) found no correlation between superintendent longevity and achievement but did find a correlation between superintendent longevity and academic growth, particularly for, “Superintendents who served a district for more than five years” (p. 21). This is an encouraging finding and suggests that even if superintendent longevity does not directly correlate to achievement, that over time, improved growth may lead to better student academic outcomes.

This study is the only one to examine superintendent longevity and student academic growth.

The Superintendent and the Achievement Gap

In a survey of literature, four studies directly examined the effect of the superintendent on the achievement gap. All of these studies were qualitative in nature and each gave its own set of recommendations for closing the achievement gap. The earliest study examined whether the No Child Left Behind Act had been a catalyst for elimination of the test-score gap (Sherman, 2008). The outcome of this study was that, “NCLB seems to have promoted a greater awareness of achievement gaps through AYP [Annual Yearly Progress] and has given some visibility to minority groups,” (Sherman, 2008 p. 697). However, the study did not find a change in the test-gaps of students of different races. The recommendations for pursuing change in this area were an awareness of data, changes

towards culturally relevant curriculum and instruction, professional development, and cultural awareness.

The other three studies examined superintendents who had closed the achievement gap in their school districts (Wright, 2009; Harris, 2014; Underwood, 2014). A number of common themes arose from these three studies and are summarized in the table below.

Table 1

Common Themes of Superintendents Who Have Closed the Achievement Gap

Wright and Harris	Wright and Underwood	Harris and Underwood	Wright, Underwood and Harris
<ul style="list-style-type: none"> • High expectations for students 	<ul style="list-style-type: none"> • Superintendent beliefs and mantras • An ability to work with the board of trustees 	<ul style="list-style-type: none"> • Communication • Hiring practices 	<ul style="list-style-type: none"> • Teacher and principal professional development • Data to drive decision making

Other themes of additional importance found to be critical were a focus on cultural proficiency and a willingness to enact change (Wright, 2009). A final conclusion as it relates to superintendent longevity was that movement toward closing the achievement gap could happen quickly. Underwood (2009) found that three of the superintendents in his study were able to affect the achievement gap in less than five years. They felt that there was an imperative to change quickly and as one superintendent stated, “Our kids are at a 9-1-1 position everyday instructionally. We don’t have time to waste” (Underwood, 2009, p. 189).

Poverty and Student Achievement

The relationship between poverty and student achievement has long been established in the United States and across the world. Coleman's (1966) landmark study established socioeconomic status as a strong predictor of student achievement and numerous follow on studies have confirmed the same relationship. A 1997 study using NAEP data by Biddle concluded there was a significant correlation poverty and achievement and that school funding and poverty could predict 55% of the variance in state mathematics achievement. Darling-Hammond (2000) concluded the same thing again two years later using state level NAEP data, finding that poverty was significantly negatively correlated with student outcomes. Given the long and clear relationship between socioeconomic status and student achievement it is clear that this factor should be taken into account when identifying the effect that other factors may have on student achievement.

Summary

Since Marzano and Waters' (2006) study reporting a significant positive correlation between superintendent longevity and student achievement, numerous other studies have investigated the same question. Given that only two studies were examined to provide their result, ongoing research was certainly necessary. Since then, the results have been mixed. Four studies, across three states and multiple large, urban cities upheld the Marzano and Waters' (2006) finding (Sorgi, 2006; Jacobs, 2009; Meyers, 2010, Libka, 2012) and four studies, across five states, contradicted their study (Metcalf, 2007; Plotts, 2011; Berlau, 2011; Chingos, 2014). An additional finding from a study in

Kentucky (Simpson, 2013) showed that superintendent longevity can be positively correlated to student growth, a different measure of student achievement. Little quantitative research has been conducted into the superintendent's relationship to student achievement gaps but three studies have investigated the characteristics of superintendents where able close achievement gaps (Wright, 2009; Harris, 2014; Underwood, 2014). The common thread between the three studies was professional development, cultural proficiency and a focus on using data to address student achievement. Research has shown a clear negative correlation between poverty and student achievement and this factor is relevant in any study on student achievement.

Chapter 3 - Method

Introduction

The state of Wisconsin has had a statewide, standardized test in place since 1975. The test has undergone many changes over the years. The format of the test that was used for this study was completed in 2006 and the data was evaluated under new cut scores after alignment to the National Assessment of Educational Progress (NAEP) in 2012-2013.

As a part of Wisconsin DPI's waiver for ESEA Flexibility in 2012, the School Report Card was developed. This report card reported statistics about each school district to include: student achievement, student growth, closing gaps, test participation rate, absenteeism rate and the dropout rate. In order to calculate many of these items additional student demographic information was also collected to include: race, percent of students with a disability, and percent of students economically disadvantaged. After calculation of scores and normalization of categories, schools were given a rating related to state expectations: significantly exceeds, exceeds, meets, meets few, or fails to meet. The data contained in this report card provided the foundation for this research.

Subjects

The subjects chosen were superintendents working in the Wisconsin public school system. Only those superintendents who operated a 4k-12th grade school district were included. Additionally, the superintendents selected must have worked in a full-time capacity in the school district and have scores reported on their school's report card for the areas of reading achievement score, math achievement score, reading growth score,

math growth score, reading closing gaps, and math closing gaps. Three districts were removed due to a lack of data on their superintendent and one superintendent was removed due to missing information. As a result of these screening criteria, 330 superintendents in 330 school districts were used for this study.

Sampling Procedure

Data was collected from publicly available databases found at Wisconsin Department of Public Instruction websites (WI DPI, 2015a and WI DPI, 2015b).

Research Setting

This study was carried out using superintendents that were employed in the Wisconsin public school system in the 2013-2014 school year.

Instrumentation

Databases that were publicly available on the Wisconsin DPI website were chosen for this study. The 2013-2014 School Report Card database contains information on each public school district in the state. It contains information on student demographics, district demographics, composite student achievement data, and average state achievement data.

The 2014 Administrative Salary Report is a database that includes information on the administrators with administrative license acting in an administrative capacity in each public school district in the state. The database includes demographic data for the administrators including race, gender, birth date, salary, fringe benefits, highest degree earned, and other information.

Validity and Reliability of Instrumentation

The Wisconsin DPI screens and validates all student achievement data that is found in the school report card database. Data reported for the Administrative Salary Report is self-reported by school districts. Given the public availability of this data both current and historical as well as the accounting requirements for the DPI, reported administrative salary data is a reliable source of information.

Statistical Treatment of Data

The data was evaluated using IBM® Statistical Package of the Social Sciences (SPSS)® Statistics, version 23. Bivariate correlation was used to test for significant relationships between identified variables. Partial correlation was used to test for significant relationships between identified variables while controlling for the percent of students economically disadvantaged.

Research Design**Data Combination and Screening Procedure.**

1. Combine 2013-2014 Administrative Salary Report with the 2013-2014 School District Report Card database using DPI school codes as the common identifier in Microsoft Excel.
2. Remove all superintendents that are not a part of 4K through 12th grade school districts.
3. Remove all superintendents that do not have school districts with complete student achievement data.
4. Remove all superintendents that have missing information.

5. Remove all school districts that have missing superintendent data.
6. Remove all extraneous information.

Data Analysis Procedure.

1. Import modified database into SPSS.
2. Compute descriptive statistics for each variable.
3. Compute bivariate correlations to identify Pearson correlation coefficients for research questions one and three.
4. Compute partial correlations, controlling for percent economically disadvantaged to identify Pearson correlation coefficients for research questions two and four.
5. Evaluate effect size to understand the practical significance of results.

Summary

Chapter three described the variables and data evaluation method that was used in the study. Data was obtained from publicly available sources and was combined using Microsoft Excel. The statistical analysis tool SPSS was used to compute correlations for the variables as well as to control for the percentage of students economically disadvantaged. The significance and effect size of these correlations determined whether there was a relationship between the variables examined.

Chapter 4 - Results

Introduction

Four research questions are the basis for the sections in this chapter.

1. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement represented by WSAS reading and math scores?
2. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement when controlling for the influence of the percent of students that are economically disadvantaged?
3. What is the relationship between Wisconsin 4K-12 public school superintendent highest degree earned and student achievement represented by WSAS reading and math scores?
4. What is the relationship between Wisconsin 4K-12 public school superintendent highest degree earned and student achievement when controlling for the influence of the percent of students that are economically disadvantaged?

Results

Research Question One: Superintendent experience and student achievement. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement represented by WSAS reading and math scores?

Descriptive Statistics: Experience of superintendents. Experience was measured in two ways: local experience, and total experience. Descriptive statistics are presented in Table 2.

Table 2

	N	Minimum	Maximum	Mean	Std. Deviation
Local Experience	330	1.0	40.0	9.871	8.4882
Total Experience	330	1.0	47.0	23.935	10.0232

Descriptive Statistics: Student achievement. Student achievement scores in reading and math were examined in three different measures: achievement score, growth score, and gaps score. The maximum score possible for all measures was 50. There was more variability in the gap scores for both reading and math as compared to the achievement and growth scores (see Table 3). The mean math achievement score was higher than the mean reading achievement score. Growth scores were similar for both subject areas.

Table 3

	N	Minimum	Maximum	Mean	Std. Deviation
Reading Achievement Score	330	14.9	43.2	30.751	3.7357
Reading Growth Score	330	24.3	45.0	32.642	3.0434
Reading Gaps Score	330	13.7	44.6	24.672	8.7432
Math Achievement Score	330	21.0	50.0	37.218	4.6787
Math Growth Score	330	19.5	43.9	31.907	4.3452
Math Gaps Score	330	11.1	43.8	24.143	8.5235

Correlations: Superintendent Experience and Student Achievement. Table 4 displays the relationship between the two measures of superintendent experience and multiple measures of student achievement. No significant correlation was found between either measure of superintendent experience and any of the six measures of student achievement.

Table 4

<i>Pearson Correlation Coefficient Between Two Measures of Superintendent Experience and Multiple Measures of Student Achievement – 2013-2014</i>			
	N	Local Experience	Total Experience
Reading Achievement Score	330	.010	.029
Reading Growth Score	330	-.063	-.072
Reading Gaps Score	330	-.012	-.031
Math Achievement Score	330	-.011	.011
Math Growth Score	330	-.094	-.073
Math Gaps Score	330	-.012	-.022

Note. **. Correlation is significant at the 0.01 level (2 – tailed). *. Correlation is significant at the 0.05 level (2 – tailed).

Research Question Two: Superintendent Experience and Student Achievement Controlling for Percent Economically Disadvantaged. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement when controlling for the influence of the percent of students that are economically disadvantaged?

Descriptive Statistics: School district percent economically disadvantaged. Table 5 shows the mean, maximum and minimum the percent of students economically disadvantaged of the school districts included in this study.

Table 5

<i>Percent of Students Economically Disadvantaged Descriptive Statistics</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
Percent Economically Disadvantaged	330	.000	.782	.39010	.144190

Correlational analysis of the relationship between percent economically disadvantaged and the six measures of student achievement show a significant correlation between four of the six measures and student achievement with three having moderate to strong effects and one have a small effect (see Table 6).

Table 6

<i>Pearson Correlation Coefficient Between Percent Economically Disadvantaged and Measures of Student Achievement – 2013-2014</i>		
	N	Highest degree earned
Reading Achievement Score	330	-.742**
Reading Growth Score	330	-.057
Reading Gaps Score	330	.134*
Math Achievement Score	330	-.731**
Math Growth Score	330	-.389**
Math Gaps Score	330	.106

Note. **. Correlation is significant at the 0.01 level (2 – tailed). *. Correlation is significant at the 0.05 level (2 – tailed).

Correlations: Superintendent experience and student achievement controlling for percent economically disadvantaged. Table 7 displays the relationship between the two measures of superintendent experience and multiple measures of student achievement when controlled for percent of students economically disadvantaged. Three

school districts were removed due to there being no students reported as economically disadvantaged. No significant correlation was found between either measure of superintendent experience and any of the six measures of student achievement when controlled for percent of students economically disadvantaged.

Table 7

<i>Pearson Correlation Coefficient Between Two Measures of Superintendent Experience and Multiple Measures of Student Achievement When Controlled for Percent of Students Economically Disadvantaged – 2013-2014</i>			
	N	Local Experience	Total Experience
Reading Achievement Score	327	.080	.012
Reading Growth Score	327	-.059	-.074
Reading Gaps Score	327	-.020	-.028
Math Achievement Score	327	.047	-.014
Math Growth Score	327	-.078	-.091
Math Gaps Score	327	-.018	-.019

Note. **. Correlation is significant at the 0.01 level (2 – tailed). *. Correlation is significant at the 0.05 level (2 – tailed).

Research Question Three: Superintendent highest degree earned and student achievement. What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement represented by WSAS reading and math scores?

Descriptive Statistics: Superintendent highest degree earned. Of Wisconsin superintendents, 47.9 % (n = 158) had a highest degree earned of a masters degree, 36.4 % (n = 120) had a doctorate, and 15.8 % (n = 52) a highest degree earned of an Education Specialist degree (Ed. S.) (see Table 8).

Table 8

<i>Wisconsin Superintendent Descriptive Statistics – Highest degree earned 2013-2014</i>		
	Frequency (n)	Percent
Masters Degree	158	47.9
Ed. S.	52	15.8
Doctorate	120	36.4

Note. A doctorate degree includes both Ed.D. and Ph.D.

Correlations: Superintendent highest degree earned and student achievement.

There were two significant findings when examining this relationship. There was a significant correlation between reading gaps score and Highest degree earned ($r = -.154$, $p = .005$) and math achievement score and Highest degree earned ($r = .126$, $p = .022$) (see Table 9).

Table 9

<i>Pearson Correlation Coefficient Between Superintendent Highest Degree Earned and Measures of Student Achievement – 2013-2014</i>		
	N	Highest Degree Earned
Reading Achievement Score	330	.102
Reading Growth Score	330	-.055
Reading Gaps Score	330	-.154**
Math Achievement Score	330	.126*
Math Growth Score	330	.022
Math Gaps Score	330	-.100

Note. **. Correlation is significant at the 0.01 level (2 – tailed). *. Correlation is significant at the 0.05 level (2 – tailed).

Research Question Four: Superintendent highest degree earned and student achievement when controlling for percent of students economically disadvantaged.

What is the relationship between Wisconsin 4K-12 public school superintendent experience and student achievement represented by WKCE reading and math scores when controlling for percent of students economically disadvantaged?

Correlations: Superintendent highest degree earned and student achievement when controlling for percent of students economically disadvantaged. When controlled for the percent of students economically disadvantaged, there was one significant correlation found between superintendent highest degree earned and any of the six measures of student achievement – reading gaps score ($r = -.142$, $p = .010$) (see Table 10).

Table 10

<i>Pearson Correlation Coefficient Between Superintendent Highest Degree Earned and Measures of Student Achievement When Controlling for the Percent of Students Economically Disadvantaged – 2013-2014</i>		
	N	Highest degree earned
Reading Achievement Score	330	.041
Reading Growth Score	330	-.061
Reading Gaps Score	330	-.142**
Math Achievement Score	330	.077
Math Growth Score	330	-.019
Math Gaps Score	330	-.090

Note. **. Correlation is significant at the 0.01 level (2 – tailed). *. Correlation is significant at the 0.05 level (2 – tailed).

Analysis of Data

Superintendent Experience and Student Achievement. From the data analysis, there were no significant correlations between either measure of superintendent experience and any of the six measures of student achievement. When controlling for percent of students economically disadvantaged there were still no significant correlations between these measures. The hypothesis was rejected for research question one and research question two.

Superintendent Highest Degree Earned and Student Achievement. Student achievement was found to correlate significantly to superintendent highest degree earned in the areas of reading gaps score and math achievement score. The correlation with reading gaps score was negative, indicating that an increase in superintendent highest degree earned resulted in a lower reading gaps score. The correlation with math achievement score was found to be positive and indicates that an increase in superintendent highest degree earned will increase the math achievement score. When controlled for percent of student economically disadvantaged only the correlation between superintendent highest degree earned and reading gaps score remained significant. The hypothesis was not rejected for research question three or research question four. It was however limited in scope to just two measures of student achievement for question three and one measure for question four.

Given the relatively small coefficients for the three correlations found to be significant, the effect size for each is considered small as well (Cohen, 1988).

Summary

Data analysis was conducted to determine if there was a significant correlation between three characteristics of superintendents – local experience, total experience, and highest degree earned – and six measures of student achievement – reading achievement score, reading growth score, reading gaps score, math achievement score, math growth score, and math gaps score. No significant correlation was found between either of the two measures of superintendent experience and the six measures of student achievement both alone and when controlled for percent of students economically disadvantaged. A significant positive correlation was found between superintendent highest degree earned and math achievement score but this correlation disappeared when controlled for percentage of students economically disadvantaged. A significant negative correlation was found between superintendent highest degree earned and reading gaps score and this correlation remained negative and significant when controlling for the percentage of students economically disadvantaged. While there may be a statistically significant relationship between superintendent highest degree earned and some measures of student achievement, the effect size is small, and in this study is unlikely to play a large role in reading gaps score or math achievement score.

Chapter 5 - Discussion

Introduction

In this chapter the results presented in chapter 4 are discussed in the context of the literature on superintendent longevity and student achievement. A discussion of the results is followed by implications for schools and recommendations for future research.

Discussion of Results

No correlation was found between superintendent local experience or total experience and the six measures of student achievement. The same was true when controlling for the percentage of students who were economically disadvantaged. The null hypothesis was confirmed for both hypothesis one and two.

A significant positive correlation was found between superintendent highest degree earned and math achievement score and a significant negative correlation was found between superintendent highest degree earned and reading gaps score. Only the relationship between superintendent highest degree earned and reading gaps score was found to be significant when controlling for the percentage of students who were economically disadvantaged. As a result hypothesis three and four were confirmed in part.

The results of this study related to superintendent experience contradict the research done by Marzano and Waters (2006) in finding a relationship between longevity and student achievement. The limited number of studies included in Marzano and Waters (2006) study give cause for concerns regarding validity and subsequent research has been conducted in this area. The subsequent research has found conflicting results with some

studies finding a positive significant correlation between superintendent longevity and student achievement and some finding no correlation. The results of this research support those that have found no correlation between longevity and student achievement (Metcalf, 2007; Plotts, 2011; Berlau, 2011; Chingos, Lindquist, Whitehurst, 2014).

This study found a significant correlation between superintendent highest degree earned and reading growth score as well as with math achievement score. The relationship between superintendent highest degree earned and reading gaps score was negative and the relationship with math achievement score was positive. Only the relationship between superintendent highest degree earned and reading gaps score remained after controlling for the percent of students economically disadvantaged. The relationship between superintendent credentials and student achievement has not been examined in the literature in a quantitative manner. This study adds to this body of work but indicates mixed and somewhat contradictory results.

Implication for Schools

The existing literature is mixed on the effects of superintendent longevity on student achievement. If superintendent longevity alone is shown to improve student achievement, then there is an incentive to retain superintendents despite other factors that may be involved. If there is no correlation between superintendent longevity and student achievement, that retention of superintendents for the purposes of student achievement should not be considered. This study indicates that in Wisconsin, superintendent experience at the local level and in the state public education system should not be considered when working towards improvement of student achievement.

The relationship between a superintendent's highest degree earned and student achievement was shown to have a significant correlation but small effects. As it related to student reading gaps scores, it is not in the best interest of the school district to employ individuals with higher level degrees as there was a negative impact on reading gaps scores as superintendent credentials increased. The opposite was found to be true for student math achievement. These mixed results and small effects of each would indicate to me that there is little benefit to considering the credentials of superintendents when hiring for the purposes of improving student achievement.

Recommendations for Further Research

This study served to increase the information available related to the characteristics of superintendents and student achievement. While there is a body of work available related to superintendent longevity and academic achievement, there are very few studies that examine student growth or achievement gaps related to superintendent longevity. This is an area that would benefit from further research. Additionally, there is nearly no existing research related to superintendent credentials and student achievement. At the same, this study found a significant correlation between student enrollment and superintendent highest degree earned ($r = .207, p = .01$). Larger districts are seeking individuals with higher degrees. If the motivation is to improve student achievement, then this practice should be more fully evaluated to determine if it is an effective strategy.

Final Thoughts

It is reassuring to believe that there could be some simple characteristic of superintendents that could be screened for to predict future success in improving

academic achievement for students in reading and mathematics. The existing research on the topic, and this study as well, provide conflicting results as to the possibility of that happening. Given the complicated nature of learning, the many factors that students bring with them to school, and the multiple levels of influence that exist in schools, it is unlikely that a simple relationship will ever be found between the characteristics of superintendents and student achievement. A significant positive or negative correlation with significant effects will likely never be consistently established between the superintendent and student achievement. This information is still useful for hiring and retention practices though as school boards and districts can then focus on other factors that are important, knowing that they are not negatively affecting the academic outcomes of students.

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Vitaé

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