

Spring 5-2011

How Do Teacher Qualifications Impact Student Achievement in Relation to the Achievement Model Established by the Mississippi Department of Education?

Timothy Darren Holland
University of Southern Mississippi

Follow this and additional works at: <https://aquila.usm.edu/dissertations>



Part of the [Curriculum and Instruction Commons](#), [Educational Assessment, Evaluation, and Research Commons](#), and the [Elementary and Middle and Secondary Education Administration Commons](#)

Recommended Citation

Holland, Timothy Darren, "How Do Teacher Qualifications Impact Student Achievement in Relation to the Achievement Model Established by the Mississippi Department of Education?" (2011). *Dissertations*. 440. <https://aquila.usm.edu/dissertations/440>

This Dissertation is brought to you for free and open access by The Aquila Digital Community. It has been accepted for inclusion in Dissertations by an authorized administrator of The Aquila Digital Community. For more information, please contact Joshua.Cromwell@usm.edu.

The University of Southern Mississippi

HOW DOES TEACHER QUALIFICATIONS IMPACT STUDENT ACHIEVEMENT
IN RELATION TO THE ACHIEVEMENT MODEL ESTABLISHED BY THE
MISSISSIPPI STATE DEPARTMENT OF EDUCATION?

by

Timothy Darren Holland

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

May 2011

ABSTRACT

HOW DOES TEACHER QUALIFICATIONS IMPACT STUDENT ACHIEVEMENT IN RELATION TO THE ACHIEVEMENT MODEL ESTABLISHED BY THE MISSISSIPPI DEPARTMENT OF EDUCATION?

by Timothy Darren Holland

May 2011

The following study was conducted in a six-county geographical region and involved teachers from various high schools that taught classes which were involved in the subject area testing program. Each participant taught one of the four state-mandated subject area classes that are tested to determine achievement levels and accreditation ratings for each high school.

The focus of the study was to collect information from each teacher regarding the qualifications they held during the 2009-2010 school year and to compare those qualifications with the mean scale score for each teacher's subject area classes. The researcher focused on five separate teacher qualifications that were National Board Certification, years of experience, alternate route certification, level of degree and hours in content area.

Twenty tests were conducted to test each qualification against the mean scale score from each subject area. Two of the test conducted produced statistically significant results. Teachers who held a National Board Certificate proved to have a statistically significant impact on test scores in English II with $t(48) = 3.319$, $p = .002$. Teachers who completed more that eighteen hours in mathematics also produced statistically significant

results in Algebra I classes with $t(47) = -2.349$, $p = .023$. These two outcomes provide a solid foundation and support basis that school administrators can use to implement practices in teacher induction and teacher recruitment programs.

A statistically significant impact on student achievement occurred in only 10% of the test during this project. Although a small percentage, the results provide educational leaders with a support basis that can be applied to current policy and practice. These results also leave the door open for future researchers to expand on the ideas explored during this project. Research topics and ideas that can easily be applied to classroom practices, foster educational growth and maximize the opportunity for student achievement.

COPYRIGHT BY
TIMOTHY DARREN HOLLAND
2011

The University of Southern Mississippi

HOW DO TEACHER QUALIFICATIONS IMPACT STUDENT ACHIEVEMENT
IN RELATION TO THE ACHIEVEMENT MODEL ESTABLISHED
BY THE MISSISSIPPI DEPARTMENT OF EDUCATION?

by

Timothy Darren Holland

A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

Ronald Styron, Jr.
Director

Gaylynn Parker

David Lee

James T. Johnson

Susan Siltanen
Dean of the Graduate School

May 2011

ACKNOWLEDGMENTS

I would like to thank those who have sacrificed the most during my journey to complete the doctoral process. A tremendous amount of gratitude goes to my wife, Teresa, for her timeless energy and efforts at home while I was away during this process. I would also like to express my boundless love to my two sons, Matthew and Jacob, for being patient with their father, while he was working on homework and not spending enough time with them. I would also like to thank my mother (Laverne) and father (Danny) for their unconditional love, support and encouragement during this educational venture. This educational goal and process has really taught me how important my family is to me. Thank you for supporting me throughout this process, especially the last four years.

I have had the pleasure of working with some incredible educators over the course of my career. My first role model and mentor was my high school baseball coach, Mr. Jerry Long. Thank you for instilling the values and work ethic that ensured a successful career path for me. I would like to thank several administrators, teachers and coaches for their assistance and professional networking that has allowed me to grow professionally. Thanks to Mr. Johnny Olsen, Mr. Rick Merrill, Ms. Rebecca Becnel, Mr. James Williams, Mr. Dean Shaw, Mrs. Carolyn Hamilton, Mr. Scott Wedgeworth, Mr. John Mundy, Mr. Wayne Rodolfich, and Mr. Ronnie Clemens.

I would like to thank my professors for their support and encouragement during this process. I would not have made it without your guidance and advice. I would also

like to say a special thank you to Dr. Edward Leonard who provided many challenges that were rigorous and mentally stimulating as well as applicable to the real world of education. I truly enjoyed each one of your classes.

I would also like to thank my committee chair, Dr. Ronald Styron, for his guidance and assistance during this venture. I would also like to thank my committee members, Dr. Gaylynn Parker, Dr. J. T. Johnson, and Dr. David Lee, for their assistance, time and effort throughout this process. I have learned a tremendous amount about leadership from each of you and I hope our professional paths cross many times in the future. Last but not least, I would like to thank my colleagues for their support and cooperation during this process. I do not think I would have made it without you. Thank you!

TABLE OF CONTENTS

ABSTRACTii

ACKNOWLEDGMENTS.....iv

LIST OF TABLESviii

CHAPTER

I. INTRODUCTION.....1

Statement of the Problem

Research Questions

Definitions

Assumptions

Delimitations

Justification

Summary

II. LITERATURE REVIEW.....18

Introduction

Theoretical Framework

National Board Certified Teachers

Years of Teaching Experience

Alternate Route Certifications

Level of Degree

Content Area Certification

Summary

III. METHODOLOGY.....62

Introduction

Design

Participants

Instrumentation

Procedures

Data Analysis

Summary

| | | |
|-----|--------------------------------------|-----|
| IV. | RESULTS..... | 74 |
| | Introduction | |
| | Descriptive Data | |
| | Statistical | |
| | Summary | |
| V. | DISCUSSION..... | 88 |
| | Conclusions and Discussion | |
| | Implications for Policy and Practice | |
| | Limitations | |
| | Recommendations for Future Research | |
| | Summary | |
| | APPENDIXES | 100 |
| | REFERENCES..... | 120 |

LIST OF TABLES

Table

| | | |
|-----|---|----|
| 1. | Information on Participating Schools | 68 |
| 2. | Information on Participating Schools Descriptive Statistics Table | 69 |
| 3. | National Board Certifications Held by Teachers..... | 75 |
| 4. | Years of Teaching Experience by Participants..... | 76 |
| 5. | Alternate Route by Participants..... | 76 |
| 6. | Level of Degree Obtained by Participants..... | 77 |
| 7. | Hours in Major by Participants..... | 77 |
| 8. | Group Statistics for NBCT..... | 78 |
| 9. | Group Statistics Years of Teaching Experience..... | 80 |
| 10. | Group Statistics for Alternate Route..... | 81 |
| 11. | Group Statistics for Level of Degree | 82 |
| 12. | Group Statistics for Hours in Major..... | 83 |
| 13. | Group Statistics for Teacher Opinion | 84 |

CHAPTER I

INTRODUCTION

Education is an ever-changing profession and is constantly requiring more time and efforts from everyone associated with any school system. School leaders and building administrators must be more active in the instructional process. Teachers are being asked to write more detailed lesson plans that contain objectives which will lead students into a higher depth of knowledge. The new testing mandates have forced parents, teachers and administrators to seek the most original and innovative teaching strategies in an effort to augment the learning process. Building principals and school leaders at all levels are required to seek strategies and practices that will improve test scores but more importantly enhance the entire learning process for all students. Teacher qualifications may not be the solution but those qualifications could make a difference in the level of skill possessed by the educator charged with the responsibility of captivating the minds of all students.

Over the past ten years, the job description for a school leader has changed dramatically. Building principals must be instructional leaders as well as effective and efficient managers of the school's many different entities. One of the most challenging tasks for the school leaders of today is replacing retiring teachers with young, energetic, and hard-working people who are passionate about the learning process. In 2002, the United States Department of Education estimated that over 2.2 million teachers would be needed to fill the vacancies created by retirement and those exiting the field of education (Cristol, Gimbert, Scne, & Wallace, 2005). School administrators not only have to worry about filling vacancies with certified staff members, but they also have to constantly

work on strategies that will enhance the teaching methods of existing staff members. Administrators must also provide and participate in professional development that will expose teachers to the latest research that will maximize the opportunity for student achievement.

Education started to focus more on test scores and student outcomes in the mid 1990s. Administrators and school leaders at all levels started to develop strategies to address shortages in the areas of math and science at the secondary level. The shortage has developed into a major problem for school leaders at all levels. Secondary school leaders have to conduct intensive searches to find highly qualified teachers to teach students at an advanced level. The level of need varies greatly throughout the geographic region of the participants in this study. The socioeconomic status of the community drastically influences the amount of monies a school district can pull from local revenues. The monies affect teacher salaries through the local supplement provided by each district. School systems with a supportive tax base can aggressively pursue teachers by offering higher salaries. However, poorer school districts do not have the same monetary resources and are at a disadvantage when recruiting new teachers to their school districts. Most high school administrators find it somewhat easier to attract content area certified teachers because of the opportunity to teach the more advanced courses. For instance, teachers who major in a content area such as mathematics do not want to teach the lower level courses offered in the middle school or junior high setting. Basile, Kimbrough, Koellner, and Swackhamer (2009) conducted a study that showed self efficacy among teachers is a vital part of the instructional process, and some schools are establishing induction programs as a means of improving teacher retention.

Several types of certifications are available for teachers who desire to improve their qualifications and enhance their effectiveness in the classroom. The first area of concern relates to mathematics teachers who lacked upper level math courses. Content knowledge in mathematics is a good indication of how well the teacher can organize and present material to students (Basile et al., 2009). Research has shown drastic differences in how material is presented and the levels of content and rigor that students are exposed to in the classroom. The certification process could change drastically depending on the university a prospective teacher attended. There are multiple types of certifications, and each one has its own unique set of requirements. The multiple types and levels of certifications will be explored later in this project (Basile et al., 2009).

In the mid 1990s, education started a self-evaluation process that required teachers and administrators to be more accountable regarding student progress. Some states began by requiring schools to administer state-mandated tests to students in various subjects. The magnitude of a state-mandated test would grow exponentially over the next decade. The challenge for educators was to continue teaching the curriculum without losing creativity and focusing solely on the test. The level of interest continued to grow regarding the impact of the certification process and the difference it made in the quality of a student's education. In 2001, No Child Left Behind (NCLB) created a sense of awareness for school leaders across the nation when it came to accountability and responsibility. NCLB established a roadmap to success for everyone involved in the educational process. The creators of NCLB sought to improve education by linking prevention programs to learning outcomes, involving parents in the educational process

and supporting families and schools by making sure all available resources were accessible (Thomas, n.d.).

Regarding curriculum and test scores, school leadership at the junior high level is somewhat different. However, the focus of school leaders must be student and teacher centered to maximize student achievement. A study conducted in 2003 showed that school leadership and administrators have a positive and significant impact on student achievement (Bosker, Kruger, & Witziers, 2003). Administrators and teachers who are willing to expand their knowledge base through professional development and college courses can increase their instructional techniques and delivery to the students. There are so many avenues to obtaining certifications or accolades that enhance a resume and make a more marketable teacher. Information collected from various school leaders showed that teachers who had completed the National Board Certification process were given a tremendous amount of credibility. School leaders also looked at years of experience and level of degree when hiring. This questioning and the researcher's own ideas also uncovered two areas of interest that were not given as much attention in the teacher recruitment process.

The national teacher shortage forced states to open up an alternate route to certification. The alternate route certification process allows educated professionals an easier and quicker way into the classroom. The second area of interest is subject related and focuses primarily on the secondary level. Exactly what process did the teacher go through to become certified, and did he or she have a minor or a major in the chosen subject area? A study conducted by Emily Feistritzer in 2005 surveyed prospective candidates for the alternate route certification process. The survey showed a dramatic

increase in how the candidates felt about their ability to teach difficult subject matter, motivate students, organize instruction and manage discipline problems (Feistritzer, 2005). Specifically, candidates who applied and were interviewed for a vacant mathematics position possessed a wide range of academic qualifications. Candidates who held a 154 certification were allowed to teach any secondary math course in grades seven through twelve. One applicant had taken 21 hours of college level mathematics, all of which were below calculus one. Another applicant had 30 hours of mathematics, all of which were calculus one and above. Despite the differences in course work, both applicants possessed the same certification.

Most administrators will agree that students can gain the same knowledge in their school regardless of the teacher they are assigned. As it turns out, that is not always true. Gordon, Kane, and Staiger conducted a study in 2006 that showed students who were taught by the top quartile of effective teachers would advance an average of five percentile points relative to their peers (Gordon, Kane, & Staiger, 2006). The same study revealed that students who were taught by the bottom quartile of teachers would lose five percentage points per year (Gordon et al., 2006).

This is one of many studies that support the idea that teacher certification has a substantial impact on student achievement. If educational leaders can show annual gains of five percentile points in student achievement, the goals set forth by NCLB are very reachable. This argument could open the door to multiple dissertation topics and future research studies, but those ideas will be explored at a later time. Research opportunities related to teacher qualifications and student test scores are endless. However, researchers must pay careful attention to all the internal factors that can influence test scores.

This study was designed to examine five different types of teacher qualifications or licensure and determine the impact those qualifications have on student achievement in relation to the accreditation model that has been established by the state department of education. Information regarding these qualifications was collected from participant's responses on a questionnaire and those responses have been matched with the teacher's mean scale score for each SATP course they taught during the 2009-2010 school year. The teacher qualifications were compared with test scores to determine their impact on student achievement.

Statement of the Problem

Education in the elementary, middle, and high school setting has dramatically changed over the last twenty years. Rhetoric such as *content*, *rigor*, and *depth of knowledge* were nonexistent in educational settings of previous generations. The mandates established and set forth by No Child Left Behind have changed the face of education forever. NCLB has addressed failing schools and forced school leaders to provide options for families if the school district is not meeting the needs of their children. If a school does not make average yearly progress for three years, a parent has thirty days to request a transfer to another school or insist that the school district provide additional services to their child (Thomas, n.d.). School leaders must hire top quality educators and provide meaningful professional development to ensure their professional growth. Instructional leadership skills will play a vital role for administrators as they attempt to recruit and retain highly qualified teachers that will allow students to receive a quality education. Educational leaders are also faced with the task of preparing all students for the next level whether it is college, a professional trade school, or the work

force. Administrators and teachers must also help students develop the social skills essential for survival once they leave the high school setting.

What characteristics or factors separate average and above-average educators? Are these same factors prevalent for all subject areas? Educators must identify the characteristics and qualities that will allow us to move our schools to the next level. Jim Collins book *Good to Great* gives multiple examples of how successful businesses move from good to great by constantly seeking improvement and not allowing complacency in locations that were turning profits. Collins, who considers himself a teacher at heart, led a research team who identified an elite set of companies and then identified the traits that allowed those companies to transition from good to great businesses (Collins, 2001). Educational leaders might model the ideas of Collins and use the data collected in this project to take a closer look at the certification requirements of teachers and what impact those certification requirements have on student achievement. How can good students be turned into great ones? How can educational leaders and teachers take minimal and basic students and turn them into proficient and advanced students? Can the same philosophy be used to move a failing student to a student who successfully completes the state department of education testing requirements for graduation? This study will look at multiple types of certifications starting with National Board Certified Teachers and will also look at years of experience, teachers who gain certification through the alternate route process, level of degree, and finally, teachers who complete a major in their teaching area at a university.

Results from this research could provide administrators with useful information that can be used during the teacher recruitment process. Statistically significant results

could assist administrators when dealing with teacher retention, when planning professional development, and when working with the staff as an instructional leader to promote the importance of educating all children. The outcomes of this study should provide educational leaders with a solid foundation from which sound academic decisions can be made for children of all ages. Results could provide educational researchers with a solid foundation that can be expanded in one or more of the particular certification areas.

The purpose of this study was to determine exactly if and how teachers with National Board Certifications impact student achievement at the high school level. This research study examines how years of teaching experience and level of degree obtained by the teacher impact student achievement at the high school level. The same tests were performed using teachers who obtained certification through the alternate route and teachers who have academic majors in the content area they are teaching. Each set of data collected from the teachers was tested against different sets of SATP mean scale scores, since different scoring rubrics exist for the subject areas. The results could provide school leaders with statistics and data that can be used in teacher recruitment and the improvement and development of teacher induction programs and professional learning communities. The results of this study show how the different teacher certifications affect student performance across the four subject areas tested at the high school level.

Research Questions

The following research questions have been answered, and those answers are supported with the data obtained from the statistical tests used in the data analysis. The data was collected from a selection of schools in the geographic region of the researcher. The results obtained from the study gives school leaders information that could assist in the quest to improve student achievement levels.

1. How do National Board Certified Teachers impact student achievement in relation to the achievement models established by the state department of education?
2. How does the number of years of teaching experience impact student achievement in relation to the achievement models established by the state department of education?
3. How do teachers who obtained certification through the alternate route process impact student achievement in relation to the achievement models established by the state department of education?
4. How do teachers with advanced degrees impact student achievement in relation to the achievement models established by the state department of education?
5. How do teachers who complete a major in their teaching area impact student achievement in relation to the achievement models established by the state department of education?

These research questions enabled the researcher to look at many types of certifications and see how they impact student achievement. Researchers are constantly looking at test scores and other types of educational data when writing articles and

formulating school improvement plans. However, very few of these studies are applicable to the geographic regions of the researcher. The culture and climate of the schools in the researcher's geographic region is quite unique. Therefore, ideas and strategies that are very successful in other states may not be as beneficial in the studied region.

Definitions

The following terms will appear throughout this research study. Each term will be followed by a short explanation and an acronym or abbreviation, if applicable in parenthesis after the term.

Accreditation Levels—The state department of education has multiple achievement levels for schools that are obtained by accumulating points based on the quality distribution index scores. The accreditation levels range from star schools to failing schools. Average yearly growth is also a component of the accreditation ratings for each school.

Advanced Degrees—Each teacher that held a masters degree, specialist's degree and a doctoral degree during the 2009-2010 school year will be referred to as an educator with an advanced degree for the purposes of this research project.

Achievement Levels—Each student will be classified into one of four groups depending on how well they perform on state mandated tests. The four classifications are advanced, proficient, basic and minimal. The goal set forth by NCLB was for all students to achieve at an advanced or proficient level by 2014.

Alternate Route—The teacher certification process that is used by non-education majors to obtain licensure. Educators have several choices when obtaining certification through the alternate route and those options will be discussed in detail in Chapter Two.

Average Yearly Progress (AYP)—The growth measurement that is used to determine if students are progressing adequately from one year to the next.

Content Area Majors—For purposes of this research study, content area majors will be defined as those teachers who complete at least 21 hours of course work in their teaching field. Teachers can obtain certification in a content area with less than thirty hours but, they must pass the praxis exam in that particular subject area.

National Board Certified Teacher (NBCT)—A certification for teachers that will supplement their pay. Each teacher that applies to become a NBCT must complete an intensive process that demonstrates mastery in his or her subject area.

No Child Left Behind (NCLB)—No Child Left Behind or NCLB was a federally mandated program that established a set of national standards for all public schools. Students will be tested in Algebra I, Biology, English II, and U. S. History.

Quality Distribution Index (QDI)—The quality distribution index is the current means for evaluation for all schools in the state. Schools must obtain a certain quality distribution index to qualify for various achievement levels.

Praxis—The exam required for non education majors to obtain certification through the alternate route. Education majors may also take the praxis to add additional certifications to their certificate.

State Department of Education—The governing body for all public schools in each state.

Subject Area Testing Program (SATP)—The title given to the mandatory testing program adopted by the state department of education. Students must pass four different tests at some point in their high school career. Students are tested in Algebra I, Biology, English II, and U. S. History.

Student Achievement—Student Achievement will be measured and discussed in terms of the mean scale SATP score for each teacher who agrees to participate in the study.

Years of Experience—The total number of years experience for teachers. Teacher induction and retention programs and how they relate to years of teaching experience will be discussed in the review of literature.

Graduation Rate—The percentage of students who actually graduate high school that are actually members of their cohort group that entered the ninth grade together.

High School Completion Index (HSCI)—The HSCI is used to incorporate students who finish high school through alternate programs such as the GED. The HSCI can raise or lower the accreditation rating depending on the percentage of students who actually finish the alternate programs in a particular school district.

Assumptions

First and foremost, the researcher assumed that participants answered the questionnaire honestly. The researcher used an instrument that was user friendly and ensured all participants as much discretion as possible. A coding system was used that allowed the researcher to match teacher responses to test data for each participant. The building administrator played a major role in the researcher's ability to deliver questionnaires and ensure participants their responses will be used for this study only. At

no time were the individual responses shared with administrators in the participating districts. The researcher collected the SATP mean scale for each person asked to participate in the research study. The mean scale score for each participant served as the basis for statistical analysis. The data analysis produced results that were much more reliable based on a high return rate from the surveys; consequently the researcher took full advantage of professional networking among colleagues when passing out the surveys. The researcher highlighted all the possible benefits for teachers and school leaders if they participate in study.

Delimitations

Results taken from the data collected in this research project could be limited by the number of schools with small student populations. The research study included only two schools that are classified as a 4A school by the high school activities association according to student population. The researcher's goal was to determine the impact of teacher certifications on student achievement, while placing an emphasis on the local area. Another possible limitation could occur when teachers with certain certifications teach all advanced classes or teachers who predominantly teach inclusion classes. Most schools split teaching assignments; yet it is possible for one set of classes to be assigned to a particular teacher based on his or her ability to handle discipline or years of experience. The socio-economic breakdown was spread out fairly consistently and contained a wide range of free and reduced lunch rates. The socio economic status of the school should not be a limitation. Nevertheless, the researcher examined the socio economic status of each school and discussed how those levels relate to the test scores within the school.

The research was limited to high schools in the local geographic area. The researcher requested and was granted permission from schools based on accreditation level, socio economic status and population. The researcher hopes that by implementing the selection criteria, he has greatly reduced the factors that could produce skewed data or incomplete results. The researcher has done everything possible to ensure all participants that the information collected for the study was kept confidential throughout the entire process. All data collected was kept in a very secure location throughout the research process and will be destroyed at the completion of the study. Other possible limitations could be that data collected was from some of the larger schools in the southern part of the state without including schools from some of the lower socio economic areas of the state. However, the requested sample size does include a distribution of schools supported by communities with unique cultures and climates.

Justification

A research study that produces reliable results will enhance the learning process for students as well as educators. The ability to take established ideas and “tweak” them to fit multiple situations is a tremendous attribute to any professional field. This research project is tied to student achievement, and if the results show statistically significant impacts for any of the areas tested, then the study has the ability to enhance the learning process and improve student achievement. However, if none of the research questions are answered with results that are statistically significant, then future researchers will have a solid foundation to build on that is closely related to the topics or ideas presented through this study. The new accountability standards mandated by the state department of education require school administrators to be aggressive in their efforts to improve

student achievement. School administrators can take significant results from this research study and justify the recruitment of teachers with additional certifications in their efforts to improve student achievement. The final requirements established by the state department of education in its efforts to satisfy NCLB require schools to obtain a QDI of 240 to achieve a star school rating. Based on scores obtained by the star schools during the 2009-2010 school year, schools leadership teams have raised their SATP scores over 20 points on average (Mississippi Department of Education, 2010). If some additional strategies are not implemented in the near future, schools' leaders are going to face a monumental task of achieving the top performance ratings for their schools.

Several studies have found that additional certifications have more impact in math and science classrooms. Previous research suggests that the more content specific the training, the more likely that training will positively impact student achievement. Years of teaching experience seem to have less impact as the number of years increase (Goldhaber, 2002). The intent of this project was to determine the impact of the certifications across all four subject areas and relate those findings to the percentage of students who achieved advanced and proficient on the SATP tests.

School administrators can use the results from this study in a manner that could provide additional resources and strategies when participating in the teacher recruitment process. School leaders who are not proactive when recruiting teachers will not be able to maintain current standards or meet the challenges they will encounter in the near future. Building principals who do not meet these new standards will find themselves being reassigned or terminated.

Information collected will be relevant to the process by which public schools are evaluated, and the data analysis will measure the level of impact teacher certification has on student achievement. Any research study that is related to the improvement of the educational process or improving the opportunities for our young men and women is well worth the time and effort. As educators, the desire to improve the learning process for our students and ourselves is the only justification we need to conduct a research study. The findings from this study will allow future researchers the ability to focus on specific certification areas and give administrators an advantage in the teacher recruitment process. Educators are given the task of leading teachers instructionally and promoting student achievement each year. Administrators and school leaders will have information to support their decisions and justification for doing what is best for children because they truly are our future.

Summary

School leadership must constantly seek new and innovative ways to enhance the instructional process and the curriculum. Teacher shortages and budget cuts have forced school leaders to cut teaching positions, which increases class size. Building principals must attempt to implement these budget cuts while meeting the standards set forth by the state department of education in its efforts to meet the goals of NCLB. School leaders must seek high quality teachers who can produce results on state mandated tests. This study examined five teacher qualifications and determined their impact on student achievement.

This study involved a wide range of school systems with substantially different support networks. Factors such as socio-economic status, support and school culture and

climate can impact the learning process. These external factors were considered in the collection of data from the selected sample size. The selection criteria provided the researcher with a quality sample of teachers with multiple certifications.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Many factors influence student achievement at the secondary level. Academic standards and expectations are always at the forefront of school systems. The academic expectations are created and maintained by students, parents, teachers, and school leaders. NCLB contains a list of standards that enables stakeholders to compare schools based on the same data. Teacher quality is the first characteristic that appears when parents, teachers, school leaders and researchers examine schools to determine school quality. Teacher quality can be evaluated based on the number or types of qualifications a teacher holds. There are many different certifications or qualifications an educator can possess which will enhance their ability to increase student achievement. In the following chapter, this study will focus on five different types of certifications or teacher qualifications that have the potential to impact student achievement. The collection of research will be divided into five different sections starting with the National Board Certification process. The following pages will also include results and conclusions of previous researchers related to the topics of teaching experience, alternate route certification process, level of degree obtained by the teacher, and whether or not the teacher has completed a major in his or her teaching area. Data collection will also be concerned specifically with the number of content area courses taken and the educational level of those courses.

Each section will contain data related to how each certification or qualification impacts student achievement. Research is plentiful to support either side of the argument

regarding the impact of teacher certification on student achievement. The results discussed below will provide the reader with summaries of previous studies. The previous information will be interesting when compared to the findings and conclusions from this research project.

Theoretical Framework

The majority of the studies encountered during the collection of literature pertaining to the National Board Certification process showed that teachers who successfully complete the certification process have a positive impact on student achievement. As one might expect, the NBPTS website cites several studies that support the certification process. However, it was difficult to find any quality research studies that found conflicting results regarding the impact of NBPTS teachers have on student achievement.

Data pertaining to how the numbers of years of teaching experience impacted student achievement was limited. The data accumulated showed the most dramatic differences in the first few years experience. Student progress actually decreased between years three and ten and flat lined after year ten (Goldhaber, 2002). The researcher then examined teacher retention and induction programs and found that schools with successful induction programs had higher retention rates which translates into fewer teachers who fall in the category where student achievement is impacted the least (Wong, 2004).

The alternate route process has relieved some of the need for placing certified teachers in the classroom. Most of the research has produced consistent findings that teachers who obtain certification through the alternate route process have lower attrition

rates. Goldhaber and Brewer conducted a 1999 study and their findings were consistent with those of Podgursky (2005) which showed that the licensure requirements of teachers do not impact student achievement.

Sawchuk (2009) suggested that schools were wasting millions of dollars on salaries for teachers with advanced degrees because his research found student test scores did not change regardless of the degree of their teacher. However a study conducted at Walden University showed students who had teachers with advanced degrees made large gains on achievement tests. He also stated that teachers with advanced degrees had more impact on student achievement in the advanced courses at the secondary level. These findings are consistent with the findings of Boots (2007), Monk (1994) and Lim-Teo (2007) which stated that content area majors are more effective in math and science courses which require advanced skills to enhance student test scores. No positive results were found in other courses (Sawchuk, 2009).

National Board Certified Teachers

Do National Board Certified Teachers have any impact on student achievement in relation to the achievement models established by the state department of education? Thomas Jefferson once said, “A nation that seeks to be both free and ignorant, never was and never will be” (National Board for Professional Teaching Standards, 2004, n.p.). Our nation has gone through a tremendous number of changes over the past 250 years. Although Jefferson was educated by bold and innovative thinkers, he probably never envisioned education as we know it today (National Board for Professional Teaching Standards, 2004). The innovative thinkers that helped to create and fuel Jefferson’s

passion for knowledge laid the foundation for the core values and beliefs of the National Board Certification process (National Board for Professional Teaching Standards, 2004).

No Child Left Behind has forced states to develop new and innovative programs that are designed to improve student achievement. More responsibility has been placed on school leaders to be instructional leaders and take an active role in the educational process. School leaders are now searching for new and innovative programs that will allow their students to achieve at advanced and proficient levels on state mandated tests. One strategy states are using is to provide supplements for teachers who obtain National Board Certifications. This research study will evaluate the effectiveness of National Board Certified teachers on student achievement in relation to the achievement models established by the state department of education. This study will focus primarily on schools within the geographic region of the researcher. The sample is representative of the communities and the schools in those cities. A list of detailed information regarding the certifications of the teachers in those schools will provide a sound basis for statistical testing to determine the impact those certifications have on student achievement. Schools were selected based on school population, demographics, and socio-economic levels of the school.

The idea for the National Board of Professional Teaching Standards was first shared in a speech by Albert Shanker, president of the American Federation of Teachers (Boyd & Reese, 2006). Shanker introduced the idea as the center piece of a report titled, "A Nation Prepared: Teachers for the 21st Century," that had been prepared for the Carnegie Forum on Education (Boyd & Reese, 2006). The NBPTS is now over 20 years old and has raised expectations while allowing teachers to evaluate themselves and

improve techniques and strategies in their classrooms. The original proposal estimated the cost at approximately \$50 million dollars. In 2006, the government had invested over 400 million dollars in the program (Boyd & Reese, 2006). Programs such as the NBPTS, which can create division among educators, have always received negative feedback and resistance from teacher unions. Teacher unions tend to support equality for all teachers and historically do not support programs that impact working conditions or salary schedules for teachers (Boyd & Reese, 2006). NBPTS managed to persevere and withstand the critics during those early years while gathering support and evidence that teachers who completed the certification program had a positive impact on student achievement (Boyd & Reese, 2006). NBPTS gained support in those early years by attracting political and educational leaders such as former North Carolina Governor Jim Hunt and James Kelly, who was well known for his work in education and social policy (Boyd & Reese, 2006). A key idea or concept that allowed NBPTS to survive during this critical time was that two-thirds of the positions on its 63 member board were occupied by teachers (Boyd & Reese, 2006). The large involvement of educators created teacher buy in and enabled self promotion of the program (Boyd & Reese, 2006). A sound organizational structure, politically savvy leaders, and masterful lobbyists allowed the board to obtain necessary funding and lay the ground work for what has become a substantial force in the world of education (Boyd & Reese, 2006).

Long before No Child Left Behind began to make its impact on public education, the National Board of Professional Teaching Standards was seeking ways to improve education. The National Board of Professional Teaching Standards has the opportunity to improve teacher quality, create an environment that will enhance teaching and learning

in schools, increase the number of highly qualified teachers, and improve the career opportunities for people who are already in the education profession (Honawar & Viadero, 2008). Regardless of how NBPTS has affected student achievement, it has created a very thorough and detailed process by which teachers can evaluate themselves. Teachers who complete the program are not automatically great teachers; however, the process of self evaluation and reflection opens the door for constant improvement regardless of the profession and the title does give the impression that teachers can deliver in the classroom. Congress requested the National Research Council (NRC) to conduct a study to determine just how effective national teacher certification programs really were. The panel revealed that when students have nationally certified teachers, their test scores are higher (Honawar & Viadero, 2008). However, the panel also stated that administrators as a whole are not making effective use of the nationally certified teachers. Also, board certified teachers were more likely to stay in teaching than change jobs at a higher rate than those who have attempted, but not passed the certification process (Honawar & Viadero, 2008). The panel also found that teachers who obtain national certifications usually move to schools where the poverty levels are much lower. Multiple studies have stated that National Board Certified Teachers tend to move to more affluent districts that have a higher socio-economic status and fewer problems with discipline. If this is the case, then one must wonder if programs like NBPTS are only allowing the rich to get richer, while the poor continue to struggle.

Some states have been more willing than others when it comes to promoting the National Board Certification. Some states are offering grants to cover the cost of the application fee while other states are offering supplements of up to \$6,000. Statistics

taken from the National Board for Professional Teaching Standards stated that the number of National Board Certified Teachers more than doubled from 2004 to 2009 (National Board for Professional Teaching Standards, 2010). In 2009, 15 states had a 20% increase in the number of teachers who achieved the National Board Certification, compared to 2008 (National Board for Professional Teaching Standards, 2010). Almost 1,700 teachers successfully met the standards for the profile of professional growth to renew the National Board Certification (National Board for Professional Teaching Standards, 2010).

Most of the research studies involving National Board Teachers and their impact on student achievement have taken place in North Carolina, South Carolina, and Florida. Those three states rank in the top five when it comes to the number of teachers who achieved National Board Certification status in 2009. North Carolina is first with 1,509 National Board Certified Teachers. Washington is second with 1,248 teachers who hold the certification (National Board for Professional Teaching Standards, 2010). South Carolina is third with 798 NCBT's. Illinois is the fourth member of the top five with 732 teachers who have obtained the certification. Florida is fifth with 651 NBCT's (National Board for Professional Teaching Standards, 2010). Regardless of the results of a research study, if the conditions under which the study is conducted are not compatible to the reader's area, it will be a risky move to say just how effective the application would be under a new set of circumstances. The culture and climate of any particular school district or geographical area will be a contributing factor in determining how it will impact student achievement. One of the researcher's goals with this study is to provide school leaders with information that can be applied and used in local school districts. In

order to do that, it is important to note what previous researchers and studies have said about teachers and the National Board Certification process.

In 2009, Mississippi possessed 3,103 National Board Certified Teachers. Mississippi had 222 teachers obtain National Board Certification status in 2009. That is an 8% increase over the previous year (National Board for Professional Teaching Standards, 2010). Senator Thad Cochran stated, “Teachers in Mississippi tell me that the process of becoming board certified renews their enthusiasm for teaching, improves their performance in the classroom, and helps raise the achievement levels of their students.”(National Board for Professional Teaching Standards, 2010, n.p.). If education were a perfect world, all educators would possess this powerful characteristic. Any certification is useless unless the person holding that certification is self motivated, has a tremendous work ethic, and is determined that doing what is best for children is the only thing that matters. Within the state of Mississippi, the Rankin County School District leads all districts with 145 teachers who are nationally board certified. Jackson Public School District, Tupelo, Desoto County, and Madison County School District are the top five school districts with teachers possessing national board certification (National Board for Professional Teaching Standards, 2010).

The National Research Council (NRC) found that National Board Certified Teachers advance student achievement and learning, stay in the classroom longer, support new and struggling teachers and assume other school leadership roles (National Board for Professional Teaching Standards, 2010). The NRC confirmed in the same reports that students who are taught by National Board Certified Teachers make higher gains on achievement tests than students taught by non-National Board Certified teachers

(National Board for Professional Teaching Standards, 2010). The NBPTS was established in 1987 and soon thereafter issued its first policy statement entitled, “What Teachers Should Know and Be Able to Do” (National Board for Professional Teaching Standards, 2010).

The first was that all teachers are committed to students and their learning. Proposition one listed multiple characteristics that each teacher must demonstrate in order to become national board certified. Each teacher must provide all students with the opportunity to access knowledge. Teachers must treat all students equally and promote the belief that all students can learn. All educators must also assist students with peer relationship skills and motivation to succeed. Teachers are also asked to address character and civic responsibility through their actions to ensure that students understand their role in society as adults (National Board for Professional Teaching Standards, 2010).

Proposition number two stated that teachers must know the subject they are teaching and how to teach those subjects to students. This is basically the same as content knowledge that will be discussed later in this review of literature. NBPTS felt it was essential that all teachers possess mastery of the content they would be presenting to students. Each teacher should also possess the ability to present material to students in multiple ways using various instructional strategies. Teachers should also have a firm grasp on curriculum to allow them to fill in the gaps where students are lacking, as well as spark their interest by introducing new and innovative applications for the material they are covering (National Board for Professional Teaching Standards, 2010).

Proposition number two is far ahead of its time. The same ideas have been renamed and

given new “buzz” words that are heard in education today. Content and rigor, vertical and horizontal curriculum alignment, differentiated instruction and Understanding by Design all seem as if they would fall under proposition number two.

The third proposition states that all teachers are responsible for managing and monitoring student learning. Not only are teachers responsible for presenting material in a manner that students can comprehend, but they must also monitor progress daily and find out what motivates each student (National Board for Professional Teaching Standards, 2010). If a teacher is going to fully explain student performance to parents, then he or she must be an expert on the student’s classroom behavior, study habits, work ethic and attitude. These are tremendous but essential requirements if educators are truly going to leave no child behind.

Proposition number four requires teachers to think systematically about their practice and learn from experience. More specifically, NBPTS asks that teachers be their own worst critic (National Board for Professional Teaching Standards, 2010). Each teacher should examine each lesson in detail before and after it has been presented to the students. Teachers should be aggressive when it comes to seeking that one thing that might be done differently to reach that at-risk student or make a concept easier to understand. If educators are willing to adopt a philosophy of what they can do to make it better and seek constant improvement, then this task can be achieved without too much trouble. As a coach, teachers are usually seeking that one skill or minor adjustment that would give their students a competitive edge. Educators, who use this philosophy, are more likely to have a positive impact on their students. Everyone in the education

profession must be willing to accept change and embrace new ideas and implement those new ideas and concepts in the classroom.

The final proposition requires teachers to be members of professional learning communities (National Board for Professional Teaching Standards, 2010). In order for a teacher to reach a high level of effectiveness, he or she must be willing to work with colleagues and parents to enhance the educational process. Teachers can work with colleagues on instructional strategies and curriculum alignment and share ideas with parents and support groups that will allow the skills and concepts taught in class to be enhanced at home. The willingness and desire to reach each student is an essential skill for any educator.

A collection of previous research by NBPTS, Honawar and Viadero, Boyd and Reese (2008), and Goldhaber and Anthony (2007) has proven that many different opinions exist and studies can be found to support either side of the argument as to whether National Board Certified Teachers have any impact on student achievement. One of the most interesting studies regarding National Board Certification and student achievement was conducted in 2007. Goldhaber and Anthony found that students who were taught by National Board Certified teachers scored higher in reading and mathematics than those students who did not have a National Board Certified Teacher (Goldhaber & Anthony, 2007). Results of this study also showed that the differences in achievement varied depending on the grade level (Goldhaber & Anthony, 2007). Another group of researchers expanded on the study conducted by Goldhaber and Anthony. An additional research group expanded the data collection process and added more validity and reliability to the previous study by finding similar results regarding the

impact of National Board Certified Teachers on student achievement (Clotfelter, Ladd, & Vigdor, 2007). Clotfelter, Ladd and Vidgor continued the examination of Goldhaber and Anthony's study by using more current data and increasing the size of the sample.

Another study that focused on how principals perceive the effectiveness of National Board Certified Teachers showed that the majority of school leaders look at National Board Certified Teachers as reflective practitioners and highly effective educators (Okpala, James, & Hopson, 2009). If the National Board Certification process does nothing else, it forces a teacher to examine the core of his or her ideas, philosophies and teaching strategies once the classroom door is closed. Any teacher can put on the proverbial "dog and pony" show, but if he or she is really interested in doing what is best for children, a true educator will always be willing to improve.

The largest study on National Board Certification was conducted in 2004 by Cavalluzzo. Her study involved more than 100,000 student records and indicated that students who are taught by National Board Certified Teachers showed gains equivalent to spending an extra month in school (Cavalluzzo, 2004). The increasing demands pertaining to curriculum require teachers to be more efficient when it comes to time management. If the above finding is true for all districts, it would greatly benefit school leaders to encourage teachers to seek National Board Certification.

Content, rigor, and depth of knowledge are interesting terms that appear in any conversation, article or study pertaining to education today. According to the research section of the NBPTS web site, National Board Certified Teachers are very astute when presenting meaningful and detailed lessons to students (National Board for Professional Teaching Standards, 2010). This idea was supported by a study in 2000, conducted by

Bond, which stated that National Board Certified Teachers created a more challenging curriculum and presented lessons that were better prepared and created deeper thinking among their students when presenting difficult subject matter (National Board for Professional Teaching Standards, 2010).

A study conducted by William Rouse in 2008, involved 54 kindergarten through eighth grade teachers. Twenty-seven were National Board Certified and 27 had not obtained the certification. Mr. Rouse used a match pair design along with a correlated samples t-test with a $p < .05$ to analyze the achievement level scores of the students (Rouse, 2008). The results of the study did not show a statistical difference in the achievement test score between those students who had a teacher with National Board Certification when compared to the scores of students whose teachers were not board certified (Rouse, 2008).

The majority of research supports the fact that the NBPTS process is beneficial and productive for educators and, more importantly, gives the teacher the ability to be more efficient when transferring knowledge to their students. A passion for success and analysis of previous studies has sparked an interest and a desire to examine if NBPTS teachers in local school districts can produce the same outcomes. Practical application of the results in this study will enhance the educational process for all stakeholders. Educational leaders need some type of application-based research and proven results before implementing new programs that have the potential to be unsuccessful. The author stated that the National Board Certification process allowed her the opportunity to communicate and reflect on her experiences as a classroom teacher (Childers-Burpo, 2002). Educators with an open mind and a willingness to learn can always benefit from

networking with other teachers in their same area or grade level. The author also described the computer prompted test she has to take as eight of the most grueling hours of her life (Childers-Burpo, 2002).

School leaders have different opinions regarding the national board certification process and exactly how much credibility the certification is given will vary depending on the school district. During a 14-year span, from 1993 to 2007, 99,300 teachers applied for NBPTS certification and 63,800 earned the credential (The National Research Council, 2008). Roughly 64% of the applicants who applied for the NBPTS certification actually obtained the license. This researcher would expect that percentage to be a good bit higher. All applicants should hold a minimum of a bachelor's degree and have enough experience in the classroom to serve as a reflective practitioner. According to these statistics we can only put one NBPTS certified teacher in 60% the schools nationwide (The National Research Council, 2008). The National Research Council suggests that future research should place more emphasis on student outcomes and not test scores. Student motivation and attendance are two specific factors listed as contributors to determining just how effective NBPTS certified teachers are regarding the entire educational process. One cannot measure success simply by test scores alone. In Mississippi, high schools are rated based on how well their students score on four basic subject area tests. This is less than 15% of the course work a student will complete during his or her high school career. This study should expand the current theories and ideas by conducting similar analysis but enhance the outcomes by collecting data from schools in our geographical location. Project outcomes should create new strategies for educational leadership teams by looking at the impact of the NBPTS certification process on

secondary students within all four SATP tested areas. In conclusion, the NBPTS certification is time consuming and very detailed in nature. However, the majority of research tends to support the idea that those teachers who complete the certification process motivate their students to perform at a higher level.

Finally, in a 2005 study conducted by Jill Farrell, NBPTS reported that teachers who are candidates for certification are involved in more leadership activities (Farrell, 2005). If this is the case, then our NBPTS candidates are more prepared to enter the administration profession. Instructional leadership is an essential characteristic for prospective administrators in this era of testing and accountability. The same study also revealed that National Board Certified Teachers experienced a higher level of career satisfaction and were willing to stay in the profession longer than teachers who were not board certified (Farrell, 2005). Essentially the determining factor for any teacher will be a combination of working conditions, support of administration, and opportunity for advancement within the classroom as well as professionally. Depending on the professional aspirations of the educator, if a person has achieved National Board status, the administration should use that person as a resource and keep him or her highly involved in the educational process (Farrell, 2005).

When researching the NBPTS certification process, this researcher was amazed at how it impacts student achievement. Results from this research project have the potential to establish new guidelines for administrators when it comes to teacher recruitment. If the results of this study are consistent with previous findings, the NBPTS process should have a positive impact on student achievement. However, the knowledge gained from

the examination of previous studies and opinions has proven beneficial, regardless of the outcomes associated with this project.

Years of Teaching Experience

Does the number of years experience possessed by the teacher have an impact on student achievement? Teacher quality is sometimes related to how many years of experience a person has teaching or even teaching a particular subject. As educators, we should be our own worst critics constantly seeking to improve what we do in the classroom. Most people would think that a teacher with multiple years experience would do a better job than a first or second year teacher. A teacher could have 15 years of experience or one year of experience that has been repeated 15 times.

In general discussions among members of the educational profession, teacher experience is considered an enduring characteristic. Information gathered from practicing educators resulted in the following ideas regarding teacher experience and the impact it has on the educational process. However, several phases were prevalent in all of the discussions. A teacher with less than three years experience is still considered a newcomer to the profession. Teachers with three to ten years experience are given a little more credibility regarding effectiveness in the classroom. Once a teacher surpasses 15 years in the classroom, they fall in one of two categories. They are either seasoned veterans who are passionate about educating children and have learned to “tweak” the instruction process to maximize the quality of instructional depth of knowledge gained by the students. The second category is one educators hope to avoid, and it involves teachers who feel as if they have seen cycles of changes and are only worried about serving their time and making it to retirement.

It was somewhat difficult finding quality research studies that did not contain a large number of limitations. Most of the research related to years of teaching experience also combined the trait with other issues that impact student achievement. One study focused on intensive teacher induction programs and how they impact teacher retention rates as well as student achievement. The Institute of Education Sciences conducted the research study that examined over a thousand teachers in 13 different states (Sawchuk, 2008). The study focused on teacher retention rates and how they impacted student achievement. The researchers concluded that intensive induction programs did not have a significant impact on teacher retention rates or on mathematics or reading test scores (Sawchuk, 2008). Most schools have some type of teacher mentoring program for first-year teachers or for teachers that are new to a particular district. At one time, New York City required a yearlong induction program. The students who had teachers that participated in the induction program made better grades and posted larger gains in test scores (Sawchuk, 2008). Teacher mentoring programs are usually led by teachers with more years of experience, and those teachers are expected to share teaching strategies and classroom management concepts with the inexperienced teachers. The mentoring philosophy does not substitute for the actual classroom experience, but it does provide support to young teachers willing to listen to experienced teachers when it comes to dealing with issues young educators will face in those first few years.

Since the inception of No Child Left Behind, schools are evaluated on performance based standards. The number of years a teacher has spent in the classroom, in some cases, can help predict how well his or her students will perform on state mandated tests. One would expect the students of a teacher who has multiple years

experience to outperform a class that has a first-year teacher delivering instruction. However, that is not always the case. A study that was published in 2002 in *Education Next* was originally conducted by Dan Goldhaber in 1999. Goldhaber found that only 3% of what the teachers contributed to the learning process could be related to years of experience or degree obtained (Goldhaber, 2002). Other findings that were shared in the study stated that veteran teachers or those with experience did have a positive effect on student achievement. However, the impact did not remain consistent as the years of experienced increased (Goldhaber, 2002).

Aaronson, Barrow and Sander (2007) conducted a study in the Chicago Public School System to investigate the impact years of teaching experience has on student achievement in the high school setting. The results of the study showed an unsubstantial impact at the high school level. More specifically, the study showed a slight gain over the first few years and then student achievement actually leveled out and even decreased as the years of experience surpassed ten (Aaronson, Barrow, & Sander, 2007). Harris and Sass (2007) continued to explore the same data and found similar results. The analysis conducted by Harris and Sass showed a .01 standard deviation increase in mathematics achievement scores for students whose teachers had ten or more years experience (Hass & Sass, 2007).

Jacob Vigdor (2008) wrote an article based on teacher pay and the incentives that influence the salary scales for educators in North Carolina. His opinion, along with previous research studies, suggests that there is no relationship between teaching credentials and how effective a teacher is in the classroom (Vigdor, 2008). He goes on to say that substantial gains in student achievement are evident during the first few years of

teaching. However, the achievement gains decrease as the years of experience increase (Vigdor, 2008). Vigdor suggests that we do away with existing salary schedules and base teacher pay on student performance. The idea would allow first-year teachers to make more money that would attract more people to the field of education. The incentives within Vigdor's plan call for teachers who possess credentials that have proven to increase test scores by one standard deviation to receive a 1% salary supplement (Vigdor, 2008). He also states that his plan would get very little support from teacher unions, which primarily consist of experienced teachers.

An additional area of concern for educational leaders is the large number of educators who enter the profession and struggle to meet some of the demands that are placed on classroom teachers. The majority of teachers who leave the profession will do so in the first five years. A research article by Kimberly Palmer, based on data from research studies conducted by the National Center for Education Statistics, showed that the percentage of teachers leaving the classroom continues to grow at an alarming rate (Palmer, 2007). The percentage of teachers who left the profession increased from 6% during the 1988-1989 school year to 8% during the 2004-2005 school year (Palmer, 2007). The same study published by NCES and referred to by Palmer stated that 20% of teachers with no prior full-time teaching experience left the profession during the 2004-2005 school year (Palmer, 2007). These statistics are somewhat staggering, and student achievement will be impacted when educational leaders are constantly replacing classroom teachers. Statistical data mentioned earlier stated that student progress and growth are impacted by teaching experience more during the first few years. If school leaders and administrators are constantly replacing teachers with less than five years

experience, the progress of academic growth of students will reach a stand still (Palmer, 2007).

Additional research and articles attributed low teacher retention rates to lack of administrative support, low pay, and student discipline (Fredricks, 2001). In a separate article, Debra Viadero referred to research collected from the *American Journal of Education* that provided additional reasons for low student achievement when related to teaching experience. Highly qualified or teachers with several years of experience are usually given upper level classes leaving lower level classes for the teachers with less experience (Viadero, 2008). The assignments of the lower level classes usually result in more discipline problem and increased levels of frustration for educators. The increased levels of stress and rates at which young teachers are leaving the profession are forcing administrators to staff schools with first and second year educators. Staffing problems can be addressed though effective professional development and teacher support which, in turn, leads to seasoned teachers with more classroom experience and increased student performance.

Tara Beteille and Susanne Loeb (2009) conducted a study on teacher quality and teacher labor markets through Stanford University. The study examined many different teacher qualifications and how those factors influence student achievement. Several studies have tied years of experience and the recurring cycle of hiring new teachers and replacing them with new uncertified teachers who lack experience. In 2004-2005, over 30% of public school teachers were at least 50 years of age (Beteille & Loeb, 2009). Most of these teachers will be eligible for retirement in the next five to ten years (Beteille

& Loeb, 2009). Most of them will be replaced with young and inexperienced teachers (Beteille & Loeb, 2009).

Boyd, Lankford, Loeb, Rockoff, and Wyckoff conducted a study that showed teachers with less than two years experience did not produce the same results regarding student achievement for English Language Arts (ELA) students and math students (Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008). Clotfelter, Ladd, and Vigdor (2007) found that student achievement steadily increased depending on the years of experience a teacher possessed. The increase was consistent across the board until years twenty-one through twenty-seven where it flat lined. Consistent with other studies, Clotfelter et al. (2007) found that the largest gains took place during the first few years. Another study conducted by Rockoff (2004) used data collected from a panel in New Jersey, showed that the impact of teacher experience on student achievement varied by subject matter (Rockoff, 2004). When compared to studies testing for the impact of a teacher's content knowledge, the results are consistent with the findings that teacher's qualifications impact student achievement more in math and science courses.

The wages for teachers have increased dramatically over the last forty years (Beteille & Loeb, 2009). More specifically, Mississippi teachers have received some type of wage increase in 17 of the last 19 years. Wages can be substantially different depending on the district where a teacher is employed. The state department of education publishes a state salary schedule, and each district provides a local supplement for its teachers. That local supplement can range from \$500 a year to over \$6,000 in some districts. Almost every district in Mississippi offers some type of step increase for years of experience and degree obtained by the teacher. However, the amount also varies

depending on economic support provided by the surrounding community. School districts who can afford to pay the larger stipends can actively recruit teachers with more experience and better classroom management skills. Teachers are willing to move for the extra money, which in turn forces the less fortunate districts to staff their schools with teachers who have little or no experience. As cited by previous research, this cycle can have a negative impact on student achievement (Beteille & Loeb, 2009).

Although teacher pay varies from district to district, the most dramatic differences are between the states. For example, salaries for new teachers in Connecticut are almost \$40,000 annually and just under \$25,000 in North Dakota. Teachers in Connecticut also have the highest average salary at \$57,760 and teachers in South Dakota have the lowest average salary at just over \$34,000 (Beteille & Loeb, 2009).

Julia Betts (1995) conducted a study that examined the link between school quality and subsequent earnings of the students who graduate from those schools. Betts defines school quality by using several characteristics, including teacher's salaries which are influenced by years of experience. Betts's findings suggest that recent changes in education organizations could have diminished the impact school quality has on student outcomes. Perhaps, this idea would enhance further research based on the quality of schools and teacher qualifications. SATP subject area teachers are feeling the pressure to lead their students to perform at a high level on state mandated tests; however, their salaries are the same as their colleagues who teach elective classes.

Harry Wong is one of the most renowned theorists in the education profession. Wong authored an article in 2004 that discussed the effectiveness of induction programs. According to Wong, more and more research is proving that teacher quality is the most

influential predictor when it comes to student achievement. In his article, Wong discusses the differences between induction programs and mentoring programs (Wong, 2004). Wong defines an induction program as a system wide, coherent, comprehensive training and support process that continues for two or three years and then becomes a part of the lifelong professional development program of the district to keep new teachers teaching and improving their effectiveness. Wong then states that the mentor is only one component of the induction process.

Induction programs are essential components of the teacher recruitment and retention process. Low teacher retention rates allow schools to reap the benefits of teacher experience and show gains in student achievement. One part of Wong's study examined the induction program implemented by school leaders in Hopewell, Virginia. Each school had four instructional coaches who possessed advanced skills in classroom management and instructional delivery. There were five lead teachers on each campus that were available for teachers to use as a support mechanism. Each lead teacher was an expert in one of the major content areas or technology (Wong, 2004). Over a 10 year period, the graduation rate for the Hopewell School District increased a mind-boggling 30%. Over that same time span, the number of students enrolled in advanced placement classes increased by forty students (Wong, 2004). The percentage of students who scored a three on the end-of-course test jumped a staggering 23% (Wong, 2004).

Wong also highlighted other school districts that have used induction programs to retain teachers and improve student success. Lafourche Parish Schools in Louisiana lost only one teacher out of 46 because of an effective induction program and support system (Wong, 2004). The most eye-popping statistic for the Lafourche Paris School system is

the fact that over a four year span, their induction program lost only 11 teachers out of the 279 that were hired (Wong, 2004). Wong mentions several other school districts from across the United States that have used effective induction programs to reduce attrition rates and enhance the instructional process that provides positive gains in student achievement.

Teacher retention was addressed in another 2004 study that was conducted by Dr. Duane Inman and Dr. Leslie Marlow. Inman and Marlow (2004) used a randomly selected sample of schools in Georgia to gather information regarding teacher attrition. Inman and Marlow used a ten item survey that allowed them to collect information related to career stability of teachers. Participants were divided into two groups based on the amount of teaching experience they possessed. Phase one consisted of teachers with zero to three years of experience and participants in phase two had four to nine years of experience. The only factor identified by teachers in phase one that contributed to teacher attrition rates was salary (Inman & Marlow, 2004). Phase two participants listed collegiality, working conditions, and job security as factors that influenced whether or not they stayed in the profession (Inman & Marlow, 2004). These factors are all components of the decision-making process for educators. Working conditions and support systems are vital for school districts that aspire to retain teachers and have them work to common goals regarding student achievement. School districts that implement effective induction programs reduce turnover and ultimately provide the opportunity for students to achieve at a higher level because of stability among the teaching staff (Inman & Marlow, 2004).

Alternate Route Certifications

How do teachers who obtained certification through the alternate route process impact student achievement? Many states, Mississippi included, have been forced to establish alternate methods of certification to counteract the shortage of qualified teachers. The basic idea behind the alternate route process is to give prospective teachers an easy method of obtaining certification. Each state has its own set of requirements that prospective applicants must complete before being awarded a teaching certificate.

The State of New Jersey introduced the first alternate route certification program in 1985 (Klagholz, 2001). Klagholz states that over 10,000 teachers had been certified through the alternate route process, and school leaders have drastically reduced the number of non-certified teachers that are placed in classrooms. He also cited a report roundup from *Education Week* in 1998 that stated alternate route teachers were likely to have more work experience, higher certification scores and low attrition rates. Previous research studies have shown that these factors are the ones that are the most likely to impact student achievement.

Currently, the state of Mississippi has 127 different certifications that can be obtained through the licensure office at the state department of education (Mississippi Department of Education, 2010). Mississippi has four different routes that prospective applicants can choose to obtain certification. Each of the programs requires the prospective applicant to possess a bachelor's degree. The first is the Master of Arts in Teaching or MAT program. The next is the Mississippi Alternate Path to Quality Teachers or MAPQT. The third route to obtaining certification is through the Teach Mississippi Institute (TMI). The final alternate route program in Mississippi is the American Board Certification for Teacher Excellence (ABCTE). Regardless of which

program one chooses, the requirements are very similar. All programs require a test and the completion of a training program or college coursework. Each program also involves a one-year internship (Mississippi Department of Education, 2010).

The Master of Arts in Teaching program (MAT) requires a bachelor's degree in a field other than education. The degree must be from an accredited institution of higher learning. The MAT program also requires applicants to complete courses in test and measurements as well as classroom management (Mississippi Department of Education, 2010). Applicants must also pass the Praxis I and Praxis II test. Ten different universities across the state of Mississippi currently offer the MAT program. However, the type of certificate that the applicant is seeking will dictate which university they will have to attend. The MAT program allows prospective teachers to obtain certification in seventeen different fields (Mississippi Department of Education, 2010).

The Mississippi Alternate Path to Quality Teachers (MAPQT) also requires a bachelor's degree from an accredited university and the Praxis I and Praxis II test. The MAPQT has an additional requirement of a 2.0 grade point average if the applicant's degree is more than seven years old. The grade point average requirement increases to a 2.5 for applicants who have received their degrees within the past seven years (Mississippi Department of Education, 2010). The MAPQT also offers certificates in seventeen different teaching areas. The program is offered at five different community colleges across the state of Mississippi. The major difference in the two programs is during the first year, the MAPQT requires the completion of a practicum that will take place on nine Saturdays. The practicum consists of activities pertaining to school law,

peer coaching, classroom management, and data analysis (Mississippi Department of Education, 2010).

The Teach Mississippi Institute (TMI) has basically the same requirements for admission to the program. The TMI program offers certification in 14 different teaching areas. The TMI program also requires an eight week training session that will give applicants experience and information in teaching strategies, classroom management, curriculum, instructional methods and tests and measurements. Prospective applicants must also complete nine semester hours of graduate coursework to renew the provisional license (Mississippi Department of Education, 2010). The final option for teachers who wish to obtain a Mississippi teaching license through the alternate route is the American Board Certification for Teacher Excellence (ABCTE) passport to Teaching. This program allows prospective teachers to obtain certification in five different areas. Applicants can become certified in biology, chemistry, English, math and physics. These are secondary certifications that usually require a specialized level of content knowledge. Most of the requirements match the ones listed in the programs above. ABCTE teachers must complete a three week summer training course and then be assigned a mentor teacher. The glaring difference with this program is that it requires the mentor teacher to be a National Board Certified Teacher or a highly trained mentor from the state department of education (Mississippi Department of Education, 2010).

Goldhaber and Brewer found that the type of certification a teacher possesses does have an impact on student outcomes (Goldhaber & Brewer, 1999). However, the different licensure requirements do not have a positive impact on student achievement (Goldhaber & Brewer, 1999). The authors warn readers that results could vary from state

to state depending on the variables tested and the consistency of participants. The authors also suggest that a tremendous amount of research still needs to be conducted to solidify any conclusions pertaining to certification routes and student outcomes (Goldhaber & Brewer, 1999).

The path to teacher licensure is a very detailed and complicated process, and the process varies from state to state. In a 2005 study, Podgursky suggests that raising the bar for teacher certifications is unlikely to have any short term or long term effects on student achievement. He goes on to suggest that raising the bar for teacher licensure is likely to lower teacher quality (Podgursky, 2005). Perhaps educational leaders were proactive when looking for a solution to this problem. A large number of states have alternative certification programs in place that allow school leaders more options when trying to fill subject area positions that have been vacated by retiring teachers.

Podgursky suggests that states are handicapping school leaders with all the stringent requirements mandated in the certification process. Only 60% of all teacher candidates graduate from NCATE accredited programs (Podgursky, 2005). The study presents many valid points concerning the certification process. However, each state and school district is vastly different, and this researcher believes that some of his suggestions are supported by vague studies instead of being grounded with sound educational theories. Podgursky (2005) makes a valid point that school administrators are sometimes forced to hire the worst certified candidate instead of a high quality non-certified candidate. Several years prior to NCLB and the alternate route process this might have been true. If a teaching candidate is truly interested in the field, he or she has multiple options at his or her disposal through one of the alternate route certification programs.

Podgursky (2005) concludes that educational leaders must focus on the 95% of existing staff instead of the 5% of newcomers to the education field each year. “Teacher quality and effort primarily is a management problem, not a licensing problem.” (Podgursky, 2005, pg 28). Regardless of the certification program, it is the individual school leader who will make or break new teachers. Building leadership teams must provide high quality professional development that can be applied in the classroom on a daily basis. Experienced teachers must bridge the gap between classroom management, curriculum, and teaching strategies. A new teacher can have all the content knowledge in the world, but if he or she is lacking classroom management skills, teaching will quickly become very frustrating (Podgursky, 2005).

Efficacy among teachers has been associated with teacher retention and has the ability to impact student achievement. A teacher who feels good about what he or she is doing in the classroom is more likely to stay in the profession. One study compared the general teaching efficacy and personal teaching efficacy between teachers who obtained certification through traditional programs and those who complete traditional university programs. Participants filled out a questionnaire that measured their feelings regarding classroom control, knowledge base and common practices related to student achievement. Researchers found that some educators question their own competence levels (Flores, Desjean-Perrotta, & Steinmetz, 2004). Data collected from these same surveys also showed that regardless of the certification track, teachers rated their general teaching efficacy higher than their personal teaching efficacy (Flores et al., 2004). However, teachers who obtained certification through a traditional university program were more likely to have a positive personal teaching efficacy (Flores et al., 2004). The authors of

this research article attribute the differences in teacher efficacy to alternative route teachers having less pedagogical experience before actually being assigned to a full time position in the classroom. Traditional route teachers also reported a higher level of confidence in their ability to deliver instruction and relate to the students (Flores et al., 2004).

A study published in the American Educational Research Journal examined the qualifications and assignments of teachers who obtained certification through one of the alternate routes. They conducted the study to examine four basic theories related to the impact of alternate route certified teachers and how they impact the field of education. The first of the four basic theories suggested that the alternate route process recruited experienced candidates from other career fields. The next belief was that the alternate route process attracted well trained teachers to the profession. Next was that the alternate route process trained teachers in hard-to-staff schools. Finally, the alternate route process was supposed to eliminate out-of-field teaching (Cohen-Vogel & Smith, 2007).

Data collected did not support the claim that the alternate route certification process attracted experienced people from outside professions. One-third of the participants reported they had worked in education the previous year, while 36% of the participants came directly from college (Cohen-Vogel & Smith, 2007). Additionally, data did not show that alternate route teachers possessed academic training. Data collected was not sufficient to support any of the four assumptions listed above (Cohen-Vogel & Smith, 2007).

A detailed and comprehensive study conducted in 2009 through the United States Department of Education and the Institute of Education Sciences showed that there were

no statistical differences in student test scores for reading and math, but the classroom practices of the teachers would vary depending on the certification route (Institute of Educational Sciences [IES], 2009). Warner cites multiple research studies, conducted by Goldhaber (2002), and Ferguson (1993) that showed a positive relationship between a teacher's cognitive ability and student achievement (IES, 2009). Results could vary depending on the type of instrument used to collect data, but there seems to be a relationship between teacher knowledge and student achievement regardless of the certification route.

Level of Degree

Do teachers with advanced degrees produce students who will perform better on state mandated tests? Again, there is an abundance of articles and research studies that will provide basis to support any argument regarding whether or not the level of degree a teacher holds has any impact on student achievement. Most of the research that has been conducted is related to the pay steps that are offered by most states for years of experience or advanced degrees. Stephen Sawchuk (2009) authored an article which was published by *Education Week* that summarized previous research and stated there was little correlation between rewarding teachers for advanced degrees and student achievement. The authors also discuss findings from a study in North Carolina that found elementary teachers who hold a graduate degree were no more effective than their colleagues who did not have an advanced degree when it came to student achievement (Sawchuk, 2009).

The author also collected data from across the United States regarding the percentage of teachers that hold graduate degrees and the amount of money each state

spends rewarding these teachers. Seventy-eight percent of the teachers in New York held a graduate degree, the highest in the nation (Sawchuk, 2009). Only 27% of the teachers in Texas held a graduate degree, the lowest in the United States. Only 36% of the teachers in Mississippi held a graduate degree, which would rank in the bottom quartile among the fifty states (Sawchuk, 2009). These percentages impact the amount spent by each state compensating teachers who have obtained advanced degrees. For example, New York has the highest percentage of teachers with advanced degrees, which requires the state to spend over \$1.1 dollars each year compensating those teachers (Sawchuk, 2009).

Sawchuk (2009) only mentioned one area where advanced degrees had a positive significant impact on student achievement. Teachers with advanced degrees in high school content areas such as math and science were more effective in the classroom (Sawchuk, 2009). Students who were assigned to a teacher that held a Master's degree in mathematics have higher mathematics achievement scores than those students who did not have a teacher with a Master's degree (Goldhaber & Brewer, 1998). Content knowledge is an essential part of the repertoire for an effective classroom teacher. School leaders have always struggled to find certified teachers to fill positions in subjects such as trigonometry, calculus, chemistry, and physics. It only makes sense that teachers who have advanced degrees in these challenging areas would have a positive impact on student achievement. The struggle for school leaders has been keeping the highly qualified individuals in the classroom and competing with business and industry who can offer higher salaries.

Researchers at Walden University conducted a study to determine if teachers who completed a Master's degree through a distance learning program could have a positive impact on student achievement in literacy (Walden University, 2004). The research study involved 46 teachers and 805 elementary students (grades one through five) from 14 schools in the Peninsula and Tacoma school districts in Washington. Student achievement data was taken from 32 teachers who did not have a Master's degree but were enrolled in the distance learning program. That data was compared to data collected from a control group of 14 teachers who held Master's degrees (Walden University, 2004). Results from the comparison showed that the teachers participating in Walden's program scored significantly higher than those teachers in the control group (Walden University, 2004). When compared to students across the country, Walden's group went from the 40th percentile to the 59th percentile (Walden University, 2004). Over 90% of the teachers in the program at Walden University reported that they had changed the way they taught reading (Walden University, 2004).

Another program that is very similar to the one conducted at Walden University is the Osborne Masters Program. The Osborne program is a five step approach that allows classroom teachers to focus on literacy and the reading levels of elementary students. The goals for the teachers in the program were to gain knowledge and understanding, practice the newly acquired skills, coaching, small group discussion and continued practicing and coaching (Lease & Garrison, 2008). In 2000, the city of Chattanooga had eight schools listed among the Tennessee's twenty lowest scoring elementary schools. The research project involved nine school districts in the Chattanooga area that were predominantly African American and 90% of the students qualified for free and reduced

lunch. The percentage of students reading below grade level ranged from 88% to 96% with one school at 80% (Lease & Garrison, 2008). Participating schools were divided into two groups depending on the number of teachers who participated in the project. Schools with two or fewer participants showed an average increase of 20.2% in the number of students who scored advance or proficient in reading (Lease & Garrison, 2008). Schools that had three or more participants in the program showed an average increase of 61.2% in the number of students who scored advance or proficient in reading (Lease & Garrison, 2008). One school increased from 41.2% to 84.1% in just two years (Lease & Garrison, 2008).

Research by Trumbull (2008) supports the idea that programs which reward teachers with supplements are unable to influence student test scores. Trumbull suggests that schools should not be evaluated or ranked based on standardized test scores because such standards only hinder the creativity and academic development of students (Trumbull, 2008). Those who support this belief tend to argue that teachers are teaching to the test and placing too much emphasis on how a student performs on state mandated tests.

Incentive pay programs in education are more prevalent in the past decade due to the mandates established by NCLB. School leaders are offering rewards to administrators and teachers who perform at high levels. The most common incentive pay program rewards teachers for years of teaching experience and the level of degree obtained. Teachers in Mississippi are compensated using this type of system. Teachers are motivated by these incentives and their teaching style is altered as they attempt to produce higher test scores (Trumbull, 2008). Trumbull (2008) also states that some

teachers have felt enough pressure to assist students with test questions, altered students' answer sheets, or even suggest that some students stay home on test day. The author also states that there is no intent to question the integrity of teachers (Trumbull, 2008).

Goldhaber and Brewer conducted a study in 1996, which has been cited and supported by more recent studies related to teacher certification and the impact those certifications have on student achievement. Goldhaber and Brewer (1996) stated that the small number of studies, which account for the verbal ability of the teacher, is related to gains in student achievement. However, in a secondary setting the level of degree obtained by the teacher was not statistically significant in any of the four major subject areas. In other words, teacher qualifications do not matter (Goldhaber & Brewer, 1996). Teachers with advanced degrees in English and history did not have a statistically significant impact on student achievement (Goldhaber & Brewer, 1996).

A study published on the National Center of Educational Statistics website for schools in 2000 showed that 64% of the teachers in Mississippi had 10 or more years of experience (National Center for Education Statistics, 2000). The same study revealed that 37% of the teachers in Mississippi hold a Master's degree (National Center for Education Statistics, 2000). The percentage of elementary and secondary teachers in Mississippi who hold a Master's degree increased by 2% between the 1999-2000 school year and the 2007-2008 school year (National Center for Education Statistics, 2000). The numbers listed above show a steady increase in the number of teachers who are obtaining an advanced degree. However, according to the majority of statistical analysis, these degrees are costing school districts more money, and student achievement is only being impacted in select math and science courses. Common sense rationale would lead us to

believe that the networking and teaching strategies being shared among colleagues in graduate courses would influence student achievement. The results may not be statistically significant, but teachers are being exposed to innovative and creative concepts that they can apply to their classrooms.

The state department of education recently added economics as a required course for graduation. Although economics is not a tested area that impacts school ratings, it is an essential part of the overall education a student receives in high school and at the post secondary level. Becker, Greene, and Rosen conducted a study in 1990 that found the number of economics courses taken by teachers has a positive impact on the progress and understanding by students at the high school level. Most economics classes are taught by social studies teachers who are required to take six semester hours of economics classes during the college careers. Lynch (1994) stated that a teacher needs five or six extra courses in economics before deeper understanding of the material takes place.

The Test of Understanding in College Economics (TUCE) was used in a 1991 study by Saunders as the sole measure of a teacher's knowledge in economics. Teachers with a high score on the TUCE test had a positive significant effect on student achievement in economics (Allgood & Walstad, 1999). Although this study is a bit older, it does support the claim that a teacher's specific knowledge in a particular subject area can have a positive impact on student achievement.

The level of degree is only one of the factors that can influence student achievement. Multiple factors, such as classroom management and planning time, must be considered when determining the effectiveness of an educator. Each school administrator will conduct a job interview in a multitude of ways. Level of degree is

simply a qualification and does not guarantee the best results inside the classroom.

However, teachers with the self motivation and determination to further their education and increase their knowledge base will transfer that passion to their students more often than not. Nevertheless, Goldhaber and Brewer (1999) state that the level of degree is a relatively unimportant factor when it comes to student achievement.

Content Area Certification

Several studies exist regarding how well students perform in classes where the teacher is certified in the specific content area they are teaching, compared to those who do not hold a major in the area they are teaching. Research can be found to support either side of the argument. There is a positive relationship between students' mathematics achievement and their teachers' mathematics knowledge (Monk, 1994). Teachers who know more mathematics than their peers have students who learn more mathematics than their peers (Boots, 2007). A study published in the *International Journal of Science and Mathematics Education* contained various viewpoints related to a teacher's mathematics and science content knowledge and the impact the level of knowledge has on student achievement. The authors cited work by Grossman which dealt with a teacher's content knowledge. Although Grossman's work was conducted almost twenty years ago, his ideas established a great foundation for future research related to the content knowledge of a teacher and the impact it had on student achievement. Grossman separated teacher's content knowledge into four basic categories: general pedagogical knowledge, subject matter knowledge, pedagogical content knowledge, and knowledge of context (Lim-Teo, Chua, Cheang, & Yeo, 2007). The authors also cite previous research from elementary schools that showed the teacher's mathematics pedagogical content knowledge did have a

profound impact on student achievement (Hill, Rowan, & Lowenberg Ball, 2005). The study conducted by Cheang, Lim-Teo and Yeo focused on four basic theories that relate the teacher's knowledge to student achievement. The first concept measured the teachers' understanding of mathematical structure and their ability to make connections in the classroom environment. Second was the multiple ways in which a teacher could use his or her content knowledge to provide alternate explanations to students. Next, the researchers investigated how the teacher's ability to adapt to the cognitive needs of the student. Last, and probably the most essential, was the teacher's ability to recognize and relate to the comprehension and misconceptions of the students when encountering new material and concepts for the first time (Lim-Teo et al., 2007). The most interesting finding revealed by the study suggested that teachers who possess specialized skills would do a better job with content specific skills in mathematics classes at the elementary level. Previous research has shown that this is true for secondary teachers but less information exists regarding content specific knowledge for elementary teachers (Lim-Teo et al., 2007).

Goldhaber and Brewer (2000) conducted a study that examined the effects of teacher certification on the achievement of high school seniors in mathematics and science courses. The level of impact showed the students with certified teachers would score about 1.3 points higher on the twelfth grade exit exam. This also amounted to approximately 10% of the standard deviation among the seniors taking the exit exam (Goldhaber & Brewer, 2000). Goldhaber and Brewer's finding were verified when an additional study, conducted by Darling Hammond, Holtzman, Gatlin, and Heilig (2005),

found similar results regarding content area certified teachers and their positive impact on student achievement.

One study conducted found that no significant relationship existed between secondary student achievement and the teacher's knowledge of the subject matter. The same study found no significant relationship between teacher attitude and student performance. Finally, there was not a significant relationship between student's perception of teaching skills and academic achievement (Adediwura & Tayo, 2007).

Betts, Zau and Rice (2003) failed to detect a relationship between the teacher's major and student's mathematics achievement scores. A research study mentioned earlier disputed these findings. Harris and Sass (2007) found students who had an education major as their mathematics teacher did significantly worse than those students who were assigned to an instructor who was a mathematics major.

Content area certification is an area that is vastly overlooked by school leaders. Administrators as a whole tend to focus on the type of certification that appears on the certificate. Each certificate code listed on a teaching certificate lets prospective schools know that an applicant has completed the necessary requirements to teach in that particular subject area. However, the differences among applicants are vast, and the courses taken by prospective educators are quite immense. The more content area courses a teacher takes during his or her college career only enhances a knowledge base that will be accessible to the students once they enter the classroom. Catherine Cardian and John Roden (1999) investigated the reading levels, science skills, and mathematical ability of prospective educators at two-year and four-year colleges. Cardian and Roden (1999) found that 39% of education majors who attended a two-year college possessed low

reading comprehension skills. Science proficiency levels for prospective educators in this same study revealed that 57% of secondary education majors scored among the lowest level on high school science proficiency test (Cardian & Roden, 1999). Conversely, 44% of secondary education majors in four-year colleges scored at or above the highest level on high school science proficiency test. (Cardian & Roden, 1999). Scores on high school proficiency tests for mathematics were lower for education majors when compared to other college students (Cardian & Roden, 1999). These results suggest that the course content required for certification in subject areas is not rigorous and demanding. Prospective educators, especially on the high school level, should be exposed to difficult and challenging material to enhance their knowledge base.

Content courses are not the sole determining factor of a teacher's success in the classroom. However, teachers who complete majors in their assigned area are more capable of expanding the knowledge base for high school students. Roughly 74% of Mississippi teachers have completed a major in their teaching area (National Center for Education Statistics, 2008). Louisiana had the lowest percentage of teachers who completed a major in their teaching area with only 52% (National Center for Education Statistics, 2008). The highest percentage of teachers completing a major in their teaching area was Wisconsin with 85% (National Center for Education Statistics, 2008).

Laczko-Kerr and Berliner (2003) conducted a study that examined the effects of a teacher's pedagogical training on student achievement. "Education coursework is a stronger predictor of a teacher's effectiveness than is the teacher's grade point averages in their majors or their test scores on content knowledge." (Berliner & Laczko-Kerr, 2003, pg 38). Education coursework allows teachers to share knowledge gained with

students through personal experiences. The most powerful tool an educator has is the ability to share and network with veteran teachers who have experience teaching content area subject matter. A 1993 study conducted by Ferguson and Womack showed that the amount of education course work completed by the teacher accounted for 16% of the variance in teacher performance. Other research studies were cited which found that 4% to 18% of the variance in student achievement could be related to the teacher's coursework (Berliner & Laczko-Kerr, 2003).

Linda Darling-Hammond authored an article in 1998 that provided a solid foundation for future researchers regarding the implications of subject matter knowledge and how it relates to student achievement. Darling-Hammond emphasizes the importance of teachers having a deep and flexible understanding of the material. Teachers who possess a deep knowledge base will increase student creativity and establish a communication network with colleagues and students (Darling-Hammond, 1998). Darling-Hammond listed several characteristics of professional development programs that improve teaching and have a positive impact on student success. One of those characteristics is the evidence that teachers are being exposed to task-oriented activities that are essential components of the learning process. The next characteristic is the evidence of a professional learning community where teachers are allowed to share innovative ideas and teaching strategies related to their subject matter. The final characteristic is a professional environment where teachers are exposed to a sustained and intensive effort to improve instruction (Darling-Hammond, 1998).

Since the beginning of the project, one particular researcher keeps appearing. Linda Darling-Hammond has participated in many different studies. In 2005, one

particular study showed that students in the fourth and fifth grades produce higher mathematics and reading achievement gains if their teachers are content certified (Darling-Hammond et al., 2005). It is this researcher's belief, grounded in leadership and classroom experience, that the foundation for core subject is established in the upper elementary and middle school grades. If students consistently produce higher test scores when they are taught by content area certified teachers, then the impact of the teacher's certification would only be magnified in the later years.

The entire certification process has a profound influence on teacher effectiveness. Haycock (2003) conducted research that found in high poverty secondary schools, approximately 30% of core academic courses are taught by people who lack proper certification. In addition, one out of five secondary core subjects is taught by a teacher without a major or minor in the field. The rate for high poverty schools is one in three (Haycock, 2003). Haycock lists several reasons for how this can happen. Teacher seniority, school resources, and a sense of entitlement or culture are some of the reasons that school leaders have lost focus to do what is the best for kids (Haycock, 2003). The culture or climate of a school system can change drastically based on geographical location and community expectations. Essentially, the responsibility lies with the school leadership team. The building principal must be involved in the instructional process and base his or her decisions on what is best for the students in the school.

Wayne and Youngs conducted an in-depth research study on teacher characteristics and achievement gains in 2003. A large percentage of the literature cited by Wayne and Youngs already appears in this paper. The major impact of instructor's course work on student achievement takes place in mathematics or specific science

courses. Wayne and Youngs (2003) concluded, based on previous research, that students have the opportunity to increase their knowledge base if they are taught by teachers with certain characteristics or qualifications.

Arguments can be presented that will sufficiently support the multiple opinions regarding the impact of teacher certification and the impact those certifications have on student achievement. Statistics can change drastically depending on the geographical location of the participants. Captivated by the possible outcomes regarding this study, this researcher was confident that this research study would produce valuable information that could assist school leaders in establishing and maintaining the educational standards of our geographic region.

Summary

Literature exists on any argument regarding whether or not teacher certification has an impact on student achievement. This chapter contains research pertaining to five different teacher certifications or qualifications and the impact those certifications have on student achievement. The National Board Certification process has a vast number of studies that support the positive impact the process has on teacher quality and student achievement. The NBPTS produces teachers who are reflective thinkers and astute instructors. The NBPTS process is detailed and time consuming but also has proven time and time again that it has a positive impact on the learning process for teachers and students.

Years of teaching experience is somewhat different. There was not a tremendous amount of research available that measured the impact of teaching experience on student achievement. The studies that focused on years experience showed the most

improvements took place during the first three years. Improvements were not as dramatic, but they did take place until year number ten and then the impact diminished and was not consistent.

The alternate route certification process, level of degree, and content area certifications were similar in the fact that the more content specific a course, the more teacher certifications impacted student achievement. Goldhaber and Brewer (1999) found that the type of certification a teacher possesses does have an impact on student outcomes. Research related to the level of degree was consistent with these findings. Teachers with advanced degrees in high school content areas such as math and science were more effective in the classroom (Sawchuk, 2009). The same is true for content area majors in the secondary classrooms which require a higher depth of knowledge for teachers to effectively deliver concepts to students.

CHAPTER III

METHODOLOGY

Introduction

The methodology section contains information pertaining to the design of the study. This section also includes some background on the participating schools and what levels of academic success they have experienced previously. The researcher also provides an explanation as to the procedures that were followed while conducting the study. Furthermore, the types of tests that were used to examine data and arrive at conclusions will also be discussed in this chapter.

This research study was designed to determine if teacher certifications have any impact on student achievement. The following pages describe the participating schools and show how well they performed according to the state accountability model during the 2008-2009 school year. Data was collected from teachers and compared to the mean scale scores for their SATP classes during the 2009-2010 school year. Participants were willing volunteers who had a desire to improve the educational process. Data analysis was conducted and will be shared with participating schools once the project is complete.

Design

The five types of teacher qualifications served as the independent variables. The researcher collected information from teachers via a survey (Appendix A) that provided the necessary information. The independent variables will be National Board Certification, years of teaching experience, alternate route certifications, level of degree, and whether or not the teacher has a content major in the area he or she is teaching.

The dependent variables for the research study were the mean scale score for each teacher who taught an SATP class during the 2009-2010 school year. The researcher completed four sets of analysis on data collected from the participating schools, since different scoring rubrics exist for SATP classes. Depending on the curriculum alignment of the school district, the research included in the data collection process to account for those teachers who teach Algebra I in the eighth grade.

The newer versions of the Algebra I and English II test are now live and passing scores range from 647 to 691. Each test has the same cut levels that determine if the student achieves at an advanced, proficient, basic or minimal level. If a student scores below 641, he or she will fail the test and fall into the minimal category. If a student scores between 642 and 649, he or she will fall into the basic category. It usually takes a 647 to obtain a passing score, but the scoring process is very complicated and could vary depending on what version of the test the student is taking. The next two categories meet the goals of No Child Left Behind, which states that all children will achieve at an advanced or proficient level. A student who scores between 650 and 660 is considered proficient. A score of 661 or above will get the student an advanced score.

The test for U. S. History is still on the old scale, which has a passing score range from 310 to 500. The cut scores that determine the level of student achievement are set at different levels for this test. A student who scores below a 310 falls into the minimal category and must retake the test. If a student scores between 311 and 346, he or she will count as basic. A score between 347 and 396 will be coded as proficient and all students scoring above 397 will count as advanced. The calculations for QDI are the same as Algebra I and English II.

The test for Biology I is slightly different for the basic through advanced categories. A score of 311-334 qualifies for the basic category. A score of 335-387 will count as proficient, and a score of 388 or above is advanced. These standards are current for the 2009-2010 school year. However, the state department of education is in the process of rewriting and formulating the test for U. S. History and Biology I. The goal of educational leaders is to increase the academic standard for students and ensure each student is prepared for what he or she will experience in college. These levels of student achievement are computed and the resulting value is known as the quality distribution index or QDI. The QDI is the first step in determining exactly how a school is ranked academically. There are several other indicators that can create minor bumps in accreditation ratings but the most essential component of the accreditation model is the QDI. The quality distribution index is computed by taking the percentage of students who achieve an advance rating and multiplying that value times three. The percentage of students who achieve a proficient rating is multiplied times two. The percentage of students who achieve a basic rating is multiplied times one and the corresponding values are added together.

Once the QDI is computed, schools are then given a rating that describes their academic progress and achievement. The highest rating is a star school followed by a high performing status. The next level is a successful rating. Schools that do not meet standards are given a rating of academic watch, at risk of failing, low performing or failing. The rating system is complicated and possesses some lofty goals for Mississippi's public schools in the near future.

A school must achieve a QDI of 200 to qualify for a star school rating. Schools that have a QDI of 166 to 199 are eligible for a high performing rating. The high school completion index (HSCI) and the graduation rate are also factors for the above rating. Schools that have a QDI of 133-165 can either be successful or be placed on academic watch depending on their average yearly progress (AYP) or growth status. Schools that have a QDI of 100-132 are placed on academic watch or labeled as at risk of failing. Again, the ruling depends on AYP or growth status. Schools that have a QDI between 0 and 99 are low performing or failing schools.

The office of accountability along with the school leaders from MDE and across the state have set lofty goals that will allow the state of Mississippi to meet the requirement set forth by NCLB. For example, the original goal for star schools for the 2010 school year was set at 214. However, due to several factors the score was not raised this year. In 2012, all schools are required to have a QDI of 240 if they are going to be eligible for star school status. Cut scores for the lower levels do not jump quite as drastically, but they do jump. The difficulty of the new SATP test is going to make it very difficult to achieve the top academic ratings.

Participants

The researcher passed out questionnaires (Appendix A) and collected data from 17 high schools in a local geographic region. The research study included information from a large percentage of the public high schools in our geographic area. Surveys were passed out to every teacher who taught SATP classes during the 2009-2010 school year. The questionnaire (Appendix A) was short in nature and contained questions related to the certifications and licensure that the teachers held during the 2009-2010 school year.

The questionnaire also contained five questions related to teacher opinion about the impact of teacher qualifications on student achievement. Although the schools are very close in driving distance, they present a wide range of students, teachers and leadership teams. The schools vary in enrollment from 506 students at school B, which is one of the top academic public schools in the state, to one of the largest schools in the state which is home to 1,651 students.

Although the schools participating in the study have more industry and a higher tax base to pull from when compared to other schools across the state, Hurricane Katrina leveled the playing field when it comes to local tax bases. Some communities have recovered more quickly than others but with the national economic crisis, all schools have felt the budget crunch. One set of factors that was considered was the socio-economic break down of the chosen schools. The number of students eligible for free or reduced lunch rate is a great indication of the economic status of the community. When breaking the participating schools into quartiles, the researcher found that three of the eighteen school districts would fall into the lowest quartile as far as percentage of students who would qualify for free or reduced lunch. The largest percentage of students who qualify for free and reduced lunch would lie in the second quartile (26% to 49%). Only three schools have a large enough percentage of students who qualify for free and reduced lunch and would fall into the third quartile (51% to 74%). School A is the only school that has a high enough percentage of students who qualify for free and reduced lunch to fall into the fourth quartile (76% to 100%). Actually 100% of the students at school A qualified for free or reduced lunch according to data for the 2008-2009 school year (Mississippi Department of Education, 2010).

The schools that participated in this research study represent a wide range of socioeconomic backgrounds and diverse community populations. The research study consists of 19 schools from 14 school districts. The high school activities association divides schools into competitive districts based on student population. Currently, the top 32 schools in the state are classified as 6A. According to enrollment, the next 32 schools are labeled as 5A. The typical cut off that has separated these two classifications has been around 1,000 students. The remaining schools are equally divided among the four classifications and considerations are given to geographical location. This research study involved two schools that are classified as 4A by the high school activities association. There will be ten 5A schools and seven 6A schools participating in the research study.

Table 1, located on the next page, contains each participating school and lists its classification according to student population tabulated by the high school activities association. These classifications are evaluated and adjusted every two years according to the student population. Table 1 also contains the percentage of black and white students as well as the highest and lowest areas for each school on the SATP test. United States History is abbreviated with a USH and is usually taken during the student's junior year of high school. English II is abbreviated with an ENG and is usually taken during the sophomore year. Biology I is abbreviated with a BIO and is usually taken during the student's sophomore year. Algebra I is abbreviated with an ALG and is usually taken during the student's freshman or sophomore year of high school.

Table 2 contains a large amount of accountability information for each of the participating schools. The performance rating for each school is listed under the status heading. Each school receives one of the following ratings based on their academic

performance. The top performance rating for a school is that of a star school which is labeled as STAR. High performing schools are labeled with an HP. Successful schools are labeled with an SUCC. Schools that have been placed on academic watch are labeled with an AW. The next heading is the quality distribution index (QDI). The graduation rate for each school is listed in the heading of GR. The HSCI heading contains the high school completion index for each school and the last heading is the percentage of students who qualify for free or reduced lunch.

Table 1 and Table 2, located on the next two pages, provide some detailed information about the academic achievement ratings of the schools that are being asked to participate in this research study. The tables allow data from the participating schools to be compared quickly and easily.

Table 1

Information on Participating Schools

| School ID | Class | Percent White | Percent Black | High SATP | LowSATP |
|-----------|-------|---------------|---------------|-----------|----------|
| A | 4A | 74 | 22 | USH 99.2 | ALG 65.4 |
| B | 4A | 62 | 31 | USH 100 | ENG 93.6 |
| C | 5A | 80 | 11 | USH 98.7 | ALG 67 |
| D | 5A | 93 | 6 | USH 98.4 | ENG 87.6 |
| E | 5A | 47 | 47 | USH 100 | ENG 73.7 |
| F | 5A | 81 | 13 | BIO 99.1 | ENG 85.6 |
| G | 5A | 64 | 33 | USH 94.9 | ALG 49.8 |
| H | 5A | 75 | 13 | BIO 99.2 | ENG 87.3 |
| I | 5A | 73 | 27 | USH 99.4 | ENG 69.2 |

Table 1 (continued).

| School ID | Class | Percent White | Percent Black | High SATP | LowSATP |
|-----------|-------|-------------------------------|---------------|-----------|----------|
| J | 5A | 93 | 6 | USH 98.8 | ENG 82.6 |
| K | 5A | NO PREVIOUS DATA (NEW SCHOOL) | | | |
| L | 6A | 60 | 29 | USH 99.1 | ALG 76.5 |
| M | 6A | 87 | 11 | USH 95.1 | ALG 71.7 |
| N | 6A | 45 | 51 | USH 99.2 | ALG 77.4 |
| O | 6A | 94 | 4 | USH 98.3 | ENG 70.4 |
| P | 6A | 62 | 33 | USH 94.4 | ALG 67.3 |
| Q | 6A | 81 | 12 | USH 99.2 | ENG 85.1 |
| R | 6A | 45 | 44 | ALG 96.2 | ENG 81 |
| | | | | | USH 96.2 |

Table 2

Information on Participating Schools

| School ID | Class | Status | QDI | Graduation Rate | HSCI | F/R Lunch |
|-----------|-------|--------|-----|-----------------|-------|-----------|
| A | 4A | HP | 170 | 76.9 | 177.5 | 100 |
| B | 4A | STAR | 229 | 85.4 | 251.9 | 41.4 |
| C | 5A | SUCC | 184 | 69.5 | 161 | 27.2 |
| D | 5A | HP | 215 | 67.5 | 131.4 | 23.5 |
| E | 5A | HP | 199 | 79.4 | 201.6 | 51.1 |
| F | 5A | STAR | 213 | 82 | 251.7 | 24.5 |
| G | 5A | AW | 144 | 63.9 | 102.5 | 46.9 |

Table 2 (continued).

| School ID | Class | Status | QDI | Graduation Rate | HSCI | F/R Lunch |
|-----------|-------|-------------------------------|-----|-----------------|-------|-----------|
| H | 5A | SUCC | 198 | 71.6 | 164.3 | 34.2 |
| I | 5A | SUCC | 182 | 78.7 | 205.5 | 39.2 |
| J | 5A | HP | 209 | 72.1 | 164 | 28.9 |
| K | 5A | NO PREVIOUS DATA (NEW SCHOOL) | | | | |
| L | 6A | HP | 204 | 80 | 213 | 41.7 |
| M | 6A | SUCC | 172 | 53.8 | 95 | 38.6 |
| N | 6A | SUCC | 192 | 74.2 | 199.5 | 47.8 |
| O | 6A | SUCC | 185 | 70.9 | 170.7 | 45.4 |
| P | 6A | AW | 162 | 80 | 213 | 38.5 |
| Q | 6A | STAR210 | | 88.2 | 237.5 | 16.9 |
| R | 6A | HP | 194 | 77.7 | 181.9 | 52.5 |

In conclusion, we can see a pattern developing among the schools. The tests for English II and Algebra I have been updated and typically are the areas of the SATP that produce the lower pass percentages. In the upcoming years, the test of U. S. History and Biology will be rewritten, and scores will mostly likely drop as the content, rigor and expectations for school leaders, teachers and students increase. The requirements to obtain a star or high performing rating will be going up during this same time period; consequently, schools are getting hit from both directions. These changes are going to increase the stress levels of teachers and force school leaders to think “outside the box” when it comes to educating children.

Instrumentation

The researcher used a self designed instrument (Appendix A) consisting of questions related to the types of certifications obtained by the participant. The instrument also contained questions that allowed the researcher to collect and organize information pertaining to the participants' perceptions about teacher qualifications and the impact those qualifications have on student achievement. The instrument contained a few simple questions that gave the researcher and reader descriptive statistics related to the participants involved in the study. The descriptive data allowed the researcher to develop a summation regarding educator's opinions regarding the impact of teacher qualifications on student achievement. The questionnaires will be color coded by subject area and assigned a number to allow the researcher to match participant responses to SATP data.

Procedures

The researcher personally contacted each superintendent by telephone to request permission to distribute questionnaires to the teachers who taught an SATP class during the 2009-2010 school year. Each superintendent received a letter explaining the study(Appendix B), and subsequently signed the permission letter allowing the research to distribute questionnaires at the high schools in their school districts. All of the signed permission letters from participating school districts (Appendix C) were included in the IRB application. The researcher applied for IRB approval. IRB then granted approval (Appendix D) and the researcher received written notification allowing the collection of data to begin. The research contacted each building principal to set up a time to deliver the questionnaires. Next, the researcher met with each building principal and assigned a predetermined number to each questionnaire. The assigned numbers allowed the

researcher to match teacher responses with SATP test data from the 2009-2010 school year. The researcher also collected the mean scale score from the individual score report sheets for each teacher who received a questionnaire. The researcher attached a teacher letter (Appendix E) describing how the data provided by the participants and the school names would be kept in a secure location throughout the course of the study. The information in the study was not anonymous, but the researcher did not share teacher responses with building principals. The data collected for this research study was only viewed by the researcher and his committee members. The teacher's letter also contained contact information of the researcher and each participant was given the opportunity to ask any questions related to the study. The superintendents, building principals and participants were given the opportunity to discuss possible benefits or risks if they decided to participate in the study.

The researcher requested that each building principal or designee pass out the questionnaires with description letters to each educator who taught a subject area class during the 2009-2010 school year. The researcher conducted a conference with each building principal or designee to discuss the study and obtain mean scale scores for each teacher who will be participating in the research study. The researcher used this opportunity to answer any questions for the building principal regarding the research study. Once the questionnaires were returned to the researcher, data was compiled and placed into excel file then transferred to SPSS for data analysis. The questionnaires were held in a secure location until the completion of the research project. Once the study has been completed, all questionnaires will be destroyed by the researcher.

Data Analysis

The researcher ran descriptive statistics for all of the variables and discussed any areas that contained abnormal data or outliers. The descriptive statistics allowed the researcher and readers to examine information pertaining to the participants. The reader and researcher can determine how many participants possess National Board Certifications or advanced degrees.

Independent sample t-tests were completed to answer research questions one, three, four and five. An ANOVA was conducted to provide answers to research question number two. The results allowed the researcher to determine if teacher qualifications have a statistically significant impact on student achievement. The statistically significant results have given school leaders valuable information regarding teachers that could improve student test scores and achievement levels. Non-significant results are not damaging to the study. The researcher is confident that the project has provided a solid foundation for future research related to teacher certifications and student achievement. Future research could focus on one or more of the areas included in this project or possibly even expand the data collection field to a wider geographical region.

Summary

The researcher has conducted a quality study and will share his findings with all participants who wish to view the information, once the project is complete. The researcher has followed guidelines for conducting the study and has worked diligently to ensure all participants a high level of security and that none of their responses on the questionnaires were shared with building principals. Descriptive statistics have provided the reader with information pertaining to the participants in the study and let the reader

know how many participants possess each type of certification. The independent sample t-tests have provided the researcher with a good understanding of how teacher certifications impact student achievement.

CHAPTER IV

RESULTS

Introduction

The study examined five different teacher qualifications and the impact those qualifications have on student achievement at the high school level. Participants who taught an SATP subject area class during the 2009-2010 school year were polled for responses regarding the qualifications they possessed. The data collected focused primarily on NBCT certified teachers, number of years of experience, alternate route certification process, level of degree, and teachers who completed a major in their content area. Participants were also asked five questions regarding their opinion about the impact of the qualifications listed above.

Data was collected from 17 high schools in a six county geographical region. The researcher distributed 264 questionnaires to the SATP subject area teachers from 17 different high schools. The researcher collected 185 questionnaires and a return rate of 70%. Four questionnaires were returned with one item left blank and one questionnaire was returned with three questions left blank.

Descriptive Data

Descriptive statistics and frequencies for the data collected during this research study are presented in the tables below. Each table contains the frequency and percentage for the participants who held a particular type of certification or qualification. Table 3 contains the number of participants who held a National Board Certification during the 2009-2010 school year. The majority of the participants in the study did not hold a National Board Certificate during the 2009-2010 school year. Table 4 contains a

breakdown of the years of experience held by each teacher who chose to participate in the study. Almost 50% of the participants had less than 10 years experience which is good news for the teacher recruitment experts. However, the percentage of participants was distributed somewhat equally. Table 5 displays with the number of participants who obtained their certification through the alternate route process. A larger percentage of the participants obtained certification via the traditional route as opposed to the alternate route process. The emphasis of teacher recruitment through the alternate route has drastically increased the number of teachers who have entered the education profession. Table 6 provides a summary of the degree level held by the participants in the study. A very small percentage of the participants have pursued specialists or doctoral degrees. Fifty percent of the participants had obtained their masters degree. Table 7 gives the number of college credit hours each participant completed in their major area. Almost 80% of the participants completed 25 or more credit hours of mathematics during their college careers. The larger number of credit hours could be attributed to previous graduation requirements for colleges and universities. The interesting part of the data relative to this section is the fact that any substantial percentage of teachers at the secondary level did not have to complete a required number of mathematics courses during their college career.

Table 3

National Board Certifications Held by Participants

| | Frequency | Percent |
|-----|-----------|---------|
| Yes | 25 | 13.5 |
| No | 160 | 86.5 |

Table 3 (continued).

| | Frequency | Percent |
|-------|-----------|---------|
| Total | 185 | 100 |

Table 4

Years of Teaching Experience by Participants

| Number of Years | Frequency | Percent |
|-----------------|-----------|---------|
| 0-5 | 44 | 23.8 |
| 6-10 | 47 | 25.4 |
| 11-15 | 34 | 18.4 |
| 16-30 | 28 | 15.1 |
| 21+ | 32 | 17.3 |
| Total | 185 | 100 |

Table 5

Alternate Route by Participants

| | Frequency | Percent |
|---------|-----------|---------|
| Yes | 77 | 41.6 |
| No | 107 | 57.8 |
| Total | 184 | 99.5 |
| Missing | 1 | .5 |
| Total | 185 | 100 |

Table 6

Level of Degree Obtained by Participants

| | Frequency | Percent |
|--------------|-----------|---------|
| 1 Bachelors | 87 | 47 |
| 2 Masters | 93 | 50.3 |
| 3 Specialist | 4 | 2.2 |
| 4 Doctorate | 1 | .5 |
| Total | 185 | 100 |

Table 7

Hours in Major by Participants

| Number of hours | Frequency | Percent |
|-----------------|-----------|---------|
| 1 0-6 | 5 | 2.7 |
| 2 7-12 | 2 | 1.1 |
| 3 13-18 | 11 | 5.9 |
| 4 19-24 | 20 | 10.8 |
| 5 25+ | 144 | 77.8 |
| Total | 182 | 98.4 |
| Missing | 3 | 1.6 |
| Total | 185 | 100 |

Statistical

Data was collected from an array of teachers across the four SATP subject area classes in the high school. Each independent variable or teacher qualification was tested

against each of the subject areas to determine if the qualification had an impact on student achievement according to the achievement model established by the state department of education. Twenty tests were performed to test for statistically significant impacts across the four subject areas.

The table below (Table 8) shows the groups statistics, mean scores and standard deviations for those participants who held a National Board Certificate and those participants who did not hold that qualification. The statistics are broken down by subject area. A t-test was performed to determine the level of significance in each subject area.

Table 8

Group Statistics for NBCT

| | NBCT | n | Mean | Std. Deviation |
|-----------------------|-------|----|--------|----------------|
| SATP Score Algebra | 1 Yes | 9 | 658.33 | 4.64 |
| | 2 No | 43 | 656.70 | 6.32 |
| SATP Score Biology | 1 Yes | 2 | 392.00 | 24.00 |
| | 2 No | 49 | 378.80 | 3.37 |
| SATP Score English II | 1 Yes | 9 | 656.78 | 1.23 |
| | 2 No | 41 | 650.85 | .79 |
| SATP Score Biology | 1 Yes | 5 | 379.80 | 10.60 |
| | 2 No | 27 | 373.56 | 3.55 |

Research question number one asks how teachers with a National Board Certificate impacted student achievement in relation to the achievement model established by the state department of education. In Algebra, the t-test revealed a non-significant impact on student achievement with $t(50) = .733$, $p = .467$. The result of the t-

test in Biology also yielded a non-significant impact with $t(49) = .768$, $p = .446$. In English, the t-test showed that teachers who held a National Board Certificate had a statistically significant impact on student achievement with $t(48) = 3.319$, $p = .002$. In English II, the mean scale SATP score for teachers who possessed a National Board Certificate was 5.93 points higher than those teachers who did not hold a National Board Certificate. Depending on the range of scores and where they fall within the accountability breakdown, the 5.93 points could mean the difference in a performance level rating for the school. The results for U. S. History were non-significant with $t(30) = .667$, $p = .510$. Therefore we can conclude that English teachers who have a National Board Certificate have a positive impact on student achievement in relation to the achievement model established by the state department of education.

Table 9 shows the number of participants, mean and standard deviation for all teachers according to their years of teaching experience. An ANOVA was used to determine if the years of experience possessed by the teacher had any impact on student achievement. The results are broken down by subject area.

Table 9

Group Statistics for Years of Teaching Experience

| | Years of Exp | | Mean | Std. Deviation |
|--------------------|--------------|----|--------|----------------|
| | n | | | |
| SATP Score Algebra | 0-5 | 14 | 653.14 | 7.61 |
| | 6-10 | 12 | 659.42 | 4.78 |
| | 11-15 | 9 | 656.89 | 3.48 |
| | 16-20 | 7 | 659.00 | 5.03 |
| | 21+ | 10 | 658.10 | 5.76 |
| | Total | 52 | 656.98 | 6.06 |

Table 9 (continued).

| | Years of Exp | n | Mean | Std. Deviation |
|-----------------------|--------------|----|--------|----------------|
| SATP Score Biology | 0-5 | 12 | 374.08 | 23.23 |
| | 6-10 | 13 | 374.15 | 21.40 |
| | 11-15 | 10 | 383.90 | 20.44 |
| | 16-20 | 6 | 389.83 | 37.94 |
| | 21+ | 10 | 381.40 | 21.50 |
| | Total | 51 | 379.31 | 23.73 |
| SATP Score English II | 0-5 | 13 | 649.31 | 3.33 |
| | 6-10 | 11 | 653.45 | 5.85 |
| | 11-15 | 10 | 651.60 | 7.59 |
| | 16-20 | 7 | 652.00 | 5.23 |
| | 21+ | 9 | 654.11 | 2.98 |
| | Total | 50 | 651.92 | 5.32 |
| SATP Score History | 0-5 | 5 | 359.80 | 18.99 |
| | 6-10 | 11 | 379.82 | 15.32 |
| | 11-15 | 5 | 374.00 | 11.49 |
| | 16-20 | 8 | 377.38 | 24.23 |
| | 21+ | 3 | 373.00 | 26.06 |
| | Total | 32 | 374.53 | 19.05 |

The second research question asks how the number of years of teaching experience impacts student achievement according to the achievement model established by the state department of education. The ANOVA for Algebra I was non-significant with $F(4,47) = 2.411$, $p = .062$. The ANOVA for Biology was non-significant with the $F(4,46) = .690$, $p = .603$. The non-significant results for English II revealed the

following results $F(4,45) = 1.445$, $p = .232$. The final ANOVA was for U. S. History and the results were non-significant with $F(4,27) = 1.011$, $p = .419$.

Table 10

Group Statistics for Alternate Route

| Alt.Route | | n | Mean | Std. Deviation |
|-----------------------|-----|----|--------|----------------|
| SATP Score Algebra | Yes | 20 | 655.60 | 7.11 |
| | No | 32 | 657.84 | 5.23 |
| SATP Score Biology | Yes | 29 | 381.69 | 25.22 |
| | No | 21 | 376.62 | 22.22 |
| SATP Score English II | Yes | 20 | 650.40 | 5.11 |
| | No | 30 | 652.93 | 5.30 |
| SATP Score History | Yes | 8 | 371.38 | 16.69 |
| | No | 24 | 375.58 | 19.99 |

Research question number three asked how teachers who obtained licensure through the alternate route impacted student achievement in relation to the achievement model established by the state department of education. A t-test was used to measure the impact alternate route teachers had on student achievement. In Algebra, the t-test revealed the following non-significant results, $t(50) = -1.309$, $p = .197$. In Biology, the results were again non-significant with $t(48) = .737$, $p = .465$. The results of the t-test for English II were not significant but the value was the smallest out of the four subject areas with $t(48) = -1.679$, $p = .100$. The t-test for U. S. History was non-significant as well with $t(30) = -.535$, $p = .597$.

Table 11

Group Statistics for Level of Degree

| | Level of Degree | n | Mean | Std. Deviation |
|-----------------------|-----------------|----|--------|----------------|
| SATP Score Algebra I | Bachelors | 26 | 656.23 | 6.64 |
| | Advanced | 26 | 657.73 | 5.45 |
| SATP Score Biology | Bachelors | 24 | 380.42 | 27.48 |
| | Advanced | 27 | 378.33 | 20.31 |
| SATP Score English II | Bachelors | 24 | 651.67 | 5.05 |
| | Advanced | 26 | 652.15 | 5.66 |
| SATP Score History | Bachelors | 13 | 370.92 | 15.64 |
| | Advanced | 19 | 377.00 | 21.12 |

Research question number four asked how teachers with an advanced degree impacted student achievement in relation to the achievement model established by the state department of education. Teachers were placed in two groups, one with a bachelor's degree and the other group contained the teachers who held a master's or higher. A t-test was again used to determine how an advanced degree impacted student achievement. In Algebra I, the results were non-significant with $t(50) = -.891$, $p = .377$. The results of the t-test in Biology yielded the following non-significant results $t(49) = .310$, $p = .758$. The results in English II were non-significant with $t(48) = -.320$, $p = .750$. The results of the t-test in U.S. History was non-significant with $t(30) = -.833$, $p = .384$.

Table 12

Group Statistics for Hours in Major

| Hours in Major | | n | Mean | Std. Dev. |
|-----------------------|------------|----|--------|-----------|
| SATP Score Algebra I | No Under19 | 4 | 650.25 | 13.05 |
| | Yes Over18 | 45 | 657.51 | 5.09 |
| SATP Score Biology | No Under19 | 6 | 383.83 | 41.84 |
| | Yes Over18 | 45 | 378.71 | 20.92 |
| SATP Score English II | No Under19 | 6 | 650.50 | 3.94 |
| | Yes Over18 | 44 | 652.11 | 5.49 |
| SATP Score History | No Under19 | 2 | 359.50 | 28.99 |
| | Yes Over18 | 30 | 375.53 | 18.50 |

The fifth research question asked how teachers who complete a major in their teaching area impact student achievement in relation to the achievement model established by the state department of education. A t-test was used to determine the statistical impact of teachers who complete a major in their content area. In Algebra I, the results were statistically significant with $t(47) = -2.349$, $p = .023$. The results for Biology were non-significant with $t(49) = .493$, $p = .624$. The t-test on data for English II teachers produced non-significant results with $t(48) = -.693$, $p = .492$. The results for U. S. History were non-significant with $t(30) = -1.159$, $p = .256$.

The teacher opinion portion of the questionnaire produced some interesting but anticipated results regarding how the participants felt about the impact of the five teacher qualifications on student achievement. The table below provides a distribution regarding

teacher opinion about these qualifications. The participants were asked to select one of the categories below that best described how they felt about the impact of a specific teacher qualification on student achievement. The number of responses appears in the first row followed by the percentage for each response in the row just below each qualification.

Table 13

Group Statistics for Teacher Opinion

| Teacher Opinion Questions | Strongly Agree | Disagree | Neutral | Agree | Strongly Agree |
|---|----------------|----------|---------|-------|----------------|
| NBCT teachers are more effective | 22 | 66 | 58 | 27 | 12 |
| Percentage of participants responses | 11.89 | 35.68 | 31.35 | 14.59 | 6.49 |
| Teachers with 10 or more years of experience are more effective | 9 | 68 | 37 | 55 | 15 |
| Percentage of participants responses | 4.89 | 36.96 | 20.11 | 29.89 | 8.15 |
| Traditional education majors are more effective than alt route teachers | 22 | 74 | 31 | 40 | 17 |
| Percentage of participants responses | 11.95 | 40.22 | 16.85 | 21.74 | 9.24 |
| Teachers with advanced degrees are more effective | 9 | 79 | 54 | 34 | 8 |
| Percentage of participants responses | 4.89 | 42.93 | 29.35 | 18.48 | 4.35 |
| Teachers who have a major in their teaching area are more effective | 2 | 35 | 28 | 89 | 31 |
| Percentage of participants responses | 1.08 | 18.92 | 15.14 | 48.10 | 16.76 |

The results of the teacher opinion questions were somewhat predictable.

However, the breakdown of responses included more neutral responses than the researcher anticipated. For instance, the majority of teachers were not national board

certified, hence the majority of the respondents either strongly disagreed or disagreed regarding the statement that teachers who held a National Board Certificate were more effective in the classroom. Responses regarding teacher experience and whether or not more experience increased the teacher's effectiveness were distributed across scale. The majority of respondents obtained their degree through the traditional route versus the alternate route; however a larger percentage of teachers did not think traditional route teachers were more effective. A slightly larger number of respondents held an advanced degree but again a larger percentage of the respondents disagreed with the fact that an advanced degree made a teacher more effective in the classroom. Finally, the majority of respondents held a major in their content area and those teachers felt that it allowed them to be more effective and have a greater impact on student achievement.

Summary

Each of the five teacher qualifications were tested against all four SATP subject area classes. The 20 statistical tests produced two areas that were statistically significant. National Board Certified Teachers more effective in English II when it comes to producing higher SATP scores. Teachers who completed enough hours to earn a major in mathematics were more effective in the Algebra I classroom. These two areas produced statistically significant results in relation to the achievement model established by the state department of education.

CHAPTER V

DISCUSSION

Conclusions and Discussion

Educational leadership teams must constantly search for new and innovative strategies that will allow their schools to maximize the opportunity for student success. Building principals must be instructional leaders as well as managers of the many different aspects that are essential components of a school. A teacher who possesses a particular qualification that has been proven to improve student achievement would be a tremendous advantage during the hiring process. Identifying the qualifications that would provide this advantage was the main idea and focus behind this research project.

When observing data collected from participants, several interesting points were discovered. There were a little more than a three to one ratio of women to men who taught subject area classes. The ethnic breakdown of the respondents was a bit of a surprise. Among the SATP subject area teachers who chose to participate in the study, 93.5% were Caucasian. Only 13.5% of the respondents held a National Board Certificate which seemed a bit low for subject area teachers.

Findings

The following paragraphs will address the finding and provide answers to the research questions that were presented at the beginning of this study. Each research question was answered by testing the teacher qualification against the teacher's mean scale score in each of the four subject areas. Twenty different tests were conducted to determine which teacher qualifications had a statistically significant impact on student achievement.

Research Question # 1

How do National Board Certified teachers impact student achievement in relation to the achievement model established by the state department of education? National Board Certified teachers proved to have a statistically significant impact in only one of the four SATP subject area classes. Teachers who held a National Board Certificate had a statistically significant impact in English II classes. Teachers who held National Board Certificates did not have a statistically significant impact in Algebra I, Biology or United States History. However, the findings could still be of use depending on the level of impact school leaders are seeking. School accountability ratings are based on how well students score on state mandated test. Student ratings range from minimal to advanced, based on the number of correct responses given on state mandated test. Although teachers with National Board Certificates did not produce statistically significant results in three subject areas, their impact could be enough to raise several students' scores from basic to proficient or from proficient to advanced. These increased scores could be the deciding factor in whether or not a school obtains a quality distribution index (QDI) to qualify for a higher performance rating. Research conducted by Boyd and Reese (2006) and cited in the review of literature suggests that teachers who hold a national board certificate have a positive impact on student achievement. Honawar and Viadero (2008) conducted a study that produced similar findings. The National Research Council expanded on the idea behind initial research by conducting research from more controlled groups. The council's finding supported previous research that showed that national board certified teachers have a positive impact on student achievement.

Research Question # 2

How does the number of years of teaching experience impact student achievement in relation to the achievement model established by the state department of education?

The consensus among previous researchers such as Goldhaber (2002), Aaronson, Barrow and Sander (2007), and Harris and Sass (2007), who examined the impact of years of teaching experience on student achievement, was similar. Years of experience did have an impact on student achievement but the impact steadily increased up to 10 years then began to level out and even decrease in some cases. Although the number of years of experience did not have a statistically significant impact on student achievement, the findings were spread out across the four subject areas. The findings show that years of teaching experience has the most impact in Algebra I. The other subjects in order of impact were English II, United States History and Biology.

Research Question # 3

How do teachers who obtain certification through the alternate route process impact student achievement in relation to the achievement model established by the state department of education? Alternate route teachers do not have a statistically significant impact on student achievement according to the findings. However, alternate route teachers who taught English II show the most impact among the four SATP subject areas. The other subjects in order of significance were Algebra I, Biology, and United States History. Goldhaber and Brewer (1999) determined that the type of certification does have an impact on student achievement but the licensure requirements do not influence student achievement. One contributing factor is the multitude of certification requirements established by each state. Cut scores and vary drastically from state to

state. The alternate route process has served one purpose by allowing school leaders to place competent individuals into classrooms without having education degrees. Once the alternate route teachers have obtained certifications and secured teaching positions, the responsibility shifts to school leaders to foster their skills through induction programs. School leaders have a vast repertoire of resources to assist in the teacher development process. Induction programs consist of teacher mentors, professional learning communities, online courses, professional development conferences and collaborative networking among colleagues. Each of these programs can assist alternate route teachers in the quest to develop their classroom skills and improve the quality of instruction within their classroom.

Research Question # 4

How do teachers with advanced degrees impact student achievement in relation to the achievement model established by the state department of education? Teachers with advanced degrees did produce higher test scores in Algebra I classes and U. S. History. However, results pertaining to advanced degrees did not show any significant findings. The level of degree obtained by the teacher did not seem to have any substantial impact across the four subject areas. The next subjects in order of impact were U. S. History, English II and Biology. Previous research conducted by Sawchuk (2009) and Goldhaber and Brewer (1998) showed that teachers with advanced degrees in math and science had more of an impact on student achievement. However, this did not hold true among the participants in this study. In fact, teacher who held bachelor's degrees had higher test score than their counterparts with advanced degrees in English II and Biology.

Goldhaber and Brewer (1996) stated that the level of degree held by the teacher is an unimportant factor when it comes to student achievement. However, previous studies did find that university programs did influence teacher performance in elementary settings and in secondary classrooms such as chemistry, physics, economics and calculus where students are exposed to content-specific material. Teachers can always benefit from the networking opportunities that present themselves in educational settings such as graduate classes and professional development conferences. The focus for school leaders must remain centered on the quest to isolate teaching strategies that when implemented will give students the best possible chance of achieving at a high level.

Research Question # 5

How do teachers who complete a major in their teaching area impact student achievement in relation to the achievement model established by the state department of education? Previous studies conducted by Monk (1994), Boots (2007) & Lim-Teo, Chua Cheang & Yeo (2007) show a strong relationship between a teacher's content knowledge and the student's level of achievement. More specifically, Goldhaber and Brewer (2000) examined the impact of teacher qualifications in high school math and science courses and found a positive relationship between the teacher's content knowledge and the student's scores on exit exams. Monk (1994) also found a positive relationship between the teacher's subject area knowledge and the student's achievement in mathematics. Teachers who completed a major in mathematics had a statistically significant impact on student achievement in Algebra I. Content area majors did not have as much of an impact on student achievement in the other subject areas. The other subject areas in order of impact were U. S. History, English II and Biology. Biology was the only area where

student performance was higher when the teacher had not completed over 18 hours in their major field. Although not significant, student performance was better in English II and U. S. History if their teacher completed 18 or more hours of content-specific courses. In high school settings where courses are geared toward content knowledge, it seems that students would benefit greatly if their instructors possessed a high level of content knowledge and specific skills that would allow them to deliver material in a manner that would spark the interest of their students.

Two particular qualifications were identified as statistically significant when it comes to impacting student achievement in relation to the achievement model established by the state department of education. Teachers who possessed a National Board Certificate were more effective in an English II classroom. Teachers who completed more than eighteen hours of course work in mathematics were more effective in an Algebra I classroom.

Statistically significant findings among National Board Certified Teachers in English II classes and content area majors in Algebra I classes will prove beneficial to school leaders. However, the major challenge for school leaders will be finding ways to encourage high school students who possess advanced skills in mathematics to pursue degrees in education. Once these young men and women obtain these degrees, school leaders must have effective and efficient induction programs that will allow the brilliant young teachers to flourish.

The significant findings could provide support to school leaders to encourage teachers to pursue additional qualifications other than state requirements for certification. School leaders must use these finding in combination with induction programs to enhance

the arsenal from which teachers obtain new and innovative ideas to apply in the classroom. The demands of NCLB on teachers and students will require everyone involved in the educational process to seek out any strategy that will impact student achievement. Hopefully the significant findings of this study will serve as a solid foundation upon which future researchers can build.

Implications for Policy and Practice

School boards can examine the results from this study and use the information as a foundation for decision making when it comes to curriculum and hiring. The drastic budget cuts that schools are facing can handicap school leaders when it comes to providing adequate funding to ensure a quality education. For instance, if a school board knew that a teacher who held a National Board Certificate were more effective in the classroom and would produce higher test scores, they might be more apt to approve the hiring of a veteran teacher who would require a higher salary.

Superintendents are saddled with the task of making recommendations to the board and implementing policy and practice that is supported by research. Superintendents must consider several external entities such as political arenas, community stakeholders and religious groups who are extremely powerful when it comes to influencing decisions that directly impact the youth of the community.

Building principals at the school level can use the findings from this study to assist in the development of teacher induction programs. One of the significant outcomes of this project was the impact of National Board Certified teachers on student achievement in English II. Building principals could aggressively pursue prospective teaching applicants who possess a National Board Certificate. School leadership teams

could also encourage current staff members to seek additional certifications in an effort to increase student achievement levels. Future researchers interested in expanding this study could focus on the impact of teacher qualifications on MCT2 scores. It could also be intriguing to examine the correlation between the student achievement scores at the different educational levels.

Another significant finding from this study was the impact of content area certified teachers in mathematics on Algebra I scores. Teachers who took 21 or more hours of mathematics produced higher student scores on state mandated test. Certification requirements for mathematics teachers have been reduced in an effort to address the shortage of teachers. Future researchers might consider exploring the relationships or differences among teachers who obtained certification through the old route versus the newer certification process. Additional research topics could investigate the impact of content-area certified teachers at the middle school or junior high levels. One final research interest related to this study could examine the differences in student's mathematics achievement in a regular classroom setting versus a school that is departmentalized.

The findings from this study could have an influential impact on teachers at all levels. Teachers who are self motivated and constantly seeking ways to improve instructional delivery can use the information from this study as a motivational tool to see additional qualifications. These additional qualifications or certifications can enhance the resumes of teachers and benefit them professionally if they choose to seek employment outside of their current school district. The professional networking will always provide

teachers with endless resources and proven strategies that will enhance the instructional process.

It would also be interesting to track and compare the performance of schools based on the grade level and which departmentalization is implemented. This study was conducted in a secondary setting but the results can be applied in any setting where instruction is specialized by subject area. The new core curriculum will greatly impact mathematics and is going to require schools systems to seek math teachers who possess higher levels of content knowledge and give them teaching assignments at middle and junior high schools. The core standards are also going to require school leaders to implement new programs that will foster the growth and development of existing employees that hold teaching positions in mathematics.

So much of the hiring process is dependent on the first impression or gut feeling of the person conducting the interview. Practical experience has proven that a specific qualification does not guarantee results in the classroom. Other factors such as classroom management, parental support, tutorial programs, and absences can all have a profound influence on student achievement. It is this researcher's belief that while the findings from this study cannot be the sole determining factor in the hiring process, these same findings could be used to distinguish between candidates who are similar in all other areas. The qualifications obtained by the prospective educator are essential components that must be considered during the recruitment and hiring process.

Limitations

This study did not involve those teachers who taught Algebra I in the middle school or junior high setting. Future researchers interested in this topic might consider a

more controlled environment regarding class selection. One might consider comparing all inclusion classes or advanced classes. The data collection would have to be expanded dramatically to obtain an adequate sample size.

This study was also limited to a six county geographical region. Although the region offered the researcher multiple cultures and climates to include in the study, one might consider other geographical regions and see if the results remain consistent. Future research related to this topic could focus on a more diverse cross section of schools from a wider geographic region. It would be interesting to see what changes would take place as the participants were expanded.

Recommendations for Future Research

Future researchers related to this topic could focus on extending the geographical area from which data is collected. Perhaps the same type of study would produce different results if it were conducted in a different socio-economic area or geographical region. Future research could also specialize in one particular subject area while increasing the number of participants. There are multiple options and directions for future research projects related to the topic of teacher qualifications and the impact those qualifications have on student achievement.

Future researchers could take the two significant results from this study and examine possible reasons why National Board Certified Teachers have more of an impact in English II classes or why Algebra I teachers with more hours in their content area produce better test scores. Specialization in one of these two areas would involve expanding the participant selection process dramatically. The validity of the results would strengthen if the results proved to be consistent in an entire state.

Future researchers might consider using other common test scores to see if the results remain consistent. The possibilities could be endless if the proposed core standards take place. If a National Curriculum Test is put in place, researchers would have a set of common test scores that could be used to test the impact of teacher qualifications on student achievement nationwide.

The two areas of statistical significance should open many avenues of discussion among educational leaders. The fact that only 13.5% of the participants were National Board Certified is somewhat alarming since Mississippi rewards its National Board Certified teachers with an annual \$6,000 supplement. The geographical region of this study tends to be one of the higher rated academic areas of the state. If the percentage of National Board Certified teachers is so low among subject areas, one could presume that the percentage of National Board Certified teachers is lower for the entire state. Current budget cuts have led to discussions of the NBCT process no longer being funded. If teachers are not rewarded for completing the long and tedious process to obtain the certification, the numbers of National Board Certified teachers will surely decrease.

The shortage of mathematics teachers at the secondary level has led the Mississippi Department of Education to lower standards and requirements for teachers to obtain certification in some of the more advanced areas. The alternate route certification process has allowed schools to fill some of the vacant positions. However, it is essential that we continue to seek out content area majors who have specialized skills in content subjects and involve them in effective induction and mentoring programs that will allow them to become successful teachers. The new core curriculum will require schools to place more content area certified educators in the middle school and junior high

classrooms. Educational leaders at all levels must continue to find ways to attract content area certified personnel to the education profession and develop ways to keep them in the classroom.

Summary

This research study examined the impact of teacher qualifications on student achievement in relation to the achievement models established by the state department of education. Data was collected from a wide range of schools across a six county geographical region. The participants were secondary teachers who taught an SATP subject area class during the 2009-2010 school year. Each participant provided information based on the types of qualifications they possessed during the 2009-2010 school year. Those qualifications were then tested against the mean scale score for their classes.

Each participant was also asked their opinion regarding the impact of those same qualifications on student achievement. The results of the opinion portion of the questionnaire produced predictable results regarding the impact of teacher qualifications. If the majority of the respondents held a particular qualification, then the results of the opinion poll would be in favor of the majority. The opinion of the participants was not always in line with the statistical evidence produced by the data analysis.

Each of the five teacher qualifications were tested against the four SATP subject area classes. Analysis of the data collected during this research project produced two statistically significant findings. Teachers who held a National Board Certificate were more productive in English II classrooms. Teachers who completed more than 19 hours of college mathematics credit hours produced better student test scores in Algebra I.

Therefore, in answering the proposed research questions we can say that English II teachers who hold a National Board Certificate have a statistically significant impact on student achievement in relation to the achievement model established by the state department of education. Research findings also support the statement that mathematics teachers who completed 21 or more credit hours of coursework had a statistically significant impact on test scores in Algebra I in relation to the achievement model established by the state department of education.

APPENDIX A
QUESTIONNAIRE

Please take the time to answer the following questions. All responses will be kept as confidential as possible. Please circle your answer.

1. What is your gender?

(A) Male (B) Female

2. Ethnicity: Please choose one (1).

(A) African American, Black
(B) Asian
(C) Caucasian, White
(D) Hispanic
(E) Native American

3. Do you currently hold a National Board Certification?

(A) Yes (B) No

If so, please list the area of certification for National Boards _____.

4. How many years of teaching experience did you have at the end of the 2009-2010 school year?

(A) 0-5 years (B) 6-10 years (C) 11-15 years (D) 16-20 years (E) 21 or more

5. Did you obtain your teaching certificate through the alternate route process?

(A) Yes (B) No

6. What level of degree do you currently hold?

(A) Bachelors (B) Masters (C) Specialists (D) Doctorate

7. How many hours of college coursework have you completed in your teaching area?

(A) 0-6 (B) 7-12 (C) 13-18 (D) 19-24 (E) 25 or more

Please indicate your answer to the following questions by circling the scaled response corresponding to the question.

Strongly Disagree Disagree Neutral Agree Strongly Agree

8. A teacher who possesses a National Board Certification is more effective in the classroom.

Strongly Disagree Disagree Neutral Agree Strongly Agree

9. A teacher who has more than ten years experience is more effective than their colleagues who have less than ten years experience.

Strongly Disagree Disagree Neutral Agree Strongly Agree

10. A traditional education major is more effective in the classroom than someone who obtained their certification through the alternate route.

Strongly Disagree Disagree Neutral Agree Strongly Agree

11. Teachers who possess an advanced degree (Masters or above) are more effective in the classroom.

Strongly Disagree Disagree Neutral Agree Strongly Agree

12. Teachers with a major (30 or more hours) in the content area they are teaching are more effective in the classroom.

Strongly Disagree Disagree Neutral Agree Strongly Agree

13. What SATP subject area did you teach during the 2009-2010 school year?

(A) Algebra I (B) Biology I (C) English II (D) U. S. History

Information from this survey must be matched with SATP test data. The questionnaires are coded for identification purposes only. Your responses will not be shared with your principal.

APPENDIX B

LETTER TO THE SUPERINTENDENT

Dear Superintendent:

My name is Timothy Holland and I am currently enrolled in the doctoral program at the University of Southern Mississippi. I have completed my course work and will be conducting the research project associated with my dissertation in the near future. The topic I have chosen is *The Impact of Teacher Qualifications on Student Achievement in Relation to the Accreditation Model Established by the state department of education*. The study will focus on teachers' certifications and SATP results for their classes during the 2009-2010 school year. I am requesting to use your high school(s) in my research project. I would appreciate your assistance in my quest to complete this project.

During the data collection process, the researcher will be asking each person in your district who taught a (SATP) subject area class during the 2009-2010 school year to complete a short questionnaire dealing with the certifications they held during the 2009-2010 school year. To complete the data analysis, the researcher will need to match each teacher's questionnaire to the mean scale score for their classes. Participant's responses will not be totally confidential. However, the researcher will not use any individual teacher names or student names in the data analysis. At no time will any party other than my committee members be allowed access to the data collected during this process. To ensure a smooth process, I would like to meet with each building principal, at their convenience, to go over the coding of the surveys. Once the surveys are completed, the researcher will need to obtain the mean scale score for each teacher's class during the 2009-2010 school year.

Once the dissertation is complete, the researcher will be more than happy to share the findings of my research project with anyone in your district. I truly appreciate your time and assistance in the educational venture.

If you choose to grant me permission to request data from your teachers and use their test scores in the project, please sign the attached form and fax it back to me as soon as possible. If you have any questions, please feel free to contact me via email or phone.

Thank you

Mr. Timothy D. Holland

1-228-861-6474 (cell)

1-228-864-8961 (fax)

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at _____ High School. I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

Superintendent's Signature

From:

11/01/2010 10:46

#097 P.002/002

10/27/2010 13:42 2288648961

PAGE 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [redacted]. I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[Handwritten signature]

Superintendent's Signature

~~REDACTED~~
From: ~~REDACTED~~
To: Tim Holland <hollandt@lbsdk12.com>
Date: 10/28/2010 8:10 am
Subject: RE: Dissertation Survey, Tim Holland

CC: ~~REDACTED~~
Tim,

I checked with ~~REDACTED~~ who said he'd be happy to coordinate the administration of your survey to SATP teachers in ~~REDACTED~~ (Copy attached)

You're good to go; I would love a copy of the results.

Good luck on your dissertation!

~~REDACTED~~
What you believe about yourself will determine your life.

From: Tim Holland [hollandt@lbsdk12.com]
Sent: Wednesday, October 27, 2010 2:37 PM
To: ~~REDACTED~~
Subject: Dissertation

~~REDACTED~~
The following attachment is at your request per our phone conversation. I spoke to ~~REDACTED~~ and he said he would be glad to help me out with the leg work at BHS. Thank you and if you have any questions please call me at 861-6474.

Thanks

Mr. Timothy Holland

GSD SUPT OFFICE
10/27/2010 14:09

2288651918
2288648951

11/01 '10 07:53 NO.575 03/05

PAGE 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED] I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[REDACTED SIGNATURE]

Superintendent's Signature

10/27/2010 14:51 2282550378
10/27/2010 14:50 2298648961



PAGE 01/01
PAGE 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED]. I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.



Superintendent's Signature

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at the three high schools in [REDACTED]. I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. () Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.



Superintendent's Signature

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at alk [redacted] I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[redacted signature]

Superintendent's Signature

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED] I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[REDACTED SIGNATURE]

Superintendent's Signature

OCT-28-2010 THU 03:37 PM

FAX NO.

P. 02

10/28/2010 07:41 2288648961

PAGE 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED]. I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[REDACTED SIGNATURE]

Superintendent's Signature

10ct. 27. 2010; 3:48PM288648961

No. 6464 P. 2 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Hollaud permission to conduct a research study at [REDACTED] I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.



Superintendent's Signature

10/27/2010 15:44 2282556204
10/27/2010 13:11 2288648961

[REDACTED]

PAGE 02/02

PAGE 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED] I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[REDACTED SIGNATURE]

Superintendent's Signature

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED]. Mr. Holland will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[REDACTED SIGNATURE]

Superintendent's Signature

10/29/2010 15:31 6019285122

[REDACTED]

PAGE 02/02

10/27/2010 13:53 2288648961

PAGE 03/05

TEACHER CERTIFICATIONS AND STUDENT ACHIEVEMENT

77

By signing and returning the form, I give Mr. Timothy Holland permission to conduct a research study at [REDACTED] I (Mr. Holland) will meet with each administrator and request that they pass out a questionnaire to each educator who taught a SATP subject area class during the 2009-2010 school year. (I) Mr. Holland will also need to know the mean scale score for each teacher participating in the research project.

[REDACTED SIGNATURE]

Superintendent's Signature

APPENDIX D

IRB APPROVAL FORM



THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Institutional Review Board

118 College Drive #5147
 Hattiesburg, MS 39406-0001
 Tel: 601.266.6820
 Fax: 601.266.5509
 www.usm.edu/irb

**HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
 NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 10111802

**PROJECT TITLE: Does Teacher Certification have an
 Impact on Student Achievement?**

PROPOSED PROJECT DATES: 01/19/2010 to 08/31/2011

PROJECT TYPE: Dissertation

PRINCIPAL INVESTIGATORS: Timothy Darren Holland

COLLEGE/DIVISION: College of Education & Psychology

DEPARTMENT: Curriculum Instruction & Special Education

FUNDING AGENCY: N/A

HSPRC COMMITTEE ACTION: Exempt Approval

PERIOD OF APPROVAL: 11/29/2010 to 11/28/2011

Lawrence A. Hosman

Lawrence A. Hosman, Ph.D.
 HSPRC Chair

12-01-2010

Date

APPENDIX E
TEACHER LETTER

Dear Teacher:

My name is Timothy Holland and I am currently enrolled in the doctoral program at the University of Southern Mississippi. I have completed my course work and will be conducting the research project associated with my dissertation in the near future. The topic I have chosen is: Do Teacher Qualifications Impact Student Achievement in Relation to the Accreditation Model Establish by the State Department of Education. The study will focus on teacher's certifications and SATP results for their class during the 2009-2010 school year. I would appreciate your assistance in my quest to complete this project.

I spent fourteen years in the classroom and I fully understand how valuable your time is to your family and your students. Hence, the reason for a topic that I feel will be beneficial to teachers, school leaders and everyone in the educational profession. I greatly appreciate your time and assistance with my educational venture.

The researcher will be using a coding system to match your responses with the mean scale scores from your classes. At no time will your name or test results be viewed or given to anyone other than myself or my committee members. The researcher will use a labeling system that will ensure as much discretion as possible for each participant.

Thank you again for you time and for assisting me in the quest. If you have any questions please feel free to contact via email or at the following number. Please take the time to complete the questionnaire and mail it back to the researcher.

Thank you

Mr. Timothy D. Holland

1-228-861-6474

REFERENCES

- Aaronson, D., Barrow, L., & Sander, W. (2007). *Teacher and student achievement in the Chicago public high schools*. Unpublished manuscript, University of Chicago Press, University of Chicago. Retrieved from <http://faculty.smu.edu/millimet/classes/eco7321/papers/aaronson%20et%20al.pdf>
- Adediwura, A., & Tayo, B. (2007). Perception of teachers' knowledge, attitude and Teachings skills as predictors of academic performance in Nigerian secondary schools. *Educational Research and Reviews*, 2, 165-171.
- Allgood, S., & Walstad, W. B. (1999). The longitudinal effects of economics education on teachers and their students. *The Journal of Economic Education*, 30, 99-111.
- Basile, C., Kimbrough, D., Koellner, K., & Swackhamer, L. E. (2009). Increasing the self-efficacy of inservice teachers through content knowledge. *Teacher Education Quarterly*, 36, 63-78.
- Becker, W. E., Greene, W., & Rosen, S. (1990). Research in high school economic education. *Journal of Economic Education*, 21, 231-245. Retrieved from <http://www.rau.ro/intranet/JEP/2001/1503/15030195.pdf>
- Berliner, D. C., & Laczko-Kerr, I. (2003). In harm's way: How uncertified teachers hurt their students. *Educational Leadership*, 60, 34-39.
- Beteille, T., & Loeb, S. (2009). *Teacher quality and teacher labor markets*. Unpublished manuscript, Stanford University.
- Betts, J. R. (1995). Does school quality matter? Evidence from the national longitudinal survey of youth. *The Review of Economics and Statistics*, 77, 231-250.
- Betts, J. R., Zau, A. C., & Rice, L. A. (2003). *Determinants of student achievement*. San

Francisco, CA: Public Policy Institute of California.

- Boots, J. (2007). *Student achievement and passport to teaching certification in mathematics*. Retrieved from www.abcte.org/files/math_2007_validity.pdf
- Bosker, R. J., Kruger, M. L., & Witziers, B. (2003). Educational leadership and student achievement: The elusive search for an association. *Educational Administration Quarterly*, 39, 398-425. doi: 10.1177/0013161X03253411
- Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wyckoff, J. (2008). *The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools*. Retrieved from <http://www.teacherpolicyresearch.org/portals/1/pdfs/NYCTeacherSorting%20PaperFinal2008.pdf>
- Boyd, W. L., & Reese, J. P. (2006). Great Expectations: The impact of the national board for professional teaching standards. *Education Next*, 51-57. Retrieved from www.educationnext.org
- Cavalluzzo, L. C. (2004). *Is National board certification an effective signal of teacher quality*. Retrieved from www.nbpts.org
- Childers-Burpo, D. M. (2002). Mirrors and microscopes: The promise of national board certification in the era of accountability. *Contemporary Education*, 72, 14-17.
- Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2007). *Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects*. Retrieved from ideas.repec.org/p/nbr/nberwo/12828.html
- Cohen-Vogel, L., & Smith, T. M. (2007). Qualifications and assignments of alternatively certified teacher: Testing core assumptions. *American Educational Research*

Journal, 44, 732-753. Retrieved from <http://aerj.aera.net>

- Collins, J. (2001). *Good to great*. New York, NY : Harper Collins Publishers.
- Cristol, D. S., Gimbert, B. G., Scene, A. M., & Wallace, D. S. (2005). A case study of a competency-driven alternative route to teacher licensure in an urban 'hard to staff' school system. *Action in Teacher Education*, 27, 53-60.
- Darling-Hammond, L. (1998). Teacher learning that supports student learning. *Educational Leadership*, 55, 6-11.
- Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, J. V. (2005, October 12). Does teacher preparation matter? Evidence about teacher certification, teach for America, and teacher effectiveness. *Education Policy Analysis Archives*, 13, 1-51.
- Farrell, J. B. (2005). National board certified teachers: An untapped resource for school improvement? *Childhood Education*, 81, 161-163.
- Feistritzer, C. E. (2005). *Profile of alternate route teachers*. Retrieved from www.teach-now.org
- Ferguson, P., & Womack, S. T. (1993). The impact of subject matter and education coursework on teaching performance. *Journal of Teacher Education*, 44, 55-63.. Retrieved from <http://www.eric.ed.gov>
- Flores, B. B., Desjean-Perrotta, B., & Steinmetz, L. E. (2004). Teacher efficacy: A comparative study of university certified and alternatively certified teachers. *Action in Teacher Education*, 26, 37-46.
- Fredricks, J. G. (2001). Why teachers leave. *Education Digest*, 66, Spring 2002, 46-48.

- Goldhaber, D. (2002, March 10). The mystery of good teaching. Retrieved from http://www.nuatc.org/articles/pdf/mystery_goodteaching.pdf
- Goldhaber, D. D., & Brewer, D. J. (1998). When should we reward degree for teachers? *Phi Delta Kappan*, 80, 134-138.
- Goldhaber, D. D., & Brewer, D. J. (1999). *Teacher licensing and student achievement*. Retrieved from www.msu.edu/user/mkennedy/TQQT/PDFs/GoldBrew%2099.pdf
- Goldhaber, D. D., & Brewer, D. J. (2000, June 20). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy*, 22, 129-145.
- Goldhaber, D. G., & Brewer, D. J. (1996). Evaluating the effect of teacher degree level on educational performance. Retrieved from www.nces.ed.gov
- Goldhaber, D., & Anthony, E. (2007). *Can teacher quality be effectively assessed? National board certification as a signal of effective teaching*. Retrieved from www.crpe.org/cs/crpe/download/csr_files/brief_crpe_badclass_nov08.pdf
- Gordon, R., Kane, T. J., & Staiger, D. O. (2006). *Identifying effective teachers using performance on the job*. Retrieved from www.brooking.edu/views/papers/200604hamilton_1.htm
- Harris, D. N., & Sass, T. R. (2007). Teacher quality and student achievement. Retrieved from http://www.sciencedirect.com/science?_ob=ArticleURL
- Haycock, K. (2003). Toward a fair distribution of teacher talent. *Educational Leadership*, 60, 11-15.

- Hill, H. C., Rowan, B., & Lowenberg Ball, D. (2005, June 20). Effects of teachers' mathematics knowledge for teaching on student achievement. *American Educational Research Journal*, 42, 371-406.. doi: 10.3102/00028312042002371
- Honawar, V., & Viadero, D. (2008, June 11). Credential of NBPTS has impact. *Education Week*. Retrieved from www.edweek.org/ew/articles/2008/06/18/42nrc_ep.h27.html
- Inman, D., & Marlow, L. (2004). Teacher Retention: Why do beginning teachers remain in the profession? *Education*, 124, 605-614.
- Institute of Educational Sciences. (2009). *An evaluation of teachers trained through different routes to certification*. Washington, DC: U. S. Department of Education National Center for Education Evaluation and Regional Assistance.
- Klagholz, L. (2001). State policy and effective alternative teacher certification. *Education Digest*, 67, 33-36.
- Lease, A., & Garrison, L. F. (2008). Improving teacher effectiveness through focused graduate education. *Action in Teacher Education*, 30, 11-22.
- Lim-Teo, S. K., Chua, K. G., Cheang, W. K., & Yeo, J. K. (2007). The development of diploma in education student teachers' mathematics pedagogical content knowledge. *International Journal of Science and Mathematics Education*, 5, 237-261.
- Lynch, G. J. (1994). High school economics: Separate course vs. the infusion approach. *International Journal of Social Education*, 8, 59-69. Retrieved from <http://isje.iweb.bsu.edu>

- Mississippi Department of Education. (2010). Accountability web page. Retrieved from <http://www.mde.k12.ms.us/accred/accred.html>
- Monk, D. (1994). Subject area preparation of secondary mathematics and science teachers and student achievement. *Economics of Education Review*, 13, 125-142.
- National Board for Professional Teaching Standards. (2004). *Why America needs national board certified teachers*. Retrieved January 19,2010 from www.nbpts.org.
- National Board for Professional Teaching Standards Website. (2010). *Impact of national Board certification on teacher practice & schools*. Retrieved from www.nbpts.org
- National Center for Education Statistics. (2000). Table 68: Highest degree earned, number of years teaching experience, and average class size for teachers in public elementary and secondary schools. Retrieved from www.nces.ed.gov/programs/digest/d04/tables/dt04_068.asp
- National Center for Education Statistics. (2008).Table 68: Highest degree earned, number of years teaching experience, and average class size for teachers in public elementary and secondary schools. Retrieved from www.nces.ed.gov/programs/digest/d04/tables/dt04_068.asp
- Okpala, C. O., James, I., & Hopson, L. (2009). The effectiveness of national board certified teacher: Policy implications. *Journal of Instructional Psychology*, 36(1), 29-34.
- Palmer, K. (2007). Why teachers quit. *Teacher Magazine*, 18, 45. Retrieved from www.teachermagazine.org

- Podgursky, M. (2005). Teacher licensing in U.S. public schools: The case for simplicity and flexibility. *Peabody Journal of Education*, 80, 15-43.
- Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *The American Economics Review*, 94, 247-252.
Retrieved February 16, 2010 from <http://www.jstor.org/stable/3592891>.
- Roden, J. K., & Cardina, C. E. (1999). Academic proficiency levels of education majors. *The Teacher Educator*, 35, 30-43.
- Rouse, W. A. (2008). National board certified teachers are making a difference in student achievement: Myth or fact? *Leadership and Policy in Schools*, 7(1), 64-86. Retrieved from <http://eric.ed.gov>
- Sawchuk, S. (2008, November 5). Intensive induction shows little impact. *Education Week*, 28,1, 11.
- Sawchuk, S. (2009, August 12). Halt urged to paying teachers for earning master's degrees. *Education Week*, 6.
- The National Research Council. (2008). *National board teachers found to be effective*. Retrieved February 16, 2010 from www.nationalacademies.org
- Thomas, L. G. (n.d.). *No Child Left Behind: Prevention and partnership*. Retrieved from www.prevention.org
- Trumbull, S. (2008, April 03). *Teacher incentive pay: Effect on student achievement and global competition*. Paper presented at the MPSA Annual National Conference, Chicago, IL.
- Viadero, D. (2008, June 4). Philadelphia ninth graders found to get least-seasoned teachers. *Education Week*. Retrieved from www.edweek.org

Vigdor, J. (2008). Scrap the sacrosanct salary schedule. *Education Next*, 8, 37-42.

Retrieved from www.educationnext.org

Walden University. (2004). Can a master's program really make a difference in students'

Reading skills? *Instructor*, 113, 8-10.

Wayne, A. J., & Youngs, P. (2003). Teacher characteristics and student achievement

gains: A review. *Review of Educational Research*, 73, 89-122.

Wong, H. K. (2004). Induction programs that keep new teachers teaching and improving.

NASSP Bulletin, 88, 41-58.