

THE EFFECTIVENESS OF STATE CERTIFIED, GRADUATE DEGREED, AND
NATIONAL BOARD CERTIFIED TEACHERS AS DETERMINED BY STUDENT
GROWTH IN READING

by

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ABSTRACT

Federal, state, and local government agencies are promoting merit pay systems that are tied to student achievement. The main problem facing governments, school districts, and educators is that money is hard to come by in the current market and choosing where to spend merit pay monies to receive a maximum rate of return on the investment realized in increased student achievement is difficult to determine. This study did explore the student achievement results of third, fourth, and fifth grade state certified, graduate degreed, and National Board Certified teachers in Brevard and Seminole County Public Schools as compared to those of other teachers within and across these schools. The goal of this study was to determine the effectiveness of state certified, graduate degreed, and National Board Certified teachers. For this study teacher effectiveness was defined by their students' Lexile Framework for Reading scores from the 2008-2009 school year. The hypothesis is that the Lexile Framework for Reading data demonstrated that there was a statistically significant difference between the learning gains of the students between groups. Overall, the findings indicate that there was a statistically significant difference between the learning gains of the students between groups; however, that change could not be attributed to the factor of teacher category. Specific teacher education levels or certifications did not make any difference in the learning gains as measured by the Scholastic Reading Inventory (SRI), among 3rd, 4th, or 5th grade students in Brevard or Seminole County Public Schools.

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LIST OF ACRONYMS/ABBREVIATIONS

AYP	Adequate Yearly Progress
CEU	Continuing Education Unit
ELL	English Language Learner
ESE	Exceptional Student Education
FCAT	Florida Comprehensive Assessment Test
ISLLC	Interstate School Leaders Licensure Consortium
MAP	Merit Award Program
NAEP	National Assessment of Educational Progress
NBC	National Board Certification
NBCT	National Board Certified Teacher
NBPTS	National Board for Professional Teaching Standards
NCE	Normal Curve Equivalent
NCLB	No Child Left Behind
NEA	National Education Association
ProComp	Professional Compensation Plan for teachers
SAM	Scholastic Achievement Manager
SES	Socioeconomic Status
SRI	Scholastic Reading Inventory
SPSS	Statistical Package for Social Science
STAR	Special Teachers Are Rewarded
TAP	Teacher Advancement Program

TEPS Commission National Commission on Teacher Education and
Professional Standards

Q Comp Quality Compensation for Teachers

CHAPTER 1 INTRODUCTION

Student achievement, accountability, and merit pay have dominated local, state, and federal government politics and policy during the last few years. These same government agencies have experienced a decrease in revenue requiring them to make difficult decisions regarding school funding. “As the largest part of K-12 spending, teacher pay is often the focus of deliberations during legislative sessions. Compensation is an important part of attracting and retaining high-quality teachers. Most teachers continue to be paid based primarily on years of experience and degree level, although some states tie a small portion of compensation to state priorities, such as raising student achievement, closing achievement gaps and ensuring that all children, regardless of where they attend school, have well-qualified teachers” (Gaines, 2005, p. 1). These governments are now focusing limited resources on merit pay programs that reward teachers for their students’ learning gains. Schools and school districts are receiving fewer resources to meet increasing student achievement and accountability demands and are required to create merit pay systems based on student performance. There is some evidence that teacher quality has an effect on student achievement, however, it is difficult to measure teacher quality and reward those who master teaching (Rockoff, 2004).

Teachers in most states are required to go through a certification process that enables them to teach in that state’s public schools. This certification process usually requires a degree from an accredited college or university and the completion of general knowledge and subject matter tests in order to teach. The National Board for Professional

Teaching Standards (NBPTS) has created a voluntary system of teacher certification that has been recognized throughout the United States. This certification is substantially more involved than state certification systems. To be eligible for NBPTS certification a teacher must go through an initial screening, prepare a portfolio, and successfully complete a set of assessment exercises (Harris & Sass, 2007).

Problem Statement

Federal, state, and local government agencies are promoting merit pay systems that are tied to student achievement. The main problem facing governments, school districts, and educators is that money is hard to come by in the current market and choosing where to spend merit pay monies to receive a maximum rate of return on the investment realized in increased student achievement is difficult to determine. Millions of dollars per year are invested in these merit pay programs but does this investment result in student learning gains? Do these merit pay programs have enough of a positive impact on student achievement to justify the money being spent on these programs? Can the incentive and effects of a merit pay system improve the quality of the teacher workforce?

Purpose of the Study

The purpose of this study was to explore the student achievement results of state certified, graduate degreed, and National Board Certified teachers in Brevard, and Seminole County Public Schools as compared to those of other teachers within these

schools. The goal of this study was to determine the effectiveness of state certified, graduate degreed, and National Board Certified teachers. For this study teacher effectiveness was defined by their students' Lexile Framework for Reading scores. The hypothesis is that the Lexile Framework for Reading data demonstrated that there is a statistically significant difference between the learning gains of the students between groups.

Definition of Terms

Accountability: Having the responsibility to perform or produce and being liable for the outcome (Florida Department of Education, 2005).

Achievement Levels: Five categories of achievement that represent the success students demonstrate with the Sunshine State Standards content assessed on the FCAT, Achievement Levels are established using the input of classroom teachers, curriculum specialists, education administrators, and other interested citizens. The Achievement Levels are helpful in interpreting what a student's scale score represents (Florida Department of Education, 2007).

At Risk Students: Students who are identified as not meeting the goals of an educational program, who may not complete a high school education, or who will not become productive citizens (Florida Department of Education, 2005).

Florida Comprehensive Assessment Test (FCAT): A state of Florida annual assessment for third through eleventh grade students. Students in third through tenth grade participate

in math and reading test. Fourth, eighth, and tenth grade students take a writing assessment. Fifth, eighth, and eleventh grade students are assessed in science (Florida Department of Education, 2005).

High Stakes Tests: Test indicates that the consequences for good (high) or poor (low) performance on a test are substantial. In other words, some very important decisions, such as promotion or retention, entrance into an educational institution, teacher salary, or a school district's autonomy depend on a single test score (International Reading Association, 2008).

Literacy: Literacy is the functional capacity to read and reason in order to be a part of society and to be prepared to contribute through higher education, vocational training, or entering the workforce (Florida Department of Education, 2005).

Merit pay: Also known as pay-for-performance is a raise in pay based on a set of criteria set by the employer. This usually involves the employer conducting a review meeting with the employee to discuss the employee's work performance during a certain time period (United States Department of Labor, 2009).

Scale Score: A score, derived from student responses to assessment items, that summarizes the overall level of performance attained by that student (National Assessment of Educational Progress, 2009).

Sunshine State Standards: The Florida educational standards, on which all curriculums are based; that which is tested on the FCAT (Seminole County Public Schools, 2007).

Delimitation

This study was delimited to Brevard, and Seminole County Public School Districts in Florida. Data was obtained from the Brevard, and Seminole County Public Schools' Electronic Student Performance Profile. The data collected includes data from these elementary schools for the 2008-2009 school year.

Limitations

This study was limited by the following:

1. The assumption that all students are randomly assigned to their classrooms.
2. The accuracy of the data provided by Brevard, and Seminole County Public Schools.
3. The category of teacher, which begins with a higher pretest score, may have normal difficulty reaching a higher gain.

Research Questions

The study was guided by the following research questions:

1. What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by non National Board Certified teachers with a graduate degree?

2. What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers without a graduate degree?
3. What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers with a graduate degree?
4. What difference occurs in the learning gains of students taught by non National Board Certified teachers with a graduate degree and students taught by National Board Certified teachers without a graduate degree?
5. What difference occurs in the learning gains of students taught by non National Board Certified teachers with a graduate degree and students taught by National Board Certified teachers with a graduate degree?
6. What difference occurs in the learning gains of students taught by National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers with a graduate degree?

Hypothesis

Hypothesis: There is a significant difference between the learning gains of the students between groups.

Overview of Methodology

The population for this study was third, fourth, and fifth grade teachers in Brevard, and Seminole County Public Schools, which are located in the central Florida area. The students in these counties attend urban, suburban, and rural schools. Together these schools are a similar representation of the demographics of the state of Florida as a whole (Weitzel & Shockley, 2006).

Students with state certified, graduate degreed, and National Board Certified teachers were compared to each other in each school and across schools. The test that was used to compare the students is the Scholastic Reading Inventory (SRI), which provided each student with a Lexile measure. Students were tested at the beginning of the school year in August and again at the end of the school year in April to determine a Lexile measure which determined growth in reading. Reading growth for each student that had a State Certified, Graduate Degreed, and National Board Certified Teacher was compared to reading growth for each student within each school and across schools in this study. Mean and/or median growth in each grade level for each group was determined. This study makes the assumption that the students were randomly assigned to their classrooms and that each classroom in the school has similar students. The data that were used was drawn from the 2008-2009 school year. Lexile reading measures for each student were generated in each school by school resource personnel using the Scholastic Reading Inventory (SRI).

Organization of the Dissertation

Chapter 1 contained an introduction to the study, a statement of the problem, the purpose of the study, a definition of terms, delimitations, limitations, research questions, hypothesis, methodology, and organization of the study. Chapter 2 provides a brief history of teacher preparation and certification, a review of the literature of National Board Certified Teachers, a review of the literature of merit pay programs, the effects on student achievement, and an overview of Lexile testing and the Scholastic Reading Inventory. Chapter 3 describes the research design and statistical methodology of the study. Chapter 4 contains a detailed analysis of the data findings. Chapter 5 includes a summary, conclusions, and recommendations for future practice and policy.

CHAPTER 2 LITERATURE REVIEW

History of Teacher Preparation and Certification

During the nineteenth century, there were several different approaches to train and prepare future teachers. New York subsidized private academies to prepare teachers for its schools. Massachusetts used “normal schools” which offered short courses in educational methods for teacher training. Some states offered longer courses to train teachers in both academic and professional subject matter in their normal schools and in some rural areas local school boards ran teacher institutes (Ravitch, 2003).

In the early part of the nineteenth century, the requirements for entry into teaching were modest. New teachers only needed to persuade a local school board of their moral character and in some districts pass a general knowledge test. In 1834, Pennsylvania became the first state to require future teachers to pass a test of reading, writing, and arithmetic. By 1867, most states required teachers to pass a locally administered test to receive a state certificate to teach within that state. This test usually covered basic skills, history, geography, spelling, and grammar (Ravitch, 2003).

In 1816 Denison Olmstead delivered an oration entitled “The State of Education in Connecticut” in which he urged the state to establish a seminary for schoolmasters where pupils would study the subjects they wanted to teach. In his oration, he described the organization of the proposed school, the curriculum, the instructors, and the students. The purpose of this school was for the students to acquire a more perfect knowledge of

the subjects they were to teach and for learning how to teach from the methods pursued and recommended by the principal (Hindsdale, 1900). In 1823, the Rev. Samuel R. Hall opened a school in Concord, Vermont for the benefit of intending teachers where he could teach them his ideas of teaching and government. He was sent by the Domestic Missionary Society to be a minister for the community (Hindsdale, 1900).

In 1837, Horace Mann was appointed the first secretary of the newly created Massachusetts State Board of Education. He became one of the most well known educational reformers of his time. He helped establish normal schools, government funded schools specifically created to educate teachers, increased teacher pay, extended the school day and the school year, and attempted to provide teachers and students with better equipped classrooms. He also hosted conventions for teachers to educate them about new discoveries and methodologies in teaching (Ohio History Central, 2009).

By 1846, education was formally recognized as a distinct field of study. In 1846, a teacher's department was added to the Collegiate, Female, Theological, and Preparatory Departments of Oberlin Collegiate Institute (Oberlin, 2009)

As early as the late 1860s and early 1870s teacher educators from the American Normal School Association introduced criteria for admission to teacher education programs and developed a two year course of study for normal schools. These educators also sought to elevate the standard of education and create a uniform system that allowed teaching to become a regular profession. In the early 1870's the American Normal School Association became the Department of Normal Schools of the National Education Association (NEA) (Edelfelt & Raths, 1998).

In 1887 Columbia University started a Teachers College and became one of the earliest centers for graduate education when it added a graduate program for teachers in 1893 (Columbia University, 2009). In 1887, the Horace Mann School was founded as a coeducational experimental and developmental unit of Teachers College at Columbia University (Horace Mann School, 2009). In the 1890s, a Department of Pedagogy was established at Oberlin College. The Superintendent of Oberlin Public Schools was the head of this department at Oberlin College (Oberlin, 2009).

At the turn of the twentieth century, many small departments of pedagogy expanded into undergraduate and graduate schools of education. These institutions developed many specializations in the field of education; educational psychology, curriculum, and school administration to name a few. It was during this time that educational experts and professionals wanted education to be recognized as a profession and sought to create an education profession that had its own preparation programs and its own technical language (Ravitch, 2003). State education departments and colleges of education created longer periods of formal training in pedagogy that were required for future educational professionals. Teacher certification came to be identified with the completion of these teacher education programs. Certification became, increasingly, dependent on taking courses in pedagogy and passing tests of pedagogical theory rather than with the receipt of local certificates or the passing of subject matter examinations (Ravitch, 2003). By 1899, standards were set for almost all phases of teacher education (Edelfelt & Raths, 1998).

During the first half of the twentieth century, Columbia University was on the forefront of every major movement, issue, and conflict in American education (Cremin, Shannon, & Townsend, 1954). In 1938, the American Council on Education created the Commission on Teacher Education. This commission believed that the improvement of teacher education was of the greatest national importance and was committed to aligning teaching and teacher education with basic social needs. The commissions' report encompassed the full scope of teacher education: personnel services, selection and recruitment, placement and follow-up, curriculum, general education, subject-matter preparation, professional education, student teaching, five-year programs, in-service education for teachers, and preparation and in-service growth of college teachers (Edelfelt & Raths, 1998).

In 1961, the National Education Association (NEA) established the National Commission on Teacher Education and Professional Standards (TEPS Commission). The TEPS Commission was given the responsibility for carrying on a continuing program for the profession in matters of selection and recruitment, preparation, certification, in-service growth, and the advancement of professional standards (Edelfelt & Raths, 1998).

In 1972, the Committee on National Program Priorities in Teacher Education published a report that called for competency-based or performance-based teacher education. This report provided new ideas and insights for dramatically improving teacher education programs. The recommendations from this report focus on developing the necessary conditions for competency-based teacher education and certification as well as developing incentives for in-service teacher training. This competency-based program

was intended to facilitate the development and evaluation of the achievement of specific competencies or standards (Rosner, 1972).

In 1981, the United States Secretary of Education T. H. Bell created the National Commission on Excellence in Education and directed it to examine the quality of education in the United States and to make a report to the Nation on the findings. In 1983, the commission reported its findings in *A Nation at Risk: The Imperative for Educational Reform*. In this report the commission concluded that the declines in educational performance are in large part the result of inadequacies in the way the educational process itself is often conducted. The findings reflect four important aspects of the educational process: content, expectations, time, and teaching, that need to be improved (National Commission on Excellence in Education, 1983).

In 1985, the Carnegie Forum on Education and the Economy was established to highlight for the nation the link between economic growth and the skills and abilities of citizens. The Forum's Task Force on Teaching as a Profession made several recommendations for reinventing teacher education in its report. They suggested that teacher education should become a graduate enterprise. Admission into teacher education programs should be contingent on the applicants' mastery of basic skills and knowledge. States should offer incentives for minority students and students with exceptional academic ability, and a National Board for Professional Teaching Standards (NBPTS) should be created to establish standards for high levels of professional teaching competence and issue certificates to teachers who meet those standards (Carnegie Corporation, 1986).

In 1991, the Association of Teacher Educators' Commission on the Education of Teachers in to the 21st Century published a set of recommendations that examined the complex factors that influence the quality of teacher education. These recommendations are: improve recruitment and selection; strengthen initial teacher preparation; facilitate successful entry into the profession; increase the capacity for continuing professional development; expand and employ the research base for teaching and teacher education; and achieve appropriate accountability (Association of Teacher Educators, 1991). This report gave special emphasis to preparing teachers to teach children who were at risk, minority, and poor, particularly those in urban areas. The commission advocated the recruitment and preparation of teachers who had skills and attitudes to deal effectively with a diverse population of students. It outlined conditions in society and education that influence teaching and schooling, and favored state level policy that focused on performance over policy that mandated compliance. The commission recommended an interrelated set of policies and positions to improve the education of teachers that could be adopted immediately, then monitored and evaluated (Association of Teacher Educators, 1991).

In the past century, there have been many improvements to teacher preparation, education, and certification. By 2003, more than 90% of teachers in the United States had regular certification and almost half of the teachers had a master's degree (Ravitch, 2009).

National Board Certified Teachers

In 1985, Albert Shanker, president of the American Federation of Teachers, called for the establishment of national teacher standards and an evaluation board that would study what a teacher should know before becoming certified and the best way to measure that knowledge (NBPTS, 2009a). In 1986, the Carnegie Forum on Education created the Economy's Task Force on Teaching as a Profession and released a report that called for a creation of a board to define what teachers should know and be able to do and create assessments that allow teachers to demonstrate that they meet these standards. This report, *A Nation Prepared: Teachers for the 21st Century*, provided the blue print for the National Board for Professional Teaching Standards (NBPTS) (Carnegie Corporation, 1986).

The NBPTS was established in 1987 and was funded by the Carnegie Corporation of New York. The majority of the members on this board are teachers that are currently active in the classroom (NBPTS, 2009a). This board created a voluntary certification process whereby teachers who are considered highly effective can demonstrate and gain recognition for their knowledge and teaching skills. This certification, National Board Certification (NBC), was developed by teachers for teachers, with teachers involved in each step of the process from writing standards, designing assessments, and evaluating candidates.

In the State of Florida, there were more than 6,300 National Board Certified Teachers as of 2004. Florida was the state with the second highest amount of National

Board Certified Teachers and fifteen percent of the national total (Harris & Sass, 2007). By 2008, Florida had 12,670 National Board Certified Teachers, which represents 7.8 percent of the state's teaching force. Almost one-third of these National Board Certified Teachers teach in Title I schools (National Board for Professional Teaching Standards, 2008a).

The number of teachers that have received National Board Certification has more than doubled during the past five years from more than 32,000 in 2003 to nearly 74,000 in 2008 (National Board for Professional Teaching Standards, 2008a). In 2007, 8,500 teachers received National Board Certification for the first time bringing the total number of National Board Certified Teachers in the United States to nearly 64,000 or about two percent of the nation's teaching force (NBPTS, 2008b). In 2008, another 9,600 teachers joined the National Board Certified Teacher ranks bringing the total number of teachers who achieved National Board Certification to more than 73,000 (National Board for Professional Teaching Standards, 2008a).

National Board Certified teachers are often regarded as some of the most accomplished teachers in the nation. They are routinely chosen as State Teachers of the Year and four of the last eight National Teachers of the Year have been National Board Certified Teachers (NBPTS, 2008b). Joseph Aguerrebere, president and chief executive officer of the National Board for Professional Teaching Standards, suggested "National Board Certification is a sound investment – a force in student achievement and a factor in teaching excellence that is reshaping teaching and learning in our schools (National Board for Professional Teaching Standards, 2008a, ¶ 7)."

The National Board for Professional Teaching Standards set forth a vision of what accomplished teachers should know and be able to do in the Five Core Propositions. This board suggested that “the Five Core Propositions form the foundation and frame the rich amalgam of knowledge, skills, dispositions and beliefs that characterize National Board Certified Teachers” (NBPTS, 1988, ¶ 2). These Five Core Propositions are:

Proposition 1: Teachers are committed to students and learning.

Proposition 2: Teachers know the subjects they teach and how to teach those subjects to students.

Proposition 3: Teachers are responsible for managing and monitoring student learning.

Proposition 4: Teachers think systematically about their practice and learn from experience.

Proposition 5: Teachers are members of learning communities (NBPTS, 1988, ¶ 3 – 7).

The National Board for Professional Teaching Standards (NBPTS) suggested that National Board Certification is the highest symbol of professional teaching excellence. They suggested seven benefits to achieving this certification. These benefits are: National Board Certification (NBC) meets most states’ definition of “highly qualified teacher” under NCLB, NBC strengthens teaching practice, NBC improves students’ learning according to a vast majority of research, NBC advances teaching careers, NBC increases financial opportunities in many states and districts, NBC provides a portable teaching

license in most states, and NBC contributes to Continuing Education Unit (CEU) or re-certification requirements in some states (NBPTS, 2008c).

The National Board for Professional Teaching Standards (NBPTS) claimed that: “more than 150 studies have examined National Board Certification and the vast majority found NBCTs make a significantly measurable impact on teachers’ performance and student learning, engagement, and achievement.”(NBPTS, 2008d, ¶ 2).

The National Board for Professional Teaching Standards (NBPTS) claimed that: “research is consistently positive about the impact of National Board Certification on improvements to teacher practice, professional development, and areas of school improvement that are critical to raising student achievement” (NBPTS, 2007, ¶ 1). Goldhaber and Anthony (2005) found that National Board Certified teachers are generally more effective than teachers who have not attempted this certification. However, they did not find any evidence that the National Board Certification process itself does anything to increase teacher effectiveness.

Good teachers make a difference on student performance but what makes a good teacher? Cavalluzzo (2004) stated that there is “robust evidence that National Board Certification is an effective indicator of teacher quality” (p. 1). Her study examined the association between student gains in mathematics in the ninth and tenth grades, National Board Certification, and other indicators of teacher quality.

Students that had National Board Certified teachers in fourteen Arizona school districts had more than one month worth of learning gains compared to students that did not have National Board Certified teachers. The researchers used three measures of

academic performance, four years of data, in four grade levels to determine that teachers with National Board Certification were more effective in terms of academic achievement (Vandevoort, Amrein-Beardsley, & Berliner, 2004).

National Board Certified teachers were found to have no clear pattern of effects on student achievement in three North Carolina school districts (McColskey et al., 2005). end-of-Grade reading and mathematics tests for fourth and fifth grade students showed no significant difference between board certified and non-board certified teachers.

Students who were taught by National Board Certified teachers did not have significantly better rates of academic progress than students of other teachers in two North Carolina school districts (Sanders, Ashton, & Wright, 2005). This study assessed student performance on the end-of-grade exam for fourth through eighth grade students in reading and mathematics.

National Board Certified Teachers were found to boost student achievement in reading significantly more than their non National Board Certified peers in a study of Florida teachers and students during a four year period. This study investigated the impact of teachers on student scores from both low stakes and high stakes exams. National Board Certification in some cases provided a positive signal of teacher productivity; however, these effects were not consistent across subjects and grades (Harris, & Sass, 2007).

Cavalluzzo (2004) suggested that school districts implement professional development programs or strategies that challenge teachers to adopt methods used by the National Board for Professional Teaching Standards to increase student outcomes in the

short term. She also suggested that school districts could use National Board Certification as an incentive for pay increases to teachers of the highest quality. This could benefit student outcomes in the long run if National Board Certification had the desired effect of attracting better candidates into teaching and raising the professionalism and prestige associated with teaching.

Teachers with National Board Certification desire to serve as leaders in the school learning community. Petty, O’Conner, and Dagenhart (2003, ¶ 4) surveyed upper elementary, middle, and high school mathematics teachers and found that “National Board Certified teachers want to serve in leadership roles, including professional development leaders, student-teacher supervisors, team leaders, and mentors. National Board Certified teachers want more autonomy, tend to integrate their work into all aspects of their lives, take risks, use professional journals, and want to be recognized for their accomplishments. National Board Certified teachers report higher job satisfaction than do non-National Board Certified teachers.”

In the National Research Council (NRC) of the National Academies report: *Assessing Accomplished Teaching: Advanced-Level Certification Programs* released on June 11, 2008 evidence is clear that National Board Certification distinguishes more effective teachers from less effective teachers with respect to student achievement (National Research Council, 2008). This report suggest that students who are taught by National Board Certified teachers make higher gains on achievement tests than those who are taught by teachers who have not applied and those who did not achieve National Board Certification. It also suggested that by creating national standards for teachers,

NBPTS and NBC have taken the culture of teaching to a higher level. This certification process is an effective professional development experience that has a positive effect on teaching practices.

In 2009, the National Board for Professional Teaching Standards (NBPTS) introduced a national certification program focused on principals called Advanced Principal Certification that will be launched within the next three years. The NBPTS will seek to develop, recognize, and retain effective principals through this Advanced Principal Certification process. This Advanced Principal Certification is the first phase of an expanded umbrella program, Advanced Certification for Educational Leaders (ACEL), which builds on the National Board Certification for teachers and school counselors (NBPTS, 2009b).

The Advanced Principal Certification will be based on a set of standards, Accomplished Principal Standards that capture the essence of what accomplished principals know and do at a consistently high level (NBPTS, 2009c). The current draft of Accomplished Principal Standards is:

Standard I: Leadership for Results

Standard II: Vision and Mission

Standard III: Teaching and Learning

Standard IV: Knowledge of Students and Adults

Standard V: Culture

Standard VI: Strategic Management

Standard VII: Advocacy

Standard VIII: Ethics

Standard IX: Reflection and Growth (NBPTS, 2009d).

These standards reflect the nine Core Propositions for Educational Leaders. These nine Core Propositions are: leadership, ethics, vision, learners and learning, instruction, culture, management, equity, and advocacy (NBPTS, 2009e). These core propositions form the foundation and frame the rich amalgam of knowledge, skills, dispositions that will characterize National Board Certified educational leaders (NBPTS, 2009c).

Effective school leaders are critical to the success of students and teachers. Effective principals create a positive school-based learning community that involves teachers, students, parents, and the community. They create a culture of learning that: “advances student learning and engagement, recruits and retains the best teachers, and improves teacher and school performance” (NBPTS, 2009b).

According to a recent NBPTS survey, most school and district level leaders support the prospect of a certification that recognizes the importance of instructional leadership, organizational change, community involvement, and school management. Educational leaders today are interested in a process that would better prepare principals to lead systemic instructional improvement (NBPTS, 2009b).

In 1996, the Interstate School Leaders Licensure Consortium (ISLLC) developed standards for educational leaders. These standards were based upon seven guiding principles. These seven principles are: standards should reflect the centrality of student learning, standards should acknowledge the changing role of the school leader, standards should recognize the collaborative nature of school leadership, standards should be high,

upgrading the quality of the profession, standards should inform performance-based systems of assessment and evaluation for school leaders, standards should be integrated and coherent, and standards should be predicated on the concepts of access, opportunity, and empowerment for all members of the school community (ISLLC, 1996).

The ISLLC standards for school leaders are:

Standard 1: A school administrator is an educational leader who promotes the success of all students by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by the school community.

Standard 2: A school administrator is an educational leader who promotes the success of all students by advocating, nurturing, sustaining a school culture and instructional program conducive to student learning and staff professional growth.

Standard 3: A school administrator is an educational leader who promotes the success of all students by ensuring management of the organization, operations, and resources for a safe, efficient, and effective learning environment.

Standard 4: A school administrator is an educational leader who promotes the success of all students by collaborating with families and community members, responding to diverse community interests and needs, and mobilizing community resources.

Standard 5: A school administrator is an educational leader who promotes the success of all students by acting with integrity, fairness, and in an ethical manner.

Standard 6: A school administrator is an educational leader who promotes the success of all students by understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context (ISLLC, 1996).

In 2003, the New York City Department of Education created the New York City Leadership Academy, to increase its pool of qualified school administrators. Through this Leadership Academy, the New York City school district asserted significantly greater responsibility for training and developing its own school leaders. The Leadership Academy created an Aspiring Principals Program that is a 14 month principal training program was designed to increase the pipeline of strong principals, particularly at low performing schools, and create a system that gave principals more autonomy over how their schools are run. This program has three components: the summer intensive, the residency, and the planning summer. During the summer intensive the participants work on simulated school projects intended to mimic the realities of an actual principalship. During the residency or ten month apprenticeship the participants work alongside an experienced principal and attend bi-weekly leadership development seminars. During the planning summer the participants transition to their school leadership positions (Corcoran, Schwartz, & Weinstein, 2009).

By 2009, nearly 230 principals have gone thru the Aspiring Principals Program and make up about 15 percent of the principal force in the New York City school district. A recent study by New York University's Institute for Education and Social Policy found that schools led by principals that have completed the Aspiring Principals Program have made gains in English and language arts at a faster pace than other city schools led by

new principals that have not completed the program. This study also found that principals trained by the Aspiring Principals Program were more likely to be placed in the city's lowest performing schools (Aarons, 2009).

Merit Pay Programs

Questions concerning teacher salaries, merit pay, and National Board Certified Teacher bonuses have occupied a considerable amount of attention in educational and legislative debates over the last few years. Many state governments, such as Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia, have programs in place to give a bonus to teachers who receive National Board Certification. Only two of the sixteen states in the Southern Regional Education Board, Tennessee and Texas, do not have programs that give monetary incentives to teachers with National Board Certification. These bonuses range from \$1,000 in West Virginia, to 12 percent of salary annually for the life of the certificate in Delaware (Bolich, 2001).

State governments are spending millions of dollars on these bonuses, but does this investment result in student learning gains? State and local school districts have spent more than \$300 million in salary bonuses over the past several years to teachers that have received the National Board Certification (Holland, 2007). Do National Board Certified teachers have enough of a positive impact on student achievement to justify these large teacher bonuses?

Local, state, and federal governments are now focusing on merit pay programs that reward teachers for their students' learning gains. Some school districts, notably Denver, and Houston, and eight states; Alaska, Arizona, Arkansas, Florida, Georgia, Minnesota, North Carolina, and Texas have performance pay programs in place. Texas has developed the largest merit pay program in the country and planned to spend at least \$320 million on teachers' merit pay by the 2008-2009 school year (Vu, 2007).

In 2006, the U.S. Department of Education distributed \$99 million in grants to a handful of local schools and school districts to set up merit pay programs. U.S. Rep. George Miller (D-Calif.), chairman of the House Education and Labor Committee recently proposed adding performance pay money for teachers who teach in high-poverty schools to the next version of the federal No Child Left Behind education law. U.S. Secretary of Education Margaret Spellings also supports this type of merit pay plan (Vu, 2007).

Assessing and rewarding excellence through merit pay increases accountability and raises the bar of professionalism in teaching (McCown, 2004). Currently most teachers are not evaluated or compensated on their achievement or their impact on the achievement of their students. A system that based a portion of teacher compensation on student performance would acknowledge the teachers' abilities and efforts in the classroom. This system could also be an excellent motivator for all teachers to focus more on student achievement and student performance. McCown (2004) suggested that the two important components of school improvement in relation to teacher

compensation are, “changing the ways teachers are paid and raising the pay levels of the most effective and sought-after teachers” (p. 54).

Figlio and Kenny suggested that student test scores are higher in schools that offer individual financial incentives for good performance and the effect of these incentives are stronger in schools that may have the least parental oversight (Figlio & Kenny, 2006).

There is little or no incentive for teachers to do a good job other than the individual intrinsic rewards of teaching. Most public school teachers are paid on a salary scale based upon educational qualifications and experience. It is also difficult to fire a poorly performing teacher after they reach tenure (Figlio & Kenny, 2006). This practice of uniform pay for teachers has not always been the norm in the United States. In 1918, 48 percent of school districts in the United States were using merit pay. By 1939, only 29 percent of school districts were using merit pay and in 1953 only 4 percent were using it (Figlio & Kenny, 2006).

The current pay structure for teachers in most schools is input-based. Teachers are paid based on their skills, which are measured by education, certification, and teaching experience. The idea is that these input measures are ultimately linked to desired outcomes in student learning (Lazear, 1986). Merit pay programs, however, are essentially output-based payment schemes that tie financial rewards to some measure of student performance. Merit pay programs are results-oriented; compensation focuses on the production of specific student outcomes (Buddin et al., 2007).

Prince and colleagues (2009) suggested that compensation policies that automatically reward teachers for additional degrees and experience do little to positively

affect student achievement, however, compensation systems that include measures of teachers' ability to increase student learning gains would be a more effective way to identify and reward top performers and ultimately improve teacher quality.

What do we know about the relationship between student achievement and teachers' educational attainment and experience, which is the traditional way that teacher salaries are determined? Paul Peterson (2006), the director of Harvard University's Program of Education Policy and Governance said "currently, there is little, if any, connection between how much a teacher is paid and how much their students are learning in the classroom. Merit pay programs are a step in the right direction" (Whoriskey, 2006, ¶ 29).

Seyfarth (2002) suggested that current teacher salary schedules "have one major weakness: They fail to attract and hold enough high-quality teachers" (p. 174). He also suggested that merit pay plans have three potential advantages. Rewarding employees for good performance may "help attract quality employees, provide an incentive for greater effort by current employees, and reduce the level of attrition among more productive employees" (p. 175). He also suggested that a problem with merit pay "is the evidence that teacher performance is not consistent over time. Teachers who achieve above-average gains with their students one year may be average or even below average the next" (p. 175).

Merit pay is designed to provide a financial incentive for teachers to improve student outcomes, to encourage the retention of proficient teachers, and to attract high skilled individuals to the teaching profession. Merit pay programs are difficult to

implement because student outcomes are not easily defined and measured and the contributions of individual teachers to student outcomes are not easily determined (Buddin et al., 2007).

Holland (2005) suggested that merit pay gives promise of being a key component of comprehensive education reform aimed at motivating teachers and elevating student achievement. There is growing momentum for merit pay that is based on value added assessment, which identifies those teachers who are most effective in raising student achievement. The father of value added assessment Dr. William Sanders claims value added assessment is a statistical analysis that allows educators to look at objective evidence of how effectively teachers are helping individual students improve their achievement test scores. Value added assessment can be the basis for a merit pay program that rewards those teachers who make a real difference with their students (Sanders, 2009).

The Teaching Commission, a bipartisan advocacy group, wants to fundamentally transform the ways teachers are recruited, retained, and rewarded. Part of their platform is merit pay for teachers who produce gains in student achievement based on value added assessment. Gerstner (2005, p.5) the founder of The Teaching Commission said that “our economic leadership as a nation is dependent on the skills we give our young people – and the skills we give our young people are directly connected to the quality of the teachers in our classrooms (Holland, 2005).”

The Lowell Milken and the Milken Family Foundation developed a comprehensive approach to improving teacher quality called the Teacher Advancement

Program (TAP). This program seeks to attract more talented people into teaching, and encourage them to stay, by making teaching more attractive and rewarding to them. TAP is a comprehensive school reform system that provides powerful opportunities for career advancement, professional growth, instructionally focused accountability and competitive compensation for educators. Through the implementation of four interrelated key elements, teachers are improving their instruction and the achievement of their students. The four elements of the TAP are, multiple career paths, ongoing professional development, instructionally focused accountability, and performance-based compensation (Milken, 2009). There is some evidence that the Teacher Advancement Program has a positive effect on student achievement. In Arizona and South Carolina, student achievement in TAP schools outpaced achievement in similar schools two-thirds of the time (Holland, 2005).

Nelson (2004) suggested that merit pay programs historically have not been successful and have had a negative effect on building and promoting democratic school communities. These merit pay programs ultimately destroy cooperation and collaboration, which are an important part of the teaching and learning process. He recommends that teachers be rewarded based on added responsibilities, team leadership, and mentorship. This form of compensation recognizes teacher effort without the detrimental effects of merit pay.

Several states and local school districts are working on merit pay experiments and some local unions are working in collaboration with them. Odden and Kelley (2002) suggested that consensus is building across the political spectrum that rewarding teachers

with bonuses for improving student achievement, working in lower income schools, or teaching subjects that are hard to staff can attract bright young teachers to the profession and energize veteran teachers.

In 2005, several states addressed programs that provided bonuses to teachers for raising student achievement or improving their knowledge and skills. Georgia legislators made changes to their National Board Certification bonus program. Initially, teachers in Georgia who receive this certification are eligible to receive a bonus of 10 percent annually for the ten year life of the certificate. Any teacher who received this certification after July 2006 will be required to teach in a high-needs school to qualify for the bonus (Gaines, 2005). Middle grade math teachers in Oklahoma who complete a state board of education approved professional development program will be eligible for a \$1,000 stipend (Gaines, 2005). The Texas governor, Rick Perry, promoted an incentive pay program for teachers that will target schools that serve economically disadvantaged students and show significant improvement (Gaines, 2005).

In 2007, the New York City School System and its teachers' union agreed on a form of merit pay, which links teacher compensation to student achievement. This merit pay would not be linked to individual student or classroom performance, but would be based on school-wide gains that will be measured by the city's new progress report system. This merit pay program will be used in two hundred of the city's highest need schools. The first year of bonuses will be paid with twenty million dollars of private money. If the program is successful, it will be expanded using public funding (Associated Press, 2007).

In 2004, Denver voters approved a plan call ProComp, or the Professional Compensation Plan for teachers and agreed to pay \$25 million a year in additional property taxes to implement and ensure the success of this plan (Honawar, 2008). This performance pay system was designed and implemented by the school district and the local teachers' union and calls for negotiations and revisions every three years. Initially ProComp bonuses were awarded for a combination of factors, including knowledge and skills, performance evaluations, student growth based on test scores, and for serving in high-risk schools as well as in positions that are more difficult to staff like math, science, and special education. These bonuses are not one-time bonuses but are incorporated into teachers' base salaries. During the first two years about half of the teachers opted into ProComp, however, new teachers are automatically enrolled.

In 2000, Oregon voters rejected a merit pay program that would have tied teachers' pay to students' test scores by nearly two to one (Associated Press, 2008). In 2008, Oregon voters again voted against a merit pay measure that would have required teacher pay to be determined by classroom performance rather than the current system of seniority and educational achievement (Bradbury, 2008).

In 2005, the Minnesota Legislature enacted Q Comp, a merit pay program that was proposed by Governor Tim Pawlenty (Minnesota Department of Education, 2009). This voluntary program allows local districts and exclusive representatives of the teachers to design and collectively bargain a plan that meets the five components of the law. The five components under Q Comp are: career ladder/advancement options, job-embedded professional development, teacher evaluation, performance pay, and an

alternative salary schedule. Thirty-nine of the 340 public school districts in Minnesota implemented Q Comp during the 2007-2008 school year and more than 130 additional districts have plans to submit an application for future years. Approved school districts receive \$260 per student.

Since 2002, Florida law has required school districts to have performance pay plans in place. In 2006, the Florida Legislature appropriated \$147.5 million for the Special Teachers Are Rewarded (STAR) Program. School districts are not required to participate in the STAR Program; however, they must have an approved plan in order to receive state funding. The STAR Program recognizes and rewards educators and school personnel for outstanding performance. In order to receive STAR funds a school district must submit a STAR proposal to the Florida Department of Education for approval by the state board. This plan must include an evaluation component focused on student achievement that makes up at least half of the total evaluation. If the state board, approves this plan school districts will be granted funding to award the top 25 percent of instructional personnel in the district a minimum reward of five percent of their annual salary (Schroeder, 2006). State Education Commissioner John Winn stated: “The STAR appropriation enables school districts to reward high performance above and beyond the current salary structure. If we can move past the one-size-fits-all teacher salary schedule to a more dynamic system of compensation, our students, and teachers will be the beneficiaries. We will go a long way to attracting and keeping top teachers” (Schroeder, 2006 p.1). In March of 2007, the Merit Award Program (MAP) replaced the STAR Program as the performance pay program in the state of Florida.

The Florida A+ Accountability Plan for Education is Florida's blueprint for improving schools and providing accountability by providing financial rewards to those schools that receive good grades or improve their grades (Rosenthal, 2007). This program has had a great effect on the climate and culture of Florida public schools. This plan has had a significant impact on the instructional focus of both high-performing and low-performing schools. Schools that receive high grades feel considerable social pressure to maintain these grades, but on the other hand, there is a negative social stigma attached to those schools that receive low grades (Goldhaber & Hannaway, 2004).

Effects on Student Achievement

Research dating back to the Equality of Educational Opportunity Study in 1966, shows that influences outside the school which include students' ethnic and socioeconomic background, academic ability, attitude toward learning, educational and career goals, and environment, have a greater affect on student performance than characteristics of a school which include teacher education, experience, and quality, school environment, climate and culture, and peer effects (Coleman, 1966).

Marzano suggested five school level factors listed in their order of impact on student achievement. These factors are: guaranteed and viable curriculum, challenging goals and effective feedback, parent and community involvement, safe and orderly environment, and collegiality and professionalism (Marzano, 2003).

Ferguson and Ladd (1996) suggested that out-of-school factors such as socio-economic status, educational levels, and home environment account for 47 percent of student achievement while in-school factors account for 51 percent. Teacher expertise and instructional practices are key in-school factors that affect student achievement (Ferguson & Ladd, 1996 taken from Bay Area School Reform Collaborative, 1999).

Scheerens and Bosker, 1997 (as noted by Whitehurst, 2002) suggested that approximately 20% of the differences in student achievement is associated with the school, another 20% is associated with individual classrooms and teachers, and 60% is associated with the differences among the children in each classroom which includes the socioeconomic background and prior achievement effects.

The impact low socio-economic populations have on schools is significant. Riggins-Newby (2004) suggested that schools with large populations of low socio-economic students face many problems including, but not limited to: “few resources, demands of daily living of parents in poverty, community inattentiveness to the plight of their children, bureaucratic restrictions on school level innovation, inflexible work rules, outmoded beliefs that academics are meant for only the top tier of students, tired and discouraged educators letting schools slip into adult-centered institutions, and the accumulation of strategies that are no longer effective” (p. 8).

Peske and Crawford (2005) said “No matter what measure you use, years of experience, certification status, major in field, or effectiveness, low-income, minority, and low-performing students do not get the same access to good teachers” (slides 9-10).

Greenberg (1999) suggested that schools with significant populations of low socio-economic students must structure themselves to provide social services for their students' physical and emotional needs. He also suggested that neighborhood factors influence the students' ability to cope with the stresses of life. The impact to students who grow up in low socio-economic neighborhoods is greater than all other factors that affect behavior. It is also the most significant challenge to overcome (Greenberg, 1999).

A parent's educational background and parental involvement significantly affect their children's success in school. Many parents of children from low socio-economic neighborhoods have different belief systems from those of middle class families. Often, children come from single parent environments where the main goal of the parent is survival. The demands of living in poverty are significant because they diminish the ability of parents to take an active role in their child's education. Parents must work and are not able to actively participate in their child's education. Children who come from these backgrounds have few role models or mentors to help them overcome the challenges of living in poverty (Payne, 1998).

More recently, researchers (Cavalluzzo, 2004; Goldhaber, 2002; Rivkin, Hanushek, & Kain, 2005) have sought to find out the impact of schools and teachers on student performance. Goldhaber (2002) suggested that the majority of the differences, approximately 60%, in student test scores are explained by individual and family background characteristics and variables. The school variables account for approximately 21% of this difference in student performance and the teacher is responsible for just less than half of this 21%. Rivkin, Hanushek, and Kain (2005) suggested that teacher

characteristics affect student performance more than any other school characteristic. They also noted that variations in teacher quality account for almost 8 percent of the total variation in student achievement.

Defining quality teaching is an important issue for state and federal policy makers as well as local educational communities. The policy makers recognize in NCLB and elsewhere that there are teacher attributes that positively relate to student achievement: verbal ability, subject matter knowledge, years of experience, and certification. However, there is no consensus on what makes a teacher effective (National Board for Professional Teaching Standards, 2008e). There is lack of agreement even within the educational research community of what makes a teacher effective (Cochran-Smith & Zeichner, 2005).

The National Board for Professional Teaching Standards (NBPTS) contends that the No Child Left Behind Act (NCLB) and subsequent legislative directives and mandates fall short in providing quality teaching and offer a narrow view of what a highly qualified teacher is (National Board for Professional Teaching Standards, 2008d). Under NCLB, the teacher quality provisions require educators in core academic areas to be licensed by the state, hold a bachelor's degree, and demonstrate competence in their subject teaching area (NCLB, 2004). "What differentiates the requirements of a highly qualified teacher as defined in NCLB with definitions of an accomplished teacher as identified by NBPTS is the ability and requirement to evidence this type of work in a classroom with children" (NBPTS, 2008e, p.2).

NBPTS suggested that highly qualified teachers are multifaceted and complex (National Board for Professional Teaching Standards, 2008d). Quality teaching requires a well-trained professional who can bring to bear professional judgments that are appropriate for each student.

Whitehurst (2002) suggested that based upon the Elementary and Secondary Act (ESEA) provisions teacher quality is affected by: general knowledge and ability, certification and licensure, experience, subject matter knowledge, intensive and focused in-service training, and the alignment between teacher training and standards-based reforms. He also suggested that the most important influence on the differences in teacher's effectiveness is the general cognitive ability. Teacher experience and content knowledge also play an important role in teacher effectiveness.

Sanders and Rivers (1996) suggested students that have effective teachers have a higher level of achievement. They also suggested that the most effective teachers facilitate appropriate to excellent gains for students of all achievement levels and lower achieving students are the first to benefit as teacher effectiveness increases. Value-added methods to determine teacher effect on student achievement examine a student's progress from year to year. Teachers that add value to student achievement will be those teachers whose students have made the most achievement over the course of the school year. These multilevel studies are able to indicate the relative contribution of teachers to academic achievement but not the mechanisms by which teachers affect student learning. These studies tell us that teachers are important but not why (Whitehurst, 2002).

Whitehurst (2002) suggested that college credits and masters degrees have little effect on teacher effectiveness. Ladd (1996) suggested that school inputs (teacher experience, percentage of teachers with master's degrees, and class size) do not affect student test scores.

Haycock (1998) suggested three teacher characteristics that have a positive effect on student achievement. These characteristics are: strong verbal and math skills, deep content knowledge, and teaching skill. Haycock (1998) said "the most important educational investment a state can make is in highly qualified teachers. When teachers have too little knowledge of the subjects they teach their students are denied the most basic learning resource" (p. 12).

Haycock (1998) also said, "If education leaders want to close the achievement gap, they must focus, first and foremost, on developing qualified teachers" (p. 15).

Highly qualified teachers can be produced by high entry standards, rich incentives like generous scholarships and loan forgiveness for the highly able professionals who want to teach in high-poverty schools, accountability systems that reward departments and campuses for the numbers of their top students that enter teaching, and non-traditional, yet still rigorous, routes into the profession (p. 16).

Haycock's (1998) plan for producing highly qualified teachers has the following six components: standards for entry into the profession, accountability measures for colleges and universities that prepare teachers, professional development for existing teachers, assurance that poor minority children have teachers that are at least qualified as the ones that teach other students, 'Parent Right to Know' policies, and a system to attract

talented individuals. First, raise the standards for entry into the teaching profession and make sure the measures for teacher content knowledge are solid and aligned with K-12 standards. Second, create accountability measures for colleges and universities that prepare teachers. Decide on what intending teachers need to know in their subjects and hold academic departments accountable for getting them there before they graduate. Third, develop professional development for existing teachers so they can build their effectiveness over time. This professional development should be ongoing, on-site, focused on the content that students should learn and provide teachers with successful strategies for success. Fourth, create assurances that poor minority children have teachers that are at least qualified as the ones that teach other students. At risk students should systematically be assigned the best teachers. Fifth, implement 'Parent Right to Know' policies that will encourage parent involvement. Finally, develop a system of recruitment and rewards to attract talented individuals into the field of teaching (Haycock, 1998, p. 16).

The Carnegie Corporation suggested that there is increasing demands for well educated teachers and that more resources should be used to prepare minority students for teaching careers. They also suggested that graduate schools of education develop programs that give teachers the resources to meet high standards of learning and teaching (Carnegie Corporation, 1986).

In 2005, The Southeast Regional Advisory Committee in a report to the U.S. Department of Education suggested that improved teacher quality is necessary to increase the performance of all students while narrowing the gaps among racial, ethnic, and socio-

economic groups. They suggested teachers must learn powerful pedagogies that incorporates differentiated instruction in the classroom and ensures growth for all students while maintaining a challenging learning environment for high-achieving students. They envision an education system that provides teachers with the training and tools needed to recognize the differences in student learning needs and accommodate a diversity of learners within the classroom. In this report the committee stated “it is the vision of education stakeholders in the southeast that states, school districts, and universities would develop an ongoing process that begins with pre-service education, initial credentialing and hiring, and moves through the continuum of induction, mentoring, professional teacher status, professional development, and recertification to improve student learning” (Southeast Regional Advisory Committee, 2005 p.3).

Most studies look at school inputs like class size, teachers’ experience, and teachers’ post college education but what about teacher quality? “Quality teachers should know the subjects they teach and know them well, however, it is equally important that teachers know the students they teach and know them well. Teacher knowledge of the student and having a sense of the student’s community are important factors that are often underestimated when determining teacher quality. A key task of a highly qualified teacher is to use this knowledge of the student to develop strategies that utilize the child’s background as a starting point, and a possible strength upon which to build toward success” (NBPTS, 2008e, p. 3). Teachers must understand the background of the students they teach in order to develop teaching practices that meet the needs of those students (Gay, 2000). Effective teachers should expect all of their students to reach high learning

goals, and should be armed with various strategies to help students achieve these goals. Effective teachers realize that every student starts at a different place and may require a different path to accomplish the same goals.

According to No Child Left Behind, (NCLB) sanctions are imposed on schools, states and districts that fail to meet Adequate Yearly Progress (AYP). AYP is determined by standardized tests in specific subject areas, including mathematics, reading/language arts, and science (NBPTS, 2008e).

The Widget Effect is the fallacy that all teachers are essentially interchangeable. Teacher evaluation systems reflect the “widget effect” in several major ways: all teachers are rated good or great, excellence goes unrecognized, professional development is inadequate, novice teachers are neglected, and poor performance goes unaddressed (Weisberg et al., 2009).

Year after year less than one percent of teachers receive unsatisfactory ratings on their evaluations and only one in four teachers are given specific feedback on improving their performance, therefore suggesting that all teachers are good or great. When excellent ratings are the norm exceptional educators are not identified and recognized for their accomplishments. If these top educators are not identified and recognized than they cannot be compensated, promoted, or retained for their achievement. On the other hand poor performance from teachers is not addressed either. Very few tenured teachers are released for poor performance each year and the majority of new teachers are retained as well (Weisberg et al., 2009).

Weisberg et al suggested four ways to address the widget effect in the educational system. First, adopt a comprehensive performance evaluation system that fairly, accurately, and credibly differentiates teachers based on their effectiveness in promoting student achievement and provides targeted professional development to help them improve. Secondly, train administrators and other evaluators in the teacher performance evaluation system and hold them accountable for using it fairly and effectively. Thirdly, integrate the performance evaluation system with critical human capital policies and functions such as teacher assignment, professional development, compensation, retention, and dismissal. Finally, address consistently ineffective teaching through dismissal policies that provide lower stakes options for ineffective teachers to exit the district and a system of due process that is fair but efficient (Weisberg et al., 2009).

The educational community has placed great emphasis on what is to be taught, how we teach, and who teaches. It is the responsibility of the school and district leaders to create an environment that allows teachers and students to achieve success. Creating a high performance workplace takes leadership. Leadership is responsible for everything the organization does or fails to do. Leaders, managers, and supervisors at all levels must step outside their traditional roles and comfort zones to look at new ways of doing things. They must create a work environment where people enjoy what they do, feel like they have a purpose, take pride in their work, and can reach their potential. It requires more time, more skill, and more leaders, managers, and supervisors who care about people. It requires true leadership (Smith, 2000).

There are several factors that facilitate the development of a cooperative, inclusive and productive work environment and work culture. Inclusive leadership, constructive interactions, and participative activities can produce a cooperative and inclusive school culture. Positive leadership practices can support or drive implementation of activities and inclusive processes that bring people together and create norms that embed cooperation, inclusion, and productivity. This productivity begins with constructive interactions that encourage positive relationships, promote learning, and facilitate the sharing of information. It results with teachers working together and collaborating throughout the educational process (Bilimoria & Greer Jordan, 2005).

The instructional leadership role of the principal is a key element in the development of a productive school, however, the other stakeholders, teachers, students and parents, play an important role in the school's success. Without the support of the teachers, students, and parents it becomes difficult to develop performance changes in consistently low-achieving schools, where several types of variables may be working in concert to constrain the principal's leadership efforts. A principal's instructional leadership depends on belief and value preferences and organizational and political variables associated with the school and community context. A principal can have a positive influence on school-wide performance through his decision-making, communicating goals and strategies to others, gate keeping with parent and community interests, and monitoring classroom work activities. The success of the school also is affected by the amount of time a principal spends directly observing classroom practices,

promoting discussion about instructional issues, and emphasizing the use of test results for program improvement (Heck, 1992).

Administrators exhibit achievement-oriented leadership by making teachers aware of new practices and trends in education and encouraging them to experiment with them in their classrooms. They provide resources needed by teachers to try new ideas and provide advice and coaching on the implementation of innovative practices.

Administrators must set a high standard of excellence and strive to improve the quality of education in the school as a whole (Seyfarth, 2005).

In a productive school environment, a continuous learning culture must be established. Schools must provide extensive learning opportunities for teachers, either through internal training and professional development programs or by supporting teacher access to external training and professional development opportunities. Teachers must be encouraged to share ideas about new teaching strategies and techniques that can positively affect the learning process. A principal can help develop this culture in a school by creating opportunities for teachers to work together and learn from each other. They can provide guidance and model collaboration and teamwork for the teachers. They can train teachers in the skills they need to achieve success. They can create an environment that facilitates communication, teambuilding, and conflict resolution so teachers can share with each other in beneficial ways and collaborate effectively (Seyfarth, 2005).

Three challenges facing educational leadership today are teachers, parents, and the responsibility for budgets, personnel, and curricular objectives. Many teachers whose

compensation is not linked to their performance have the notion that they can operate as independent experts able to decide what is best for their students. Parents are many times suspicious of initiatives to move schooling in directions that are different from what they experienced in their own schooling. Many school leaders have responsibility without a commensurate degree of authority for budgets, personnel, or curricular objectives. Based on these challenges there is a need to attract and hold in positions of leadership people who are knowledgeable, skilled and committed to education (NPBEA, 2008).

Lexile Testing

There are several tests that have been developed to measure a students' Lexile measure. The Scholastic Reading Inventory (SRI) is the reading test that is used to determine the Lexile measure for each student in this study.

The Lexile Framework for Reading is a scientific approach to reading and text measurement. There are two Lexile measures: the Lexile reader measure and the Lexile text measure. A Lexile reader measure represents a person's reading ability on the Lexile scale. The Lexile reader measure can also be used to monitor a reader's growth in reading ability over time. A Lexile text measure represents a text's difficulty level on the Lexile scale. When used together, they can help a reader choose a book or other reading material that is at an appropriate difficulty level (The Lexile Framework for Reading, 2008, p.1 ¶ 1).

The readers usually take a reading comprehension test to determine their Lexile reader measure. There are about two dozen tests that can report Lexile reader measures. A few of these tests are: Scholastic Reading Inventory, PA Series Reading, the Iowa Test of Basic Skills, and many end-of grade state assessment test. The Lexile reader measure scale is from a low of 0L to a high of 2000L.

The Lexile text measure is reported on the same Lexile scale as the Lexile reader measure. The lower a book's Lexile text measure, the easier it will be to comprehend. The Lexile text measure scale is from a low of BR to a high of 2000L. The Lexile text measure refers only to the text difficulty of a book and does not address the content or quality of the book. The Lexile text measure is based on word frequency and sentence length. Word frequency and sentence length are strong predictors of how difficult a text is to comprehend. It is noted that there are other factors that affect the relationship between a reader and a book. These factors are: the content of the book, the age and interests of the reader, and the design of the actual book (The Lexile Framework for Reading, 2008).

A key feature of the Lexile Framework for Reading is that both the Lexile reader and the Lexile text measures can be used together to predict how well a reader will likely comprehend a text at a specific Lexile level. According to MetaMetrics, Inc., the company that developed the Lexile Framework for Reading, a "Lexile range" is the suggested range of Lexile measures that a reader should be reading. This range is 50L above to 100L below the student's Lexile measure. They suggest that it is best for a

student to select books based on his or her Lexile range rather than focus on one reader measure.

Another key feature of the Lexile Framework for Reading is that the Lexile scale is a developmental scale. This scale can be used to show whether a reader's reading ability is growing (or developing) over time. This feature allows parents and educators to monitor a reader's growth over time. If a student's growth is too slow then supplemental reading instruction can be given. If a student's growth is fast then more challenging readings can be provided to encourage more growth.

MetaMetrics collected the Lexile measures for a national sample of students. They identified the Lexile measures for the students in the middle 50 percent of the Lexile range (25% to 75%). It is possible to describe the Lexile measures of typical students and textbooks at various grade levels, however Lexile measures should not be linked directly to grade levels (The Lexile Framework for Reading, 2008).

The test that is used to determine Lexile measure is the Scholastic Reading Inventory (SRI). More details regarding the SRI test and its construction are located in the Appendix.

CHAPTER 3 METHODOLOGY

Introduction

The purpose of this chapter is to describe the methods and procedures used in the collection and analysis of data for this study. The sections of this chapter are organized as follows: problem statement, research questions, population and databases, analytical procedures and summary.

Problem Statement

Federal, state, and local government agencies are promoting merit pay systems that are tied to student achievement. The main problem facing governments, school districts, and educators is that money is hard to come by in the current market and choosing where to spend merit pay monies to receive a maximum rate of return on the investment realized in increased student achievement is difficult to determine. Millions of dollars per year are invested in these merit pay programs but does this investment result in student learning gains? Do these merit pay programs have enough of a positive impact on student achievement to justify the money being spent on these programs? This study, based on an analysis of Brevard and Seminole County Public Schools' data on student growth in reading, makes some recommendations that may provide insight to this problem.

Research Questions

The following questions were developed to verify results for the literature and to find patterns that could lead to recommendations.

1. What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by non National Board Certified teachers with a graduate degree?
2. What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers without a graduate degree?
3. What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers with a graduate degree?
4. What difference occurs in the learning gains of students taught by non National Board Certified teachers with a graduate degree and students taught by National Board Certified teachers without a graduate degree?
5. What difference occurs in the learning gains of students taught by non National Board Certified teachers with a graduate degree and students taught by National Board Certified teachers with a graduate degree?

6. What difference occurs in the learning gains of students taught by National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers with a graduate degree?

The purpose of these questions is two-fold. First, do the learning gains of students vary from one grade level to another or from one teacher category to another? Second, if they do, what known factors about the students or teachers may explain the discrepancies?

Population and Databases

The population of this study included students that were enrolled in Brevard and Seminole County Public Schools during the 2008-2009 school year. Information on this population, available in the form of two databases, was used to answer the research questions.

Database-1. This database contained information on all third, fourth, and fifth grade students enrolled in the following Seminole County Public Schools: Bear Lake Elementary, Evans Elementary, Layer Elementary, Walker Elementary, Rainbow Elementary, Idyllwilde Elementary, Woodlands Elementary, Wekiva Elementary, and Partin Elementary during the 2008 – 2009 school year.

Database-2. This database contained information on all third, fourth, and fifth grade students enrolled in all Brevard County Public Schools during the 2008 – 2009 school year.

For each of the 3,819 students that qualified from Database-1 and for each of the 15,346 students that qualified from Database-2, the following information was entered into Statistical Package for Social Science (SPSS): school name, grade (3 -5), gender (M or F), race (White, Black, Hispanic, American Indian, Multiracial or Asian), SES (Do Not Apply, Free Lunch, Reduced Lunch, Title I), ELL status (Yes or No), ESE status (None, Language Impaired, Specific Learning Disability or Other), beginning Lexile, ending Lexile, and teacher category (Bachelor Degree, Bachelor Degree with NBC, Graduate Degree, Graduate Degree with NBC).

Analytical Procedures

The data queries of Database-1 and Database-2 were used to answer each of the research questions. The Statistical Package for Social Science (SPSS) Graduate Package (16.0) was used to analyze the data. Three one-way repeated measure ANOVA tests (one for each grade level, 3, 4, and 5) were used to analyze the data to determine if there is a significant difference between the learning gains of the students between groups. The student Lexile score, a continuous measure, served as the dependent variable for the analysis. Time served as the repeated measure. This study focused on the change in score between the beginning of the year (beginning Lexile) and the end of the year (ending Lexile). Lexile scores were matched on this factor of time. Teacher category served as an independent factor.

The analysis addressed if significant differences in the Lexile scores occurred within each grade level on the factors of time, teacher category, or an interaction of these two variables. Each of the six individual research questions were addressed by the post-hoc analyses to these ANOVAs, as these tests described, in the case of significance involving the teacher category factor, which teacher categories yielded significantly higher or lower values of Lexile change. If the teacher category factor did not show any omnibus significance (either on its own or through interaction with the time factor), the research questions were answered through descriptive statistics. In general, descriptive statistics were provided for all of the analyses to show Lexile performance and change between grades and teacher categories.

Summary

Chapter 3 described the general methodological approach, research setting, population, data gathering instrument, and analytical procedures to be employed. Chapters 4 and 5 contain the data analysis, findings of the data analysis, a discussion of the quantitative data gathered, and the implications of the results of this study for further research.

CHAPTER 4 DATA ANALYSIS

Introduction

This study examined the effectiveness of state certified, graduate degreed, and National Board Certified teachers as determined by student growth in reading. The analysis of data from Brevard County Public Schools' and Seminole County Public Schools' databases for the 2008-2009 school year is presented in this chapter.

This chapter is divided into the following sections: Population Demographics, Repeated Measures ANOVA Analysis for grades 3-5, and Research Questions 1-6.

Population Demographics

The population of this study included students who were enrolled in either third, fourth, and fifth grades in 2008-09 at all Brevard County Public Schools and at a selection of schools in the Seminole County Public Schools System. The following Seminole County Public Schools were used in this study: Bear Lake Elementary, Evans Elementary, Layer Elementary, Walker Elementary, Rainbow Elementary, Idyllwilde Elementary, Woodlands Elementary, Wekiva Elementary, and Partin Elementary. Demographic information for the student population, separated by grade, is provided in Tables 1 through 5. These tables include gender, ethnicity, free and reduced lunch, exceptional student and English language learner demographics. Although these demographics do not directly address the research questions, this information serves the

purpose of describing the population of interest that will be helpful when discussing other potential variables of interest or possible areas for future research.

Table 1

Descriptive Student Population Statistics for Gender

Gender	Frequency			Percent		
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5
Female	2,518	2,667	2,676	48.9	49.3	48.9
Male	2,633	2,743	2,798	51.1	50.7	51.1

Table 2

Descriptive Student Population Statistics for Ethnicity

Ethnicity	Frequency			Percent		
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5
Asian	149	151	169	2.9	2.8	3.1
Black	639	624	626	12.4	11.5	11.4
Hispanic	448	514	513	8.7	9.5	9.4
Am. Ind	15	21	14	0.3	0.4	0.3
Multi-Racial	339	344	329	6.6	6.4	6.0
White	3,561	3,756	3,823	69.1	69.4	69.8

Table 3

Descriptive Student Population Statistics for Free and Reduced Lunch (FRL)

FRL	Frequency			Percent		
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5
No	3,360	3,498	3,655	65.2	64.7	66.8
Yes	1,791	1,912	1,819	34.8	35.3	33.2

Table 4

Descriptive Student Population Statistics for Exceptional Education Students (ESE)

ESE	Frequency			Percent		
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5
No	4,184	4,342	4,403	81.2	80.3	80.4
Yes	967	1,068	1,071	18.8	19.7	19.6

Table 5

Descriptive Student Population Statistics for English Language Learners (ELL)

ELL	Frequency			Percent		
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5
No	4,993	5,274	5,320	96.9	97.5	97.2
Yes	158	136	154	3.1	2.5	2.8

Data Analysis

All six research questions were addressed with a series of repeated measure ANOVA tests, one for each grade, third, fourth, and fifth. Since the answers to each of the six research questions originated from the same set of three ANOVA tests, general results will be presented independent of the research questions. Detailed results germane to each research question, such as the differences in means, will be presented in the appropriate section.

The three repeated measure ANOVA tests were conducted identically for each grade. In each analysis, the Lexile score served as the dependent variable, teacher training served as the independent (between subjects) factor, and time (beginning or end of year) served as the repeated measure (within subjects). The interaction between teacher training and time was also of interest. This interaction effect was able to address the hypothesis that there would be a statistically significant difference between the learning gains of students between groups as measured by Lexile scores when taking into account teacher category and time. All statistical assumptions were checked prior to running the analyses, including homogeneity of variance and normality, and all values fell within acceptable ranges. Tests for inference were run at the $\alpha = .05$ level of significance.

Grade 3 Repeated Measure ANOVA Analysis

The repeated measure ANOVA results for Grade 3 are located in Table 6. When controlling for teacher type, the change in SRI scores from pre-test to post-test was

significant: $F(1, 5,147) = 2,531.50, p < .01$. Approximately 33% of the variability in SRI score could be attributed to the time element. However, when controlling for pre-test and post-test status, there was no statistically significant difference in SRI scores between teachers of different categories: $F(3, 5,147) = 2.33, p > .05$. Less than 1% of the variability in SRI scores can be attributed to teacher category. Likewise, there was no significant interaction effect between time and teacher training: $F(3, 5,147) = 1.25, p > .05$. Less than 1% of the variability in SRI scores could be attributed to the interaction between these two factors (time and teacher category).

Table 6

Repeated Measures ANOVA for Grade 3 SRI Change Between Teacher Groups Over Time

Source	<i>df</i>	<i>F</i>	η	<i>p</i>
Between Subjects				
Teacher Category (T)	3	2.33	.03	.07
<i>S</i> within-group error	5,147	(89,380.99)		
Within Subjects				
Blocks (B)	1	2,531.50**	.57	.01
B x T	3	1.25	.03	.29
B x <i>S</i> within-group error	5,147	(7,208.56)		

Note. Value enclosed in parentheses represents mean square errors. *S* = subjects.

* $p < .05$. ** $p < .01$.

The means and standard deviations associated with the ANOVA are included in Table 7. Overall, 3rd grade scores significantly increased from SRI-1 to SRI-3. There was a significant increase from pre-test ($M = 536.83$, $SD = 227.00$) to post-test ($M = 668.29$, $SD = 212.44$). However, since teacher category was not a significant factor on its own, and since there was no significant interaction effect between time and teacher category, teacher education levels did not make any difference in the learning gains as measured by SRI, among 3rd grade students. Implications for the research questions will be discussed in the appropriate sections later in the chapter.

Table 7

Descriptive Statistics for SRI by Teacher Type and Time, Grade 3

Category	N	Pre-Test		Post-Test		Δ
		M	SD	M	SD	
Bachelor - No NBC	3,217	531.63	223.72	662.67	210.02	131.04
Bachelor - NBC	364	558.36	241.29	681.54	218.88	123.18
Graduate - No NBC	1,284	539.67	227.65	675.42	211.46	135.75
Graduate - NBC	286	555.23	240.04	682.61	233.35	127.38
All Teachers	5,151	536.83	227.00	668.29	212.44	131.46

Grade 4 Repeated Measure ANOVA Analysis

The repeated measure ANOVA results for Grade 4 are located in Table 8. When controlling for teacher type, the change in SRI scores from pre-test to post-test, $F(1, 5,406) = 3,765.04, p < .01$, indicated a significant difference. Approximately 41% of the variability in SRI scores could be attributed to the time element. Additionally, when controlling for pre-test and post-test status, there was a statistically significant difference in SRI scores between teachers of different categories: $F(3, 5,406) = 11.41, p < .01$. However, less than 1% of the variability in SRI scores can be attributed to teacher category. There was also a significant interaction effect between time and teacher training: $F(3, 5,406) = 3.70, p < .01$. Despite this significance, less than 1% of the variability in SRI scores could be attributed to the interaction between these two factors (time and teacher category).

Table 9 contains the means and standard deviations associated with the Grade 4 ANOVA tests. Overall, 4th grade scores significantly increased from SRI-1 ($M = 695.78, SD = 227.95$) to SRI-3 ($M = 821.86, SD = 212.10$). Although there was an interaction effect between change in SRI scores from pre-test and post-test and teacher category, there was no conclusive evidence that the change in score from pre-test to post-test was significantly higher or lower between any two particular groups. The greatest difference in mean score change was between bachelor NBC and graduate non-NBC, though statistical significance cannot be claimed due to the nature of post-hoc analysis via interaction-based results.

Table 8

Repeated Measures ANOVA for Grade 4 SRI Change Between Teacher Groups Over Time

Source	<i>df</i>	<i>F</i>	η	<i>p</i>
Between Subjects				
Teacher Category (T)	3	11.41**	.08	.01
<i>S</i> within-group error	5,406	(89,952.28)		
Within Subjects				
Blocks (B)	1	3,765.04**	.64	.01
B x T	3	3.70*	.04	.01
B x <i>S</i> within-group error	5,406	(6,462.56)		

Note. Value enclosed in parentheses represents mean square errors. *S* = subjects.

p* < .05. *p* < .01.

Table 9

Descriptive Statistics for SRI by Teacher Type and Time, Grade 4

Category	N	Pre-Test		Post-Test		Δ
		M	SD	M	SD	
Bachelor - No NBC	2,831	687.72	230.11	817.41	211.66	129.69
Bachelor - NBC	640	726.26	221.15	856.79	204.81	130.53
Graduate - No NBC	1,556	688.23	223.07	806.70	209.90	118.47
Graduate - NBC	383	735.06	235.10	857.93	226.15	122.87
All Teachers	5,410	695.78	227.95	821.86	212.10	126.08

Figure 1 displays the means for pre-test and post-test SRI scores to supplement the means and standard deviations located in Table 9. Normally, an interaction effect would involve some crossing of lines which is not present here due to the extreme strength of the time factor; however, it is evident that NBC teachers had students scoring consistently higher than non-NBC teachers. Referring to the differences in mean scores alone, the largest increase in scores occurred among students who had an NBC teacher with a bachelor's degree. From pre-test ($M = 726.26$, $SD = 221.15$) to post-test ($M = 856.79$, $SD = 204.81$), scores increased on average by 130.53. The smallest increase in scores occurred among students who had a non-NBC teacher with a graduate degree. From the pre-test ($M = 688.23$, $SD = 223.07$) to the post-test ($M = 806.70$, $SD = 209.90$), scores increased on average by 118.47.

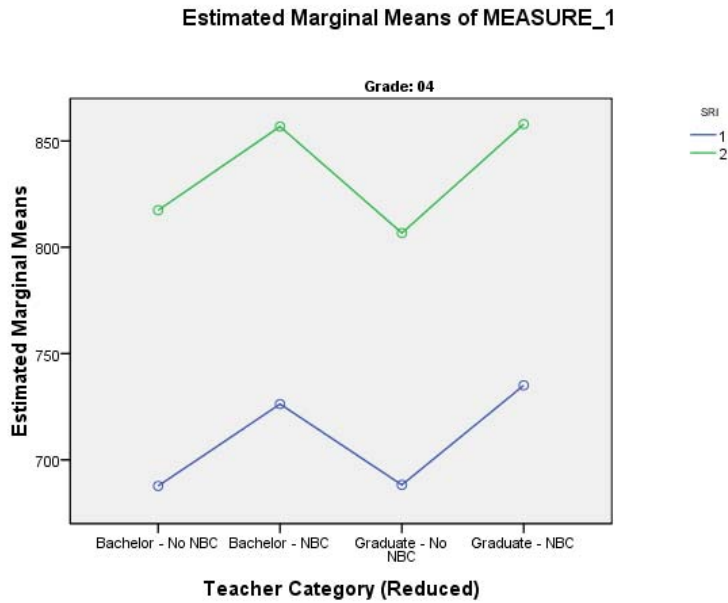


Figure 1. Means of SRI by time and teacher category, Grade 4.

Grade 5 Repeated Measure ANOVA Analysis

The repeated measure ANOVA results for Grade 5 are located in Table 10. When controlling for teacher type, the change in SRI scores from pre-test to post-test, $F(1, 5,470) = 2,468.16, p < .01$, indicated a significant difference. Roughly 31% of the variability in SRI scores could be attributed to the time element. Additionally, when controlling for pre-test and post-test status, there was a statistically significant difference in SRI scores between teachers of different categories: $F(3, 5,470) = 10.87, p < .01$. Approximately 1% of the variability in SRI scores could be attributed to teacher category. There was also a significant interaction effect between time and teacher training: $F(3,$

5,470) = 3.15, $p < .05$; however, less than 1% of the variability in SRI scores could be attributed to the interaction between these two factors (time and teacher category).

Table 10

Repeated Measures ANOVA for Grade 5 SRI Change Between Teacher Groups Over Time

Source	<i>df</i>	<i>F</i>	η	<i>p</i>
Between Subjects				
Teacher Category (T)	3	10.87**	.08	.01
<i>S</i> within-group error	5,470	(95,890.23)		
Within Subjects				
Blocks (B)	1	2,468.16**	.56	.01
B x T	3	3.15*	.04	.02
B x <i>S</i> within-group error	5,470	(7,208.56)		

Note. Value enclosed in parentheses represents mean square errors. *S* = subjects.

* $p < .05$. ** $p < .01$.

Table 11 contains the means and standard deviations associated with the Grade 5 ANOVA tests. Overall, 5th grade scores significantly increased from SRI-1 ($M = 835.39$, $SD = 231.40$) to SRI-3 ($M = 930.72$, $SD = 220.66$). Although there was an interaction effect between change in SRI scores from pre-test and post-test and teacher category, there was no conclusive evidence that the change in score from pre-test to post-test was

significantly higher or lower between any two particular groups. The greatest difference in mean score change was between graduate NBC and bachelor NBC, although statistical significance cannot be claimed due to the nature of post-hoc analysis via interaction-based results.

Figure 2 displays the means for pre-test and post-test SRI scores to supplement the means and standard deviations located in Table 11. Normally, an interaction effect would involve some crossing of lines which is not present here due to the extreme strength of the time factor. However, it is evident that graduate degreed teachers had students scoring consistently higher than bachelor degreed teachers regardless of National Board Certification. Referring to the differences in mean scores alone, the largest increase in score occurred among students who had a bachelor degreed teacher. From pre-test ($M=823.44$, $SD=231.50$) to post-test ($M = 921.47$, $SD = 221.12$), students with a bachelor degreed teacher with no NBC scores increased on average by 98.03. From pre-test ($M = 829.22$, $SD = 224.51$) to post-test ($M = 929.46$, $SD = 218.03$), students with a bachelor degreed teacher with NBC scores increased on average by 100.24. Referring to the differences in mean scores alone, the smallest increase in score occurred among students who had a graduate degreed teacher. From pre-test ($M = 845.03$, $SD = 233.33$) to post-test ($M = 936.11$, $SD = 223.89$), students with a graduate degreed teacher with no NBC scores increased on average by 91.08. From pre-test ($M = 887.52$, $SD = 224.98$) to post-test ($M = 972.93$, $SD = 206.66$), students with a graduate degreed teacher with NBC scores increased on average by 85.41.

Table 11

Descriptive Statistics for SRI by Teacher Type and Time, Grade 5

Category	N	Pre-Test		Post-Test		Δ
		M	SD	M	SD	
Bachelor - No NBC	3,057	823.44	231.50	921.47	221.12	98.03
Bachelor - NBC	535	829.22	224.51	929.46	218.03	100.24
Graduate - No NBC	1,372	845.03	233.33	936.11	223.89	91.08
Graduate - NBC	510	887.52	224.98	972.93	206.66	85.41
All Teachers	5,474	835.39	231.40	930.72	220.66	95.33

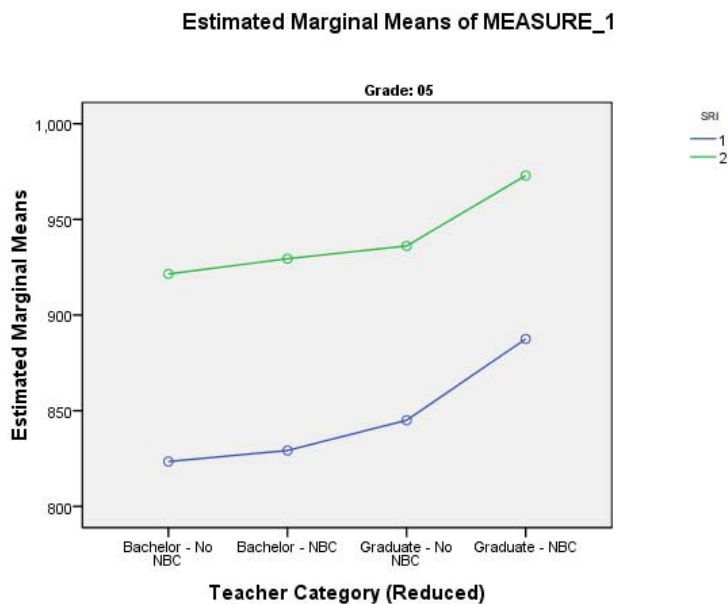


Figure 2. Means of SRI by time and teacher category, Grade 5.

Research Question 1

What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by non National Board Certified teachers with a graduate degree?

Grade 3: The mean difference for a Bachelor-No NBC teacher was 131.04 and the mean differenced for a Graduate-No NBC teacher was 135.75. There were no significant interaction results or differences among teacher groups.

Grade 4: The mean difference for a Bachelor-No NBC teacher was 129.69 and the mean differenced for a Graduate-No NBC teacher was 118.47. There was a significant interaction effect among the groups and there is some evidence that there was a difference. The mean difference for a non NBC teacher with a bachelor degree was one of the highest and the mean difference for a non NBC teacher with a graduate degree was the lowest.

Grade 5: The mean difference for a Bachelor-No NBC teacher was 98.03 and the mean differenced for a Graduate-No NBC teacher was 91.08. There was a significant interaction effect. However, there is no concrete evidence about there being a difference, as neither mean was the highest nor lowest of the group.

Research Question 2

What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers without a graduate degree?

Grade 3: The mean difference for a Bachelor-No NBC teacher was 131.04 and the mean differenced for a Bachelor-NBC teacher was 123.18. There were no significant interaction results or differences among teacher groups.

Grade 4: The mean difference for a Bachelor-No NBC teacher was 129.69 and the mean differenced for a Bachelor-NBC teacher was 130.53. There was a significant interaction effect among the groups and there is some evidence that there was a difference. The mean difference for a non NBC teacher with a bachelor degree was one of the highest and the mean difference for a NBC teacher with a bachelor degree was the highest. Referring to the differences in mean scores alone, students with a bachelor degree teacher had a larger increase in score than students with a graduate degree teacher regardless of NBC. Non NBC teachers with a bachelor degree started out with students that on average scored lower on their SRI-1 then the other teacher groups.

Grade 5: The mean difference for a Bachelor-No NBC teacher was 98.03 and the mean differenced for a Bachelor-NBC teacher was 100.24. There was a significant interaction effect and there is no concrete evidence about there being a difference, however, the Bachelor-NBC teacher mean was the highest of the group.

Research Question 3

What difference occurs in the learning gains of students taught by non National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers with a graduate degree?

Grade 3: The mean difference for a Bachelor-No NBC teacher was 131.04 and the mean differenced for a Graduate-NBC teacher was 127.38. There were no significant interaction results or differences among teacher groups.

Grade 4: The mean difference for a Bachelor-No NBC teacher was 129.69 and the mean differenced for a Graduate-NBC teacher was 122.87. There was a significant interaction effect among the groups and there is some evidence that there was a difference. The mean difference for a non NBC teacher with a bachelor degree was one of the highest and the mean difference for a NBC teacher with a graduate degree was one of the lowest. NBC teachers with a graduate degree started out with students that on average scored higher on their SRI-1 then the other teacher groups.

Grade 5: The mean difference for a Bachelor-No NBC teacher was 98.03 and the mean differenced for a Graduate-NBC teacher was 85.41. There was a significant interaction effect and there is no concrete evidence about there being a difference; the Graduate-NBC teacher mean was the lowest of the group.

Research Question 4

What difference occurs in the learning gains of students taught by non National Board Certified teachers with a graduate degree and students taught by National Board Certified teachers without a graduate degree?

Grade 3: The mean difference for a Graduate-No NBC teacher was 135.75 and the mean differenced for a Bachelor-NBC teacher was 123.18. There were no significant interaction results or differences among teacher groups.

Grade 4: The mean difference for a Graduate-No NBC teacher was 118.47 and the mean differenced for a Bachelor-NBC teacher was 130.53. There was a significant interaction effect among the groups and there is some evidence that there was a difference. The mean difference for a non NBC teacher with a graduate degree was the lowest and the mean difference for a NBC teacher with a bachelor degree was the highest.

Grade 5: The mean difference for a Graduate-No NBC teacher was 91.08 and the mean differenced for a Bachelor-NBC teacher was 100.24. There was a significant interaction effect and there is no concrete evidence about there being a difference, however, the Bachelor-NBC mean was the highest of the group.

Research Question 5

What difference occurs in the learning gains of students taught by non National Board Certified teachers with a graduate degree and students taught by National Board Certified teachers with a graduate degree?

Grade 3: The mean difference for a Graduate-No NBC teacher was 135.75 and the mean differenced for a Graduate-NBC teacher was 127.38. There were no significant interaction results or differences among teacher groups.

Grade 4: The mean difference for a Graduate-No NBC teacher was 118.47 and the mean differenced for a Graduate-NBC teacher was 122.87. There was a significant interaction effect among the groups and there is some evidence that there was a difference. The mean difference for graduate degreed teachers with and without NBC was the lowest among the groups.

Grade 5: The mean difference for a Graduate-No NBC teacher was 91.08 and the mean differenced for a Graduate-NBC teacher was 85.41. There was a significant interaction effect and there is no concrete evidence about there being a difference, however both graduate degreed teachers with NBC and without NBC were the lowest among the groups.

Research Question 6

What difference occurs in the learning gains of students taught by National Board Certified teachers without a graduate degree and students taught by National Board Certified teachers with a graduate degree?

Grade 3: The mean difference for a Bachelor-NBC teacher was 123.18 and the mean differenced for a Graduate-NBC teacher was 127.38. There were no significant interaction results or differences among teacher groups.

Grade 4: The mean difference for a Bachelor-NBC teacher was 130.53 and the mean differenced for a Graduate-NBC teacher was 122.87. There was a significant interaction effect among the groups and there is some evidence that there was a difference. The mean difference for a NBC teacher with a bachelor degree was the highest.

Grade 5: The mean difference for a Bachelor-NBC teacher was 100.24 and the mean differenced for a Graduate-NBC teacher was 85.41. There was a significant interaction effect and there is no concrete evidence about there being a difference, however, Bachelor-NBC mean was the highest and Graduate-NBC was the lowest of the group.

Analysis Summary

Across all grades and teacher categories, the means are located in Table 12.

Likewise, across all grades, the ANOVA findings are located in Table 13.

Table 12

Summary of Mean SRI Score Changes by Grade and Teacher Category

Category	Grade 3	Grade 4	Grade 5
Bachelor - No NBC	131.04	129.69	98.03
Bachelor - NBC	123.18	130.53	100.24
Graduate - No NBC	135.75	118.47	91.08
Graduate - NBC	127.38	122.87	85.41

Table 13

Summary of ANOVA Findings by Grade

Factor and Result	Grade 3	Grade 4	Grade 5
Time			
Significance	Yes	Yes	Yes
% of SRI Variability Explained	33%	41%	31%
Teacher Category			
Significance	No	Yes	Yes
% of SRI Variability Explained	< 1%	< 1%	< 1%
Time and Teacher Category Interaction			
Significance	No	Yes	Yes
% of SRI Variability Explained	< 1%	< 1%	< 1%

CHAPTER 5 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter provides an overview of the problem statement, methodology, and data analysis. In addition, a summary and discussion of the findings regarding each grade level is included, as well as conclusions drawn from the findings, agreements with the literature, recommendations, and suggestions for future research.

Purpose of the Study

Educational degree level and National Board Certification historically have been used for determining teacher salary and merit pay; however, there have been recent attempts to tie teacher salary and merit pay to student performance. This study was conducted to determine the effectiveness of state certified, graduate degreed, and National Board Certified teachers as determined by student growth in reading. This research can be used to provide insight into the teacher salary and merit pay debate and help policymakers decide if educational degree level and National Board Certification should be used to determine teacher salary and merit pay.

Methodology

Data were collected from public elementary schools in Brevard and Seminole Counties, Florida as reported to the district SRI database for the school year 2008-2009. Data related to the demographic information (gender, race, SES, ELL, and ESE), Lexile measures (beginning and ending Lexile), and teacher category (Bachelor Degree, Bachelor Degree with NBC, Graduate Degree, Graduate Degree with NBC) for each student in grades 3-5 was collected.

Data Analysis

Data analysis in this study was conducted using the Statistical Package for Social Science (SPSS) Graduate Package (16.0). Three one-way repeated measure ANOVA'S (one for each grade level 3, 4, and 5) were used to analyze the data to determine if there is a significant difference between the learning gains of the students between groups. The student Lexile score, a continuous measure, served as the dependent variable for the analysis. Time served as the repeated measure. This study focuses on the change in score between the beginning of the year (beginning Lexile) and the end of the year (ending Lexile). Lexile scores were matched on this factor of time. Teacher category served as an independent factor. Further analysis addressed whether significant differences in the Lexile scores occurred within each grade level on the factors of time, teacher category, or an interaction of these two variables.

Summary and Discussion of Findings

Grade 3

Overall 3rd grade scores significantly increased from SRI-1 to SRI-3. Since teacher category was not a significant factor on its own, and since there was no significant interaction effect between time and teacher category, teacher education levels or certifications did not make any difference in the learning gains as measured by SRI, among 3rd grade students.

In grade 3 National Board Certified teachers were given higher achieving students; therefore, on average their students' scores were consistently higher than the scores of students with non-National Board Certified Teachers. Referring to differences in mean scores alone, the largest increase in score occurred among students who had a non NBC teacher regardless of degree, however, these non NBC teachers were given students that on average scored lower on SRI-1 than students of NBC teachers.

Grade 4

Overall 4th grade scores significantly increased from SRI-1 to SRI-3. Although there was an interaction effect between change in SRI scores from pre-test and post-test and teacher category, there was no conclusive evidence that the change in score from pre-test to post-test was significantly higher or lower between any two particular groups. The smallest increase in score occurred among students who had a non-NBC teacher with a

graduate degree. The largest increase in score occurred among students who had a National Board Certified teacher with a bachelor's degree. The greatest difference in mean score change was between bachelor NBC and graduate non-NBC.

In grade 4 National Board Certified teachers were given higher achieving students, therefore, on average their students' scores were consistently higher than the scores of students with non-National Board Certified teachers. Referring to differences in mean scores alone, the largest increase in score occurred among students who had a bachelor degree teacher regardless of NBC.

Grade 5

Overall, 5th grade scores significantly increased from SRI-1 to SRI-3. Although there was an interaction effect between change in SRI scores from pre-test and post-test and teacher category, there was no conclusive evidence that the change in score from pre-test to post-test was significantly higher or lower between any two particular groups. The greatest difference in mean score change was between graduate NBC and bachelor NBC teachers. It is evident that bachelor NBC teachers had students scoring consistently higher than graduate NBC teachers, however, the students of graduate NBC teachers scored higher on pre-test evaluations. The largest score increase occurred among students of teachers with bachelor's degrees, regardless of NBC status. However, as degree and NBC status increased (Bachelor No NBC, Bachelor NBC, Graduate No NBC, Graduate NBC), so did scores in both the pre-test and post-test SRI administrations.

Conclusions

This study sought to determine the effect of state certified, graduate degreed, and National Board Certified teachers on student growth in reading. Additionally, the study sought to provide insight into the teacher salary and merit pay debate and help policymakers decide if educational degree level and National Board Certification should be used to determine teacher salary and merit pay. Teachers in most schools are compensated based on their educational degree level and many receive bonus pay for receiving National Board Certification. Federal and State governments are now encouraging local school districts to develop a merit pay system that rewards teachers for the learning gains of their students, working with at risk students, and working in high need subject areas.

In this study there was no difference in the learning gains of students in grade 3 based upon teacher category. There was a difference in the learning gains of students in grade 4 and grade 5 based upon teacher category, however, the learning gain could not be attributed to teacher category. Students who had teachers with higher degrees and advanced certification did not make higher gains than students who had teachers without these degrees or certifications and in some cases made smaller gains than these students.

National Board Certified (NBC) teachers in grade 3 and grade 4 received students that had achieved more success in reading than non NBC teachers. In grade 3, students with a non NBC teacher had a larger mean SRI gain than students with a NBC teacher. In grade 4, students with a bachelor degree teacher had a larger mean SRI gain than students

with a graduate degree teacher. In grade 5, teachers with a higher degree an advanced certification received students that had achieved more success in reading. However, students with a bachelor degree teacher had a larger mean SRI gain than students with a graduate degree.

This study suggests that more experienced teachers, teachers with a higher degree an advanced certification, are receiving the most talented students. Schools may have more success with underperforming students if they put more experienced teachers with students who are at risk or falling behind.

Agreements with Literature Review

National Board Certified teachers were found to have no clear pattern of effects on student achievement and students who were taught by National Board Certified teachers did not have significantly better rates of academic progress than students of other teachers. Data do not show that teachers with National Board Certification or a graduate degree had a more positive effect on student performance in reading. In some cases, students with a bachelor's degreed teacher had more growth in reading based upon Lexile scores than students with a National Board Certified teacher or teacher with a graduate degree.

Assessing and rewarding excellence through teacher salary and merit pay would be an excellent motivator for all teachers to focus more on student achievement and student performance, however, this would require changing the way teachers are paid and

raising the pay levels of the most effective teachers. Teachers who work with, at risk or underachieving students could also receive merit pay monies if academic growth is made.

Merit pay programs are difficult to implement because student performance is not easily defined and measured and the contributions of individual teachers to student performance are not easily determined. Clearly, some teachers have a greater effect on student growth than other teachers, however, a good system for measuring this growth and the teachers contribution to the growth has not been widely used or recognized.

Influences outside the school (ethnic background, socioeconomic background, academic ability, and environment) have a greater affect on student performance than influences of a school (teacher education, experience and quality, school environment, climate and culture).

Recommendations

This study has shown that additional degrees and certifications do little to positively affect student achievement. School districts as well as the state and federal government should develop a plan that will determine what does have a positive effect on student achievement and put resources to promote these things.

Teacher pay typically is based on degree level and special certifications, however, a compensation system that includes measures of a teacher's ability to increase student performance would be a more effective way to recognize and reward successful teachers and improve teacher quality.

Recommendations for Future Studies

While conducting this study the following recommendations for future studies became apparent.

1. More research should be done on the effect of graduate degrees and National Board Certification on student performance.
2. This study measured student academic achievement on student reading performance based on teacher education and certification. A similar study to measure the effectiveness of students based on other reading assessments, math, science, and writing should be conducted.
3. Further research should investigate why teachers with more education and certifications are given higher performing students.
4. Merit pay programs are continually being pushed by the federal and state governments. A study of merit pay programs and their effect on student performance should be undertaken.
5. In this study teachers with higher certifications and higher educational degrees generally received higher achieving students. A study that focused on these better qualified teachers working with lower performing students should be conducted.

APPENDIX
EXPLANATION OF SCHOLASTIC READING INVENTORY

All content is from the Read 180: Placement, Assessment, and Reporting Guide, 2005.

How SRI Works

During an SRI test, students read brief passages from authentic literature and nonfiction and answer questions about what they have read. Each test screen contains a passage and a question (p.15) SRI is a computer adaptive test that assesses reading comprehension using the Lexile Framework. SRI consists of short passages and questions about the passages. Passages are selected from authentic fiction and nonfiction literature, as well as newspapers and magazines. Items are written to enable students to demonstrate comprehension using strategies such as making inferences and drawing conclusions. No prior knowledge is required to understand the passages or answer the questions (p. 40).

SRI is a researched-based assessment that has been field-tested and validated to ensure that it is a reliable indicator of reading comprehension.

- Content Validity – does the test sample important content related to what the test is supposed to measure?
- Construct Validity – does the test measure the theoretical construct (or trait) it is supposed to measure?
- Criterion-Related Validity – does the test adequately predict the test-taker’s behavior in a specific situation? (p.16)

SRI is designed to measure a reader’s ability to comprehend narrative and expository texts of increasing difficulty. The purpose of SRI is to locate a reader’s comprehension level on the Lexile Framework. Once a reader’s comprehension level is

measured, it is possible to forecast how well the reader will comprehend reading materials that have also been measured using the Lexile Framework. Readers can then be matched with texts they can read with confidence, competence, and control so that they can build reading skills (p. 40). SRI scores can be used to form initial groups for small group rotations, match text to reading tasks, match students with texts, and differentiate instruction and grouping (p. 28).

The SRI reports students' results in Lexiles. Lexiles are scale scores. A scale score is determined by the difficulty of the items the student responds to correctly and incorrectly. Scale scores are also used to report criterion and norm referenced information (p. 20).

SRI is based on the Lexile Framework. The Lexile Framework measures texts and readers on the same scale. The Lexile Framework is a reliable and tested tool designed to bridge two critical aspects of student reading achievement: leveling text difficulty and assessing the reading skills of each student. The Lexile scale ranges from Beginning Reader (below 100 Lexiles) to above 1500 Lexiles. When a reader's Lexile score matches the text Lexile measure, the reader experiences confidence and control over the reading process (p. 21).

Each time students take SRI, the Scholastic Achievement Manager SAM records their Lexile scores and prepares reports from which you can analyze test results. SAM is used to generate a variety of SRI reports that include the following data: Lexile scores, Performance Standards (Below Basic, Basic, Proficient, Advanced), Normative data (Percentiles, NCEs (Normal Curve Equivalent), and Stanines), Reading levels (on, above,

or below grade level), Lexile ranges for Easy, On-Level, and Challenging text, and Recommendations for helping students meet grade-level expectations. The students' SRI results are used to measure baseline reading levels, create three initial small groups and change those groups during the year, provide targeted instruction for individuals and groups, monitor reading comprehension growth over time, assess students' performance against normative data, and match students to texts at the appropriate level.

LIST OF REFERENCES

- Aarons, D. (2009, August 26). Principal program in NYC linked to student test gains. *Education Week*, 29(1), p. 7.
- Associated Press. (2007). New York City approves merit pay. Retrieved from <http://www.teachermagazine.org/tm/articles/2007/10/17/06apmerit>
- Associated Press. (2008). Oregon debates merit pay measure. Published September 29, 2008.
- Association of Teacher Educators. (1991). Restructuring the education of teachers. Report of the Commission on the Education of Teachers into the 21st Century. Reston, VA: 1991.
- Bay Area School Reform Collaborative. (1999). Equity Research Brief. October, 1999. Retrieved from <http://www.springboardschools.org/research/documents/EquityBriefOct99.pdf>
- Bilimoria, D., and Greer Jordan, C. (2005) A good place to do science: A case study of an academic science department. Retrieved from <http://www.case.edu/admin/aces/case>
- Bolich, A. (2001). SREB states lead the way in National Board Certification for teachers. Southern Regional Education Board, March 2001.
- Bradbury, B. (2008) Oregon Online Voters' Guide. Retrieved from www.sos.state.or.us/elections/nov42008/guide
- Buddin, R., McCaffrey, D., Kirby, S., & Xia, N. (2007) Merit Pay for Florida Teachers: Design and Implementation Issues. Prepared for the Florida Education Association, August 2007.
- Carnegie Corporation. (1986). A nation prepared: Teachers for the 21st century. New York: Author.
- Cavalluzzo, L. (2004). Is National Board Certification an effective signal of teacher quality? Retrieved from www.cna.org/documents/cavalluzzostudy.pdf
- Cochran-Smith, M., & Zeichner, K. (2005). Studying teacher education: The report of the AERA Panel on Research and Teacher Education. Mahwah, NJ: Lawrence Erlbaum Associates.
- Coleman, J. (1966). Equality of Educational Opportunity Study. Commissioned by the United States Department of Health, Education, and Welfare.

- Columbia University (2009). A brief history of Columbia. Retrieved from www.tc.columbia.edu/abouttc/heritage.htm?id=A+Brief+History+of+Columbia
- Corcoran, S., Schwartz, A., & Weinstein, M. (2009). The New York City Aspiring Principals Program: A School-Level Evaluation. New York University: Institute for Education and Social Policy, August 2009.
- Cremin, L., Shannon, D., & Townsend, M. (1954). *A History of Teachers College*. Morningside Heights, NY: Columbia University Press.
- Edelfelt, R., & Raths, J. (1998). A brief history of standards in teacher education. Published by the Association of Teacher Educators. Reston, VA June 1, 1998.
- Figlio, D., & Kenny, L., (2006). Individual teacher incentives and student performance. National Center for Analysis of Longitudinal Data in Educational Research. Retrieved from www.caldercenter.org/PDF/1001069_Individual_Teacher.pdf
- Florida Department of Education (2005). FCAT Handbook – A resource for educators. Glossary
- Florida Department of Education (2007). Website.
- Gaines, G. (2005). Focus on teacher pay and incentives: 2005 Legislative actions and update on salary averages. Southern Regional Education Board, December 2005.
- Goldhaber, D. (2002). The mystery of good teaching: Surveying the evidence on student achievement and teachers' characteristics. *Education Next*, 2(1), 50 – 55.
- Goldhaber, D., & Anthony, E. (2005). Can teacher quality be effectively assessed? National Board Certification as a signal of effective teaching. Retrieved from www.urban.org/url.cfm?ID=411271
- Goldhaber, D., & Hannaway, J. (2004). Accountability with a kicker: Observations on the Florida A+ Accountability Plan. *Phi Delta Kappan*, 85(8), 598 – 605.
- Greenberg, M. (1999). Improving neighborhood quality: A hierarchy of needs. *Housing Policy Debate* (10) 3 Fannie Mae Foundation 1999.
- Harris, D., & Sass, T. (2007) The effects of NBPTS-Certified Teachers on student achievement. Retrieved from www.caldercenter.org/pdf/1001060
- Haycock, K. (1998). Good teaching matters...alot. *OAH Magazine History*, 13(1), 61-63. Retrieved from JSTOR.

- Heck, Ronald H. (1992) Principals' Instructional Leadership and School Performance: Implications for Policy Development. *Educational Evaluation and Policy Analysis* Vol. 14, No. 1, 21-34, 1992.
- Hinsdale, B. (1900). Horace Mann and The Common School Revival in The United States. New York: Charles Scribner's Sons 1900.
- Holland, R. (2005). Merit pay for teachers can common sense come to public education? Retrieved from www.lexingtoninstitute.org
- Holland, R. (2007). Value of teacher certification is questioned again. *School Reform News*, March 2007.
- Honawar, V. (2008). Model plan of merit pay in Ferment. *Education Week*, July 2008.
- Horace Mann School (2009). Retrieved from <http://www.horacemann.org/home/content.asp?id=19>
- Interstate School Leaders Licensure Consortium (1996). Standards for school leaders. Retrieved from www.ccsso.org/content/pdfs/isllcstd.pdf
- International Reading Association (2008). High stakes assessment in reading. Retrieved from www.reading.org/resources/issues/position_high_stakes.html
- Ladd, H. (1996). *Holding schools accountable: Performance-based reform in education*. Washington, D.C.: The Brookings Institution 1996
- Lexile Framework for Reading (2008). What does the Lexile Measure mean? Retrieved from www.lexile.com/EntrancePageHtml.aspx?1
- Marzano, R. (2003). *What works in schools: Translating research into action*. Washington DC: Association for Supervision and Curriculum Development.
- McCloskey, W., Stronge, J. H., Ward, T. J., Tucker, P. D., Howard, B., Lewis, K., et al. (2005). Teacher effectiveness, student achievement, & National Board Certified Teachers. Prepared for the National Board for Professional Teaching Standards. June 2005.
- McCown, G. (2004). Teacher merit pay: Prudent or pointless? *Scholastic Administrator*, April/May 2004, 52-54.
- Milken, Lowell (2009). TAP's elements of success. Retrieved from <http://www.talentedteachers.org/action/action.taf?page=elements>

- Minnesota Department of Education (2009). Quality compensation for teachers (Q Comp). Retrieved from www.education.state.mn.us/MDE/Teacher_support/QComp/index.html
- National Assessment of Educational Progress (2009). Retrieved from <http://nationsreportcard.gov/glossary.asp>
- National Board for Professional Teaching Standards (1988). The five core propositions. Retrieved from www.nbpts.org/the_standards/the_five_core_proposition
- National Board for Professional Teaching Standards (2007). Impact of National Board Certification. Retrieved from www.nbpts.org/resources/impact_of_certification
- National Board for Professional Teaching Standards (2008a). Education reform takes major step forward with announcement of 9,600 new National Board Certified Teachers in 2008. Retrieved from www.nbpts.org/about_us/news_media/press_releases?ID=462
- National Board for Professional Teaching Standards (2008b). New report affirms National Board Certification's positive impact on student achievement and learning. Retrieved from www.nbpts.org/about_us/news_media/press_releases
- National Board for Professional Teaching Standards (2008c). Why should I become a National Board Certified Teacher? Retrieved from www.nbpts.org/become_a_candidate/the_benefits
- National Board for Professional Teaching Standards (2008d). NBPTS has put itself and its certification process to the test. Retrieved from www.nbpts.org/resources/research
- National Board for Professional Teaching Standards (2008e). Initial thoughts on the Reauthorization of the No Child Left Behind Act. Retrieved from www.nbpts.org/userfiles/file/NBPTS.NCLB.pdf
- National Board for Professional Teaching Standards (2009a). History: The beginnings of a movement. Retrieved from www.nbpts.org/about_us/mission_and_history/history
- National Board for Professional Teaching Standards (2009b). Advanced Principal Certification. Retrieved from www.nbpts.org/products_andservice/advanced_principal/certi
- National Board for Professional Teaching Standards (2009c). Accomplished Principal Standards Public Review & Comment. Retrieved from www.surveymonkey.com/s.aspx?sm=wZKcjUdQTSbNDL023gPIw_3d_3d

- National Board for Professional Teaching Standards (2009d). Accomplished Principal Standards. Retrieved from www.nbpts.org/userfiles/media/apc/Full%Standards.pdf
- National Board for Professional Teaching Standards (2009e). Core Propositions for Educational Leaders. Retrieved from www.nbpts.org/userfiles/media/apc/Approved%20core%Propositions.pdf
- National Commission on Excellence in Education (1983). *A National at Risk: The imperative for educational reform*. Retrieved from www.ed.gov/pubs/NatAtRisk/recomm.html
- National Policy Board for Educational Administration (2008). Why a system of advanced certification for educational leaders should be established & supported. Informing educational policy: A Policy Brief Series from the National Policy Board for Educational Administration: August 2008.
- National Research Council (2008). *Assessing accomplished teaching: advanced-level certification programs: Committee on evaluation of teacher certification by the National Board for Professional Teaching Standards*. Washington, D.C.: National Academies Press (2008).
- Nelson, W. (2004). Teacher merit pay: Prudent or pointless? *Scholastic Administrator*, April/May 2004, 52-54.
- No Child Left Behind (NCLB) (2004). Updated chart for highly qualified teacher requirements. Retrieved from www.ed.gov/nclb/methods/teachers/hqtflexibility.html
- Oberlin College (2009). History of Teacher Education at Oberlin College. Retrieved from www.oberlin.edu/teachereducation/history
- Odden, A., & Kelley, C. (2002). *Paying teachers for what they know and do: New smarter compensation strategies to improve schools*. 2nd ed. Thousand Oaks, CA: Corwin Press.
- Ohio History Central (2009). Horace Mann. Retrieved from www.ohiohistorycentral.org/entry.php?rec=2380
- Peske, H., & Crawford, C. (2005). Teacher quality matters. Retrieved from www2.edtrust.org
- Petty, T., O'Connor, K., & Dagenhart, D. (2003) Identifying the wants and needs of North Carolina Teachers. Retrieved from www.nbpts.org/resources/research/browse_studies?ID=27 (Paragraph 4)

- Prince, C., Koppich, J., Azar, T., Bhatt, M., & Witham, P. (2009). Center for Educator Compensation Reform: Research Synthesis. Retrieved from www.cecr.ed.gov/guides/researchsyntheses
- Ravitch, D. (2003). A brief history of teacher professionalism. White House conference on preparing tomorrow's teachers. Retrieved from www.ed.gov/print/admins/tchrqual/learn/preparingteachersconference/ravitch.html
- Riggins-Newby, C. (2004). Urban connections: Turning around urban schools. *The Turnaround Principal* September/October 2004, p.8.
- Rivkin, S., Hanushek, E., & Kain, J. (2005). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417 – 458.
- Rockoff, J. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review*, 94(2), 247-252.
- Rosner, B. (1972). The power of competency-based teacher education: Report of the Committee on National Program Priorities in Teacher Education. Washington, D.C.: National Center for Educational Research and Development.
- Sanders, W. (2009). Dr. William L. Sanders. Retrieved from http://www.sas.com/govedu/edu/bio_sanders.html
- Sanders, W., Ashton, J., & Wright, S. (2005) Comparison of the effects of NBPTS-Certified Teachers with other teachers on the rate of student academic progress. Retrieved from http://eric.ed.gov/ericdocs/data/ericdocs2sql/content_storage_01/0000019b/d3/09.pdf
- Sanders, W., & Rivers, J. (1996). Cumulative and residual effects of teachers on future student academic achievement. Retrieved from www.mccsc.edu/~curriculum/cumulative%20and%20residual%20effects%20of%20teachers.pdf
- Scholastic Incorporated (2005). *Read 180: Placement, Assessment, and Reporting Guide*. New York, NY: Scholastic 15, 16, 20, 21, 28, 40, and 41.
- Schroeder, C. (2006). Florida State Board of Education approves first STAR plan. Florida Department of Education Press Release. October, 2006.
- Seminole County Public Schools (2007). K-12 Comprehensive research based reading plan.

- Seyfarth, J. (2002) *Human Resources Management for Effective Schools*. New York: Pearson Education, Inc. 174-175.
- Seyfarth, J. T. (2005) *Human Resources Management for Effective Schools*. Boston, MA: Pearson
- Smith, G. P. (2000) Transforming workers to winners: Taking your workforce to higher levels of performance. Retrieved from westga.edu/bquest/2000/winner
- Southeast Regional Advisory Committee (2005). A Report to the U.S. Department of Education On Educational Challenges and Technical Assistance Needs For the Southeast Region. March 2005.
- United States Department of Labor. (2009). Merit pay. Retrieved from www.dol.gov/dol/topic/wages/meritpay.htm
- Vandevoort, L. Amrein-Beardsley, A., & Berliner, D. (2004) National Board Certified Teachers and their student's achievement. *Education Policy Analysis Archives*, 12(46). Retrieved from <http://epaa.asu.edu/epaa/v12n46/>
- Vu, P. (2007). States venture into teacher performance pay. Retrieved from www.stateline.org/live/details/story?contentId=246599
- Weisberg, D., Sexton, S., Mulhern, J., & Keeling, D. (2009) The widget effect: Our national failure to acknowledge and act on differences in teachers effectiveness. The New Teacher Project, 2009. Retrieved from www.widgeteffect.org
- Weitzel, S., & Shockley, C. (2006). *Florida's Children At A Glance, 2006*. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, Department of Child and Family Studies, Center for the Study of Children's Futures.
- Whitehurst, G. (2002). Scientifically based research on teacher quality: Research on teacher preparation and professional development. White House Conference on Preparing Tomorrow's Teachers. March, 2002.
- Whoriskey, P. (2006). Florida to link teacher pay to students' test scores. Washington Post: March 22, 2006.