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A Mixed Methods Examination of the Impact of National Board Certified Teachers in Central Kentucky

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A Mixed Methods Examination
of the Impact of National Board Certified Teachers
in Central Kentucky

By

Susan Michelle Boulden

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of the Impact of National Board Certified Teachers
in Central Kentucky

By

Susan Michelle Boulden

Doctor of Education
Eastern Kentucky University
Richmond, Kentucky
2011

Submitted to the Faculty of the Graduate School of
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for the degree of
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ABSTRACT

The NBPTS was created in response to a call from *A Nation at Risk* (National Commission on Excellence in Education, 1983) and *A Nation Prepared* (Carnegie Forum, 1986) to ensure improved student academic performance in the United States. The mission of NBPTS is to establish rigorous standards for what teachers should know and be able to do, develop a voluntary national system to assess and certify teachers who meet these standards, and improve student learning in schools across the United States of America (Rouse & Hollomon, 2005). The ultimate goal of this process is to place effective, highly qualified teachers in classrooms, thus improving student performance.

A variety of books on program evaluation as it relates to NBPTS are available, including *Advances in Program Evaluation* (Ingvarson & Hattie, 2008) and *Assessing Accomplished Teaching: Advanced Level Certification Programs* (Hakel, Doenig, & Elliot, 2008), but they only evaluate portions of the certification process, the assessments, and parts of the five core propositions. Additionally, the nbpts.org website contains numerous articles which evaluate portions of the program. However, a holistic, formal evaluation of this program is not available. Without the evaluation element, it is difficult to assess the effectiveness of a policy (Fowler, 2009).

The goal of this study is to evaluate the National Board Certified Teacher program in Fayette County. It must be determined if the certification process is enabling candidates and recipients to make the gains and professional contributions that they are expected to make upon receiving this national credential. The Fayette County Board of Education provided a data set of elementary school RIT scores for more than 3500 students from the 2009-2010 school year. Additionally, Fayette County Elementary School teachers working in a building with at least one National Board Certified Teacher were surveyed to gain insight into the impact that NBCTs have on their colleagues in regards to instruction, assessment, and behavior management. The research is a mixed-methods study, utilizing both one-sample and independent sample t-tests, along with descriptive survey data. The independent variables for each hypotheses were whether or not teachers held their National Board Certification and

student race and SES, measured by participation in the free and reduced lunch program. The dependent variable for the first four hypotheses is student growth as measured by a RIT score in reading, and the dependent variable for the fifth hypotheses included the number of others teachers had assisted with instruction, student behavior, assessment, or any other mentoring type activities.

The analysis of data resulted in the following findings: second and third grade NBCTs in the Fayette County Public School had significantly greater RIT growth in the area of reading than non-NBCTs. However, there was not a significance difference in RIT growth for fourth and fifth NBCTs and non-NBCTs. In regards to impacting colleagues, the data revealed that the teachers surveyed did not indicate that NBCTs provide more help in the areas of behavior management, instruction, and assessment than non-NBCTs. However, when both groups of teachers self-reported the numbers of colleagues they had assisted during the school years, NBCTs assisted a significantly greater number of teachers than non-NBCTs in the area of assessment. Additionally, the data indicates that 4.6% of the teaching population (NBCTs in Fayette County Elementary Schools) is providing 33% of all mentoring activities that aid in developing the instructional capacity of teachers within the sampled school buildings.

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CHAPTER ONE

INTRODUCTION

Throughout the 1900's, many initiatives have been implemented to improve the condition of public education in the United States. In the early 1900's, John Dewey, a member of the American Pragmatist movement, argued that in order for children to learn deeply, they must be exposed to experiential education that would help students to learn both theory and practice simultaneously. In order to ensure this type of learning, teachers must present materials in a way that elicited such experiences (Peterson, 2010). President Johnson's War on Poverty propelled educational issues for students of low socioeconomic status into the limelight. As a push for a Great Society emerged, the Elementary and Secondary Education Act (ESEA) was passed by Congress and Title I surfaced as a means to improve schools that serviced a great number of students in need (DeBray, 2006). Additional instruction was provided to students through various methods. This act has seen many revisions since 1965, but Title I and its intention to mold and change education for public school students remains an important piece of legislature even today.

A new wave of reforms emerged in response to *A Nation at Risk* (National Commission on Excellence in Education, 1983). This document placed a spotlight on the need for higher graduation requirements, more standardized curriculum, increased teacher and student testing, and higher certification requirements for teachers. Later research published in the late 1980's by Goodlad, Sizer, and Boyer advocated reforms that included decentralization, site-based decision making, greater teacher empowerment and parental involvement, and increased use of technology (Marino, 1988).

The 1990's continued to include educational reform in politics and federal policymaking. President Clinton's Goals 2000 focused on a variety of elements. This policy called for increased

accountability for schools and teachers that required using standards to drive curriculum. It also advocated for inclusion of special populations in schools and in accountability scores. Specific reforms impacting students and parents were also considered including block scheduling, school choice, and charter schools (DeBray, 2006).

Reforms to education continue to be a political issue even in the 2000's. During the Bush administration, the No Child Left Behind Act (NCLB) attempted to continue to transform public education. Many goals of this act contain portions of reforms described above. NCLB included goals such as all students in grades three through eight would be tested in both reading and mathematics. All tests must be aligned with standards. Accountability continued to be a focus and the act required that all schools and teachers demonstrate adequate yearly progress and that all students would reach a level of proficiency by 2014. Additionally, all schools must have highly qualified teachers by 2005. Parent and student choice continued to be a part of reform including maintaining a focus on charter schools (DeBray, 2006).

These reforms are just highlights of practices put into place to improve public education in the last 100 years. Some have focused on curriculum and standards, while others have focused on parent and student choice. However, one common thread that binds each of these reforms is that of the teacher. In order to ensure quality learning, the policy advocate for each reform understood that changes must take place at the school level with the classroom teacher. While some reforms focused on instructional practices, others focused on the role of the teacher in the building. Some focused on instructional monitoring, and others focused on teacher quality and certification. Even though policy makers cannot agree on exactly what teachers should do to enact educational reform, they seem to acquiesce that teachers play an important role in educational change. The National Board for Professional Teaching Standards

(NBPTS) created a way to identify quality teachers who were able to impact both student learning and the professional community through a national teacher certification process.

Rationale for Program

In 1987, the NBPTS was created in response to a call from *A Nation at Risk* (National Commission on Excellence in Education, 1983) and *A Nation Prepared* (Carnegie Forum, 1986) to ensure improved student academic performance in the United States. One goal of this organization is to recognize accomplished teachers through a system of advanced, national certification. The mission of NBPTS is to establish rigorous standards for what teachers should know and be able to do, develop a voluntary national system to assess and certify teachers who meet these standards, and improve student learning in schools across the United States of America (Rouse & Hollomon, 2005). The ultimate goal of this process is to place effective, highly qualified teachers in classrooms, thus improving student performance.

Founded on the idea that the characteristics that make teachers effective can be identified and evaluated, the NBPTS desires to replicate these factors in order to improve student achievement and learning (Goldhaber & Anthony, 2005). In order for National Board Certification to be considered effective, it must impact the students in the classrooms.

Purpose of Study

As state and national funding become more scarce, legislators are faced with the task of cutting and reallocating funds. Thirty-five states currently allocate funds to assist teachers in pursuing their National Board Certification (NBC) (Hakel, Koenig, & Elliot, 2008; NBPTS, 2010). Additionally, in thirty-two states, teachers earning this certification receive monetary compensation ranging from \$500 to \$10,000 per year, depending upon the state or district. Many states, including Kentucky, also provide mentors to assist teachers with the NBC process.

Podgursky (2001) estimates that more than \$600 million in grants and fees, and more than \$1 billion in salary incentives have been spent on National Board Certification since the first certificates have been awarded. These significant investments raise questions as to whether or not such expenditures are justified based on NBPTS's impacts and outcomes (Boyd & Reese, 2006). As lawmakers continue to face difficult decisions around financial allocations, questions surrounding the impact of NBCTs on student achievement are increasingly significant. Answers to these important questions may help politicians to determine which reforms to support and which ones have the greatest impact on students.

The goal of this study is to evaluate the National Board Certified Teacher program in Fayette County. It must be determined if the certification process is enabling candidates and recipients to make the gains and professional contributions that they are expected to make upon receiving this national credential. Questions about cost effectiveness of NBCTs at the local, state, and national level cannot be explored until the certification program is evaluated both formally and informally. Therefore, the study is not about the cost of certification, but finances are an important underlying issue concerning NBC.

This study will focus specifically on Kentucky National Board Certified Teachers. It will use databases from Fayette County Public Schools to determine: a). if NBCTs serving in the elementary schools elicit greater reading gains on the MAP reading assessment than non-NBCTs; and b). if the NBCTs in this district develop the instructional capacity of other teachers at a greater rate than their non-NBCT colleagues.

Research on National Board Certification

Scant research exists on the effects of National Board Certification on student achievement. Specifically, few peer reviewed studies exist that link NBPTS certification with student outcomes. Some of the studies suggest that National Board Certified Teachers (NBCTs)

increase student achievement by as much as .5 standard deviations in math and reading (Clotfelter, Ladd, & Vigdor, 2006, 2007; Goldhaber & Anthony, 2007; Cavaluzzo, 2004; Cantrell et al., 2007), while others conclude that there is no performance difference between students taught by NBCTs and a comparison group of non-NBCTs (Harris & Sass, 2006; Sanders, Ashton, & Wright, 2005). Researchers and policy-makers alike must determine if these kinds of limited gains are sufficient when faced with the academic growth needs of the entire school population, particularly considering the needs of minority and low-income students. In many of these studies, researchers and reviewers suggest that there are data shortcomings because of low sample size (Boyd & Reece, 2006) and failure to control for student demographics (Goldhaber & Anthony, 2005). Other studies exist that have not been peer reviewed (Boyd & Reece, 2006). Collectively, the research from the peer reviewed and non-peer reviewed studies is contradictory and inconclusive.

Not only is there inconsistent evidence linking individual National Board Certified Teachers with increased student achievement data, the evidence that the presence of NBCTs in a school and district does have an impact on student achievement is also conflicting. Koppich (2006) and Sykes (2006) found that NBCTs have a very limited impact in their school systems, while Frank (2008) and Yankelovich Partners (2001) suggest that NBCTs have an indirect impact on student achievement through spillover effects. Frank defines spillover effects as a secondary effect that follows a primary effect (2008). These secondary effects may or may not be far removed in time and place from the primary effect. Therefore, effects that NBCTs have on students and student achievement may or may not be discernable or measureable. If NBCTs do have an indirect impact on student achievement, they may also have the potential to influence the culture and climate of a school.

There are a variety of factors directly affecting school culture and climate, one of which is teacher collaboration. Gruenert (2000) explored the impact of teacher collaboration on climate and culture and determined that this phenomenon was so influential that rewarding the efforts of teachers to increase collaboration would be a motivating factor in shaping and improving school culture and climate. Not only is collaboration important, mentoring provided by teachers also affects school climate and culture. Additionally, teacher mentoring has the potential to directly impact student achievement (Gruenert, 2000). Two of the four elements determined to impact school culture and climate, including defining school culture and implementing structures and opportunities to mentor, are directly influenced by teachers (Gruenert, 2000). If NBCTs do mentor a greater rate than their non-NBCT peers, it can be inferred that these teachers have the ability to play an indirect role in determining the climate and culture of an individual school building.

Frank et al., (2008) found that National Board Certified Teachers were identified by their own peers as providing more help to colleagues in instructional matters than non-NBCTs. Using a value added approach, they demonstrated that National Board Certification affects the number of peers a teacher helps with instructional issues. In addition, Park, Oliver, and Johnson (2007) found NBCTs play a role in professional development. Specifically, this research showed that NBCTs affected professional development: by increasing reflection on personal teaching practices, establishing a school community focused on professional discourse, raising standards for teacher performance, and facilitating collaboration (2007).

The results from a qualitative case study completed in a rural Alabama school are consistent with these findings. In the course of the study, thirteen teachers, or 50% of the certified staff in the school building earned their National Board Certification. As more teachers earned the certification, professional learning communities began to develop, and teacher

leadership began to emerge. Teachers held themselves and their colleagues personally responsible for achievement and growth within the school. The overall student achievement in the school increased. The principal attributes the change in school culture and climate to the leadership provided by the NBCTs in the building (Berry, Johnson & Montgomery, 2005).

Inquiry Framework

This study will utilize a mixed methods approach that incorporates quantitative and qualitative data. Because of the contradictory research on NBCT impact on student achievement, it is important to determine if NBCTs in Fayette County produce greater reading gains on the MAP assessment than their non-NBCT colleagues. Administrators will be able to use this information to make decisions about NBCTs in the district, including where to place these teachers, and deciding if an additional monetary investment may be warranted to encourage teachers to pursue the certification. A significant positive relationship between NBCTs and student achievement may lead to further exploration of the importance of NBCTs impact on other factors, such as school culture, that lead to higher levels of student achievement.

The first question in this study is designed to answer a “what” or “how much” question. Therefore, it will also be important to explore “how” and “why” if it is determined that NBCTs do have a significant positive impact on a school’s student achievement data in the area of reading. It will be important to focus upon individual teacher input to determine in what ways National Board Certified Teachers are impacting the culture and climate of their individual school buildings and districts, especially as it relates to developing the instructional capacity of individual teachers and the building as a whole. Survey questions will allow individual teachers to give input and provide insight into this phenomenon. The study will encompass open and closed-ended questions. By utilizing mixed methods, a better picture of the impact of National Board Certified Teachers will emerge.

Research Questions

Even though teachers have been earning the title of National Board Certified Teacher for more than seventeen years, research on the impact of these teachers in their professional community and on their colleagues is still in its infancy. The potential exists for NBCTs to have an impact on the professional community as a whole, and therefore, on student achievement. The National Board for Professional Teaching Standards includes as its fifth core proposition that *teachers are members of learning communities* (NBTPS, 2009). Thus, it is important to ascertain whether NBCTs are taking on this role, and if so, if their involvement is impacting teacher growth and leading to increased student achievement.

The research questions to be explored are:

- 1) Do NBCTs in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-NBCTs for students in second through fifth grades?
- 2) Do NBCTs in Fayette County elementary schools influence the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?

As question one is explored, additional analysis will occur to determine if NBCTs have an effect on the performance of both African American students, and students receiving free or reduced lunch (SES). This is not a primary or driving question of the study, but one that will be investigated as the student achievement data is analyzed. Humphrey, Koppich, and Hough (2005) cited a 2004 Texas study by The Teaching Commission that attributed half the difference in test scores between white and African-American students to variation in teacher quality. They also report that quality teachers make a marked impact on the achievement of minority and low socioeconomic students. Because National Board Certification is one means by which

teacher quality can be measured, findings for these groups of children will be determined from this data set throughout the study.

Limitations

A limitation of the study is the data set of MAP scores provided by the school district. Fayette County has been using the MAP assessment for three years, and the data set provided was from the second year of MAP implementation. During this year, only about two thirds of the district elementary schools were participating in this assessment. Many schools that participated only reported spring scores, so numerous scores in the original data set had no fall matches and had to be discarded because a RIT growth could not be determined. However, the sample size included more than 1000 student scores that could be directly matched to teachers and their individual certification. This sample was representative of the district's population including race, free and reduced lunch, and special education.

Another limitation is the relatively low number of National Board Certified teachers in the state of Kentucky. Even though Kentucky ranks 12th in the number of NBCTs nationwide, there are only 1,864 of these teachers in the state. This is less than 2% of Kentucky public school teachers. These 1,864 teachers are dispersed inequitably through the state, with many districts and schools having no NBCTs on staff. In Fayette County, the district that is the focus of the study, there are currently sixty six NBCTs serving in the elementary schools. This number represents 4.6% of the elementary teaching population of the district. Therefore, a slight overrepresentation of NBCTs occurs within the district. This inequitable dispersion will impact the ability of the findings to be generalized to the state.

Other limitations include the use of teacher surveys. This mode of research has the common limitation of a limited participant response. A low response to this survey will decrease the power and generalizability of the data. While open-ended surveys provide

contextual information, teachers may or may not be reflective and forthcoming in their answers. Also, the surveys will be distributed in twenty-two elementary schools in a central Kentucky district. These surveys will involve about 66 NBCTs. All of the National Board Certified teachers participating in the survey portion of this study teach in Central Kentucky. Therefore, the findings may not be representative of the NBCT population statewide. Additionally, findings will not be generalizable to the entire NBCT population.

An additional limitation is possible researcher bias. The researcher is employed by Fayette County Public Schools and is also a National Board Certified Teacher with an Early Childhood Generalist certification. While the researcher was careful to remain objective and analyze and report raw data, it is possible that bias could play an unseen role in the execution of the research and the analysis of the data.

Definition of Terms

National Board for Professional Teaching Standards (NBPTS). A private organization charged to articulate accomplished teacher standards, to define what effective teachers should know and be able to do, and to recognize such accomplished teachers through certification.

National Board Certified Teacher (NBCT). A teacher who has successfully completed the NBPTS process and has earned the National Board Certification.

Teacher Leaders. Teachers who play a role in instructional decisions that impact students regardless of positional authority. These teachers lead instructional improvement by sharing specialized content and knowledge with their colleagues. One of the Core Propositions of NBPTS is that NBCTs take on this role in their schools.

Shared Leadership. A distributed form of leadership in schools that cultivates teacher leaders through teacher involvement in leadership work, inquiry based decisions, collaborative roles and responsibilities, norms that include innovation and reflection, and the use of teams

focused on school-wide goals. The NBPTS advocates that NBCTs add to the professional learning community through these kinds of roles.

Instructional Capacity. The ability of teachers to achieve the goal of helping all students, regardless of gender, race, socioeconomic status, or ethnicity, to reach high standards of achievement (Corcoran, T. & Goertz, M., 1995).

MAP Test. Measure of Academic Progress assessment developed by the Northwest Evaluation Association (NWEA). This computer based assessment offers measures in both reading and mathematics, grades kindergarten through twelve. It provides teachers and parents with an assessment of a student's ability, measuring both what a child knows and needs to know (nwea.org, 2011).

RIT. A scale developed and used by NWEA to measure student achievement and student growth. This equal-interval score relates to a curriculum scale in each subject area (math and reading) and is used to trace a student's educational growth from year to year on the MAP assessment (nwea.org, 2011).

Significance of the Study

Lawmakers hold the key to continuing to fund the National Board certification process. Without this financial assistance many teachers will not be able to afford to pursue this certification on their own. In order to make informed economic decisions, it is important to determine what kinds of influence, if any, NBCTs have on school improvement and student achievement. Legislators will be able to use this knowledge to determine not only if they should continue to support this process, but also if there are strategic ways in which NBCTs can be used throughout the state to improve student learning and performance.

Because the study focuses specifically on Fayette County Public Schools, specific implications may emerge for the administrators and principals in this district. It may be that the

Fayette County Public School district may benefit from placing current NBCTs more strategically in low achieving schools, and encouraging existing NBCTs to serve as mentors and school leaders in their buildings and in the district. The students in low achieving schools are often making the required RIT growth each year. However, in order for these at-risk students to accelerate and close the achievement gap, they need to make more than one year's growth during the academic school year. By assigning these students to a NBCT several years in a row, the chances of these students having accelerated growth increases (Hanushek, 1992; Darling-Hammond, cited in Ingvarson and Hattie, 2007). Likewise, new teachers join staffs each year and need to be acculturated into the school and district norms. Therefore by encouraging NBCTs to aid in building the instructional capacity of the building, the highest and lowest achieving schools may have the potential to increase the professionalism and individual strengths of their entire staffs.

Summary

While there is contradictory evidence connecting individual National Board Certified Teachers with increased student achievement data, there is evidence that the existence of National Board Certified Teachers (NBCTs) in a school and district does have an impact on student achievement at these levels (Clotfelter, Ladd, & Vigdor, 2006, 2007; Goldhaber & Anthony, 2007; Cavaluzzo, 2004; Cantrell et al., 2007). One possible indirect effect is the positive impact that NBCTs have on their colleagues and school culture through their endeavors as teacher leaders.

CHAPTER TWO

REVIEW OF THE LITERATURE

Education reform has been a continuous theme since the 1980s. As the balance of authority between federal, state, and local levels of government shifted, the concept of educational standards moved from a local, to a state, to a national issue (Fuhrman & Elmore, 1990). Presidents began exerting their power to influence educational policy. By the 1990s, President Clinton's agenda included promoting national standards for public school students. These were not federal mandates but were highly encouraged by the federal government (Mintrom & Vergari, 1997).

Policymakers and educators alike came to believe that an important policy strategy for promoting student learning and teacher professionalism was that of national standards for teachers (Darling-Hammond, cited in Ingvarson & Hattie, 2007). By the late 1980s, several reports calling for standard setting for teachers were published. The National Commission on Teaching and America's Future (1996) argued that:

Standards for teaching are the linchpin for transforming current systems of preparation, licensing, certification, and ongoing development so that they better support student learning. (Such standards) can bring clarity and focus to a set of activities that are currently poorly connected and badly organized. Clearly, if students are to achieve high standards, we can expect no less from their teachers and from other educators. Of greatest priority is reaching agreement on what teachers should know and be able to do to teach high standards. (p. 67)

If students were to achieve high standards, then high quality and effective teachers would be necessary.

This literature review will trace the history and goals of the National Board for Professional Teaching Standards (NBPTS). It will consider the characteristics that the NBPTS has set forth for its certified teachers and explore the relationship that National Board Certification

has with teacher performance and student achievement. It will focus primarily on the goal of teacher contribution to the professional learning community through leadership and impact on instructional practice within the school building, along with teacher impact on individual student achievement.

The Policy Context

Fowler (2009) describes public policy as the dynamic and value-laden course of action that the political system employs to deal with public problems. The implementation of the National Board for Professional Teaching Standards (NBPTS) and the subsequent formation of National Board Certification (NBC) contain elements of several policy models. Lerner and Lasswell (1951) proposed that policymaking occurs in a series of sequential stages through which a problem or question must go in order to become policy. The stages this model addresses are those of issue definition, agenda setting, policy formulation, policy adoption, and implementation. Hofferbert's (1974) heuristic model is a six-stage process in which each stage is impacted by independent actors. The stages include historic and geographic conditions, socioeconomic composition, mass political behavior, governmental institutions, and elite behavior. Each of these conditions is evident in the implementation of NBPTS.

Elements of each model appear in the establishment of the National Professional Teaching Standards Board. The policy follows the classic stages model, as illustrated in Figure 1. But without the window of focus on standards and quality education, financial support for this certification likely would have been difficult to achieve. An historic overview of how this policy became part of the public education system follows.

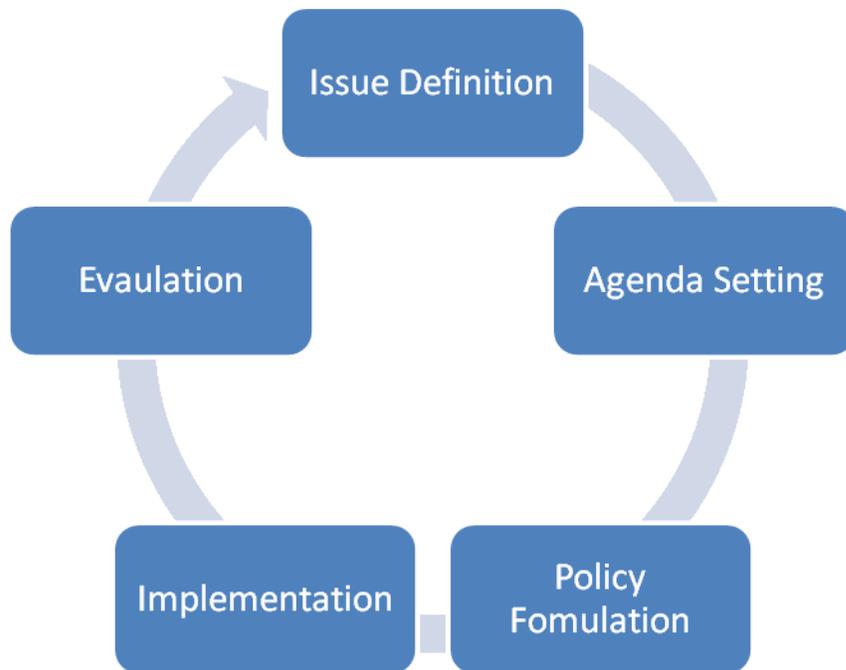


Figure 1. A Diagram of the Policy Process

Source: Fowler, F.C. (2009). *Policy studies for educational leaders: An introduction* (3rd ed). Boston: Allyn & Bacon.

Issue Definition

The 1983 publication of *A Nation at Risk* propelled educational problems (mediocre educational performance, lack of gains in student achievement, steady decline in SAT scores from 1963-1980, increase in four year college remedial math classes, and the statistic that the achievement scores of one half of all gifted students did not match their ability score (National Commission on Excellence in Education, 1983) to public spotlight (Fowler, 2009; Ingvarson & Hattie, 2007; Hakel, Koenig, & Elliot, 2008). In addition to citing needs for improvement in the field of education, *A Nation at Risk* (1983) made recommendations regarding the teaching profession, especially in regards to certification, salary, and working conditions. The authors described teacher working conditions and professionalism as unacceptable. They cited “a teacher shortage, teacher candidates of low ability level, inadequate content coverage in teacher education programs, low average salaries, and teachers teaching subjects for which they

were not qualified” (Thompson, 2007, p. 24). They advocated for increased professional development for teachers, funding increases for teacher pay, and basing teacher salaries on student performance (National Commission on Excellence in Education, 1986).

Like *A Nation at Risk* (1983), *A Nation Prepared* (1986) contended that in order to improve public schooling, teaching standards must be raised. Because teacher compensation was inadequate, the profession did not attract the most qualified candidates for ensuring that the country would produce graduates capable of taking their place in the marketplace and business world. Therefore, in order to improve the teaching force, standards for the profession, along with monetary compensation must be addressed. This would be accomplished through 1) strengthening their educational preparation by requiring a bachelors degree in the arts and sciences, 2) revamping their compensation system to make teacher salaries and career opportunities competitive with other professions, 3) creating a professional environment for teaching that allows teachers to decide how to best meet state goals for students while at the same time holding teachers accountable for student progress, and 4) raising the standards for teachers through the creation of a National Board for Professional Teaching Standards (Carnegie Forum on Education and the Economy Task Force on Teaching as a Profession, 1986). The publication of this document cast educational problems and teacher compensation as a pressing public issue.

Improving the teaching force continues to be an issue in education. A variety of methods have been employed to address teacher preparation and improve public education. Teacher practices are a focus of teacher preparation programs. Among practices that are currently focused upon in university programs are the use of higher order questioning, using manipulatives and concrete examples, and using student assessment to determine if students have met goals and standards (Cochran, 2000). Additionally, Long (2010) identifies the use of

cohort delivery models and professional learning communities to strengthen teaching in the public school system. These types of models are ones which NBPTS advocate through their five core propositions.

Agenda Setting

The 1983 publication of *A Nation at Risk* propelled educational problems from a social concern to a formal policy issue (Fowler, 2009; Ingvarson & Hattie, 2007; Hakel, Koenig, & Elliot, 2008). Heightened awareness of educational challenges characterized the United States. President Reagan used this document to redefine concerns over the educational system in terms of a national need for increased excellence (Fowler, 2009). Three years later the Carnegie Forum on Education and the Economy Task Force on Teaching as a Profession published *A Nation Prepared* (1986). This report argued that if the United States was going to remain a vibrant globally competitive democracy, schools must graduate their students with high achievement levels. To meet this goal, standards were going to have to be raised for teachers (Carnegie Forum on Education and the Economy Task Force on Teaching as a Profession, 1986). With the distribution of these documents, the importance of the teacher in a quality education became newly defined and an important policy issue in American education.

Policy Formulation

Based on the recommendations in *A Nation Prepared*, a 1987 planning group began to study and make decisions about the direction and structure of the National Board of Professional Teaching Standards. This group was chaired by former North Carolina Governor James B. Hunt, Jr. The group stipulated that the majority of its members would be teachers who were currently active in the classroom (NBPTS, 2009; Ingvarson & Hattie, 2007; Hakel, Koenig, &

Elliot, 2008). The agenda for this group that would eventually evolve into the NBPTS Board of Directors included the following questions:

- 1) What will certification represent?
- 2) How should certification be structured?
- 3) What skill levels should certification signify?
- 4) What type and combination of tests should be used for assessment?
- 5) What is the connection between board certification and teacher education?
- 6) How can consistent assessment procedures be maintained?

The group focused their efforts on determining the answers to the questions: *What should teachers know?* and *What should teachers be able to do?* They elicited input from organizations, experts, and educators (Kelly cited in Ingvarson & Hattie, 2008). As the answers to these questions were determined, the policy that would become the National Board Certification process was formulated (Eric Clearinghouse on Teacher Education Washington, DC, 1988).

Funding for the NBPTS came from a variety of private foundations including the Carnegie Corporation of New York and several leading United States corporations. Later, through the leadership of President Bill Clinton, the federal government also provided financial support. However, neither private corporations nor the federal government had any influence over the standards, policies, or assessments related to NBPTS (Kelly cited in Ingvarson & Hattie, 2008).

Policy Implementation

This board spent five years determining the answers to their guiding questions and establishing explicit teaching standards in a variety of certification fields. The certification was to be an endorsement by a professional body i.e., the NBPTS, that a teacher had attained a

specific and rigorous set of professional performance standards. It was performance-based and not meant to be an academic qualification (Ingvarson & Hattie, 2008). The NBPTS modeled this certification on those of the medical and legal professions and intended it to be a national endorsement (Wolf & Taylor, cited in Ingvarson & Hattie, 2008). This certification system is a means by which the teaching profession can define and describe teaching standards and recognize professionals who meet the standards. By having this process in place, the standards educators are to meet in order to improve schools, the profession, and student achievement are clear (Ingvarson & Hattie, 2008).

Obstacles to Policy Implementation

As Fowler declares, “the mere fact that a president, legislature, or court has promulgated a policy does not mean that people will immediately execute their orders; in fact, many official policies are never implemented at all, and many others are implemented only partially or incorrectly” (2009, p. 269-270). Three generations of research have been conducted on the difficulties of policy implementation. Research shows that some policies are easy to implement, but others prove to be complicated. Nakamura and Smallwood define implementation as the stage in a policy process when the policy is formally adopted and put into place (1980). They assign roles during the implementation stage. The formal implementers are those who have the power to put a policy into effect. The intermediaries are those to whom the responsibility for implementation has been delegated (Nakamura & Smallwood, 1980). In order for a policy to be successfully implemented, not only do the intermediaries need to possess the will to implement the policy, they also must possess the ability, or as Spillane and others define it, capacity (Spillane, Reiser & Reimer, 2002).

At first glance at the implementation of National Board Certification, it seems that this is a policy that has been easily implemented. The NBPTS took on the role of formal implementer,

and individual state and local governments assumed the role of the intermediaries. This policy even had the support of both national teacher unions. NBC represents the first time in United States history that teacher unions were willing to accept any form of measuring teacher quality as a reason for salary increases (Kelly, cited in Ingvarson and Hattie, 2007). Many states quickly embraced the certification and began using it as a measure of teacher quality. Advocates for NBC asserted that it represented a unity of teacher unions, subject matter associations, and various professional groups. Additionally, it represented a status that rewarded teachers in a variety of manners (Sykes, cited in Ingvarson and Hattie, 2007).

However, upon further investigation, it can be inferred that many state and local governments, who took on the role of the intermediaries, did not have either the will or capacity to implement the policy. This is evidenced through teacher participation in the certification. Some states, such as Florida and North Carolina, currently employ more than 10,000 NBCTs each (nbpts.org, 2011). Both of these states had governments that valued the certification and created incentives for teachers to pursue and earn their NBC. Other states, such as North Dakota and New Hampshire, currently have less than 100 NBCTs on staff in the entire state (nbpts.org, 2011). Neither of these state governments has endorsed incentives for teachers to engage in this type of professional development. Funding between states is neither equal nor equitable for teachers across the nation. The broad range of financial incentives and support for teachers pursuing NBCT suggests that while some of the intermediaries had the will and the capacity to support the certification, others did not.

Gross et al. (1971) discusses four circumstances that might cause policy implementation to fail:

- 1) Implementers not having the understanding of what they are to do.
- 2) Implementers lacking the knowledge or skills to implement a policy.

- 3) Implementers not having adequate resources to apply a policy.
- 4) Implementers not having adequate time to execute a policy.

Because no national incentives exist for teachers attempting NBC, and no federal funds are allocated to enhance the salaries of NBCTs, one resistance of many state and local governments might simply be that a direct relationship between student achievement and NBCTs has not been established, and because of this, they are unwilling to allocate funds to such a program. Regardless of the reasons, it is clear that the implementation of NBCT has had a variety of hidden obstacles.

Policy Evaluation

Fowler (2009) asserts that evaluation is an integral part of policy implementation. This stage in the policy process is designed to determine if the policy has been successfully implemented. Based on findings, the policy is then changed, maintained, or terminated. However, like the other stages of policy implementation, this stage has a variety of difficulties. Fowler (2009) has determined seven steps to assist in policy evaluation:

- 1) Determine the goals of the policy
- 2) Select indicators
- 3) Select or develop instruments for data collection
- 4) Engage in data collection
- 5) Perform an analysis and summary of the data
- 6) Provide a written evaluation report
- 7) Respond to the recommendations of the evaluators

These steps indicate a formal, well-thought out process that measures the goals that a policy is intended to achieve. The purpose of such evaluations is to hold policy implementers accountable and to determine the effectiveness of the policy and its impact.

Many effective policies begin implementation with an expectation of what will be evaluated and how it will be evaluated. Successful evaluations include the use of formative and summative evaluation (Fowler, 2009). By utilizing both types of evaluation, policy implementers are able to make changes in the policy as it is implemented to ensure its success. Many times federal and state policies are evaluated before a bill is to be revisited. However, because NBPTS is not a federal program, but funded by private funds, such a renewal is not an issue.

It is not clear how the originators of NBPTS decided to evaluate this policy. A variety of books on program evaluation as it relates to NBPTS are available, including *Advances in Program Evaluation* (Ingvarson & Hattie, 2008) and *Assessing Accomplished Teaching: Advanced level Certification Programs* (Hakel, Doenig, & Elliot, 2008), but they only evaluate portions of the certification process, the assessments, and parts of the five core propositions. Additionally, the nbpts.org website contains numerous articles which evaluate portions of the program. However, a holistic, formal evaluation of this program is not available. Without the evaluation element, it is difficult to assess the effectiveness of a policy (Fowler, 2009).

National Board Certification Candidacy

In the 1993-1994 school year, the NBPTS was ready for National Board Certification candidacy. More than 500 teachers submitted portfolio entries and took National Board Certification Exams that year. Only 35% of those teachers, 177, succeeded in achieving National Board Certification credentials (NBPTS, 2009). The number of candidates, along with the number of teachers achieving National Board Certification, has increased each subsequent year. The total number of NBCs in 1994 was 177. That number has swelled to more than 73,485 total National Board Certified teachers in the 2007-2008 school year (NBPTS, 2009).

The number of available types of certification has also increased. There were 26 certification fields available in 2008 (NBPTS, 2009). These certifications include specialists in each level of American schooling: elementary, middle, and high school.

With the support of both the National Education Association and the American Federation of Teachers, NBC continues to be a benchmark for accomplished teaching. Many states offer monetary compensation for teachers earning their NBC. As with the implementation of many policies, some states have aggressively seized the opportunity to encourage teachers to pursue National Board Certification, while others have been cautious. This caution may be rooted in the unwillingness to offer federal financial incentives for NBCTs. “Consequently, while the ultimate impact of this enterprise will be determined in part by the National Board’s own work, it also rests on the actions of state and local authorities as well as on the decisions of individual teachers” (NBPTS, 2004, p.2).

Thirty-five states currently allocate funds to assist teachers in pursuing their National Board Certification (NBC) (Hakel, Koenig, & Elliot, 2008; NBPTS, 2010). Additionally, in thirty-two states, teachers earning this certification receive monetary compensation ranging from \$500 to \$10,000 per year, depending upon the state or district. Many states, including Kentucky, also provide mentors to assist teachers with the NBC process. Podgursky (2001) estimates that more than \$600 million in grants and fees, and more than \$1 billion in salary incentives have been spent on National Board Certification since the first certificates have been awarded. These significant investments raise questions as to whether or not such expenditures are justified based on NBPTS’s impacts and outcomes (Boyd & Reese, 2006).

One way in which the original founders intended to evaluate the effectiveness of the NBPTS was through the increased number of teachers earning certification and the increase of professionalism of the teaching profession (NBPTS, 2009). However, sixteen years after the

initial implementation of this policy in the United States' educational system, very little formal evaluation of National Board Certified Teachers impact on students has taken place. What research has occurred is often contradictory. Likewise, research on the other four core propositions is limited.

The National Board Certification Application Process

The National Board for Professional Teaching Standards is a private organization charged to articulate accomplished teacher standards, define what quality teachers should know and be able to do, and recognize such accomplished teachers through certification (Ballou, 2003). This voluntary assessment process takes an academic year to complete. Candidates generate two videos that demonstrate classroom performance accompanied by a written commentary, a student work sample accompanied by a written commentary, and documented accomplishments accompanied by a written commentary. Candidates also complete six assessment exercises at an assessment center. Two scorers blind score each portfolio entry and assessment exercise. The two scores for each individual entry are averaged to generate a single score. The score for each entry is then totaled. Candidates receiving an overall score of 2.75 pass their National Board Certification (Ballou, 2003).

Pass rates for this certification are low. Between 1993 and 1997, the pass rate was 35% (Rotberg, Futrell, & Lieberman, 1998). It has since grown to over 45%. Women are more likely to apply for and gain certification than men. While African-American teachers have a higher rate of application (they are 30% more likely to apply than white teachers), they have a low rate of certification compared to their Caucasian colleagues (27% achieve NBC as opposed to 54% of Caucasian candidates) (Goldhaber, Anthony, & Perry, 2003).

Candidates who are unable to earn the 2.75 required points during their first year of application have the option to "bank" scores for up to two years. These candidates may retake

any combination of assessment center pieces or redo entire portfolio entries. The cost to retake a question or resubmit an entry is \$350 for each question or entry. All resubmitted work must be completely new and come from the current school year. Identical or amended versions of a portfolio question may not be resubmitted and if they are, they will be disqualified. In order to ensure fairness, assessors do not have insight into which entries are retakes and which are first time entries. All entries are scored the same. The new score replaces the original score for each resubmitted question or entry. The total weighted score is then recalculated. The retake results are reported in late November or early December, at the same time as first time applicants (NBPTS, 2011).

The certification is very expensive. Candidates pay a \$2300 fee to participate in the process. Many states offer scholarships to teachers to pursue candidacy. Most of the scholarships offer only a partial payment. Candidates must apply at their individual state level in order to receive a scholarship. In some states, the money is offered on a first come, first serve basis, while in others, the scholarships are awarded on a competitive basis (NBPTS, 2009). In most cases, the candidates must first register to pursue their NBC and pay the \$300 registration fee before they are informed about any financial assistance. The National Education Association additionally offers low interest loans to applicants (NBPTS, 2009) to support their candidacy. Many states, such as Kentucky, reimburse applicants up to 75% of the total fees upon earning National Board Certification (Table 1). However, this reimbursement comes only after a candidate has earned the certification. Final payment to pursue the certificate is due in January, while scores are released and new NBCTs announced in late November. Therefore, the actual reimbursement is received almost a year after the candidate makes the initial investment. Assistance varies widely across the nation with some states such as New Hampshire and Texas providing no fee assistance or salary bonus for those teachers earning their NBC.

Table 1. Financial Incentives for National Board Certification Offered by States 2006

State	Fee Assistance	Salary Bonus
Alabama	\$2500 per candidate who passes	\$5000 per year
Alaska		
Arizona		
Arkansas	\$2500 per 1 st time candidate	\$5000 per year
California		\$2000 per year
Colorado	\$1000 per candidate (limit)	
Connecticut	\$1000 for 10 candidates	
Delaware	Loan program	12% annual increase
Florida	\$2250 for 1 st time candidates	10% annual increase
Georgia	\$1000 per candidate	10% annual increase
Hawaii	Up to \$3000 per candidate	\$5000 per year
Idaho		\$1000 per year
Illinois	\$2000 per candidate	\$3000 per year
Indiana	\$2000 for 60 candidates	
Iowa	\$1250 per candidate plus \$1250 per recipient	\$2500 per year
Kansas	\$1000 per first time candidate	\$1000 per year
Kentucky	\$1875 per recipient plus \$400 stipend	\$2000 per year
Louisiana	\$2000 per candidate	\$5000 per year
Maine	Grant, unspecified	\$3000 per year
Maryland	\$1650 for 500 candidates	\$4000 per year
Massachusetts		
Michigan	\$1250 per candidate	
Minnesota		
Mississippi		\$6000 per year
Missouri	\$750 for 100 candidates	\$5000 per year
Montana		Promotion to master teacher
Nebraska		
Nevada		5% annual increase
New Hampshire		
New Jersey	\$625 per candidate	
New Mexico		\$5200 per year
New York	\$2000 per 1 st time candidate	\$1000 per year
North Carolina	\$2500 per year	12% annual increase
North Dakota	\$1250 each for 17 candidates	
Ohio	\$2200 per 1 st time candidate	\$1000 per year
Oklahoma	\$2500 for 400 candidates	\$5000 per year
Oregon	Subsidies available	
Pennsylvania	\$1250 for 500 candidates	
Rhode Island	\$1000 per candidate	
South Carolina	\$1250 per candidate plus \$1250 per recipient	\$7500 per year
South Dakota	\$2500 per public school recipient	\$1000 per year
Tennessee		
Texas		
Utah		
Vermont	\$850 each for 30 candidates	\$2000 per year
Virginia	\$1000 each for 75 candidates	\$2750 per year

Table 1 (Continued)

State	Fee Assistance	Salary Bonus
Washington	\$1250 each for 500 candidates	\$7000 per year
West Virginia	\$1250 per candidate, plus \$1250 per recipient for 200	\$2500 per year
Wisconsin	\$2000 per recipient	\$2250 per year
Wyoming	\$2000 per candidate	\$8000

Source: Hakel, M., Koenig, J., & Elliot, S. (2008). *Assessing accomplished teaching: Advanced level certification programs*. National Research Council: The National Academies Press.

The NBPTS was founded on the idea that the characteristics that make teachers effective can be identified and evaluated (Goldhaber & Anthony, 2005). The NBPTS (2009) developed five core propositions that lead to certification:

- 1) Teachers are committed to students and their learning.
- 2) Teachers know the subjects they teach and how to teach those subjects to students.
- 3) Teachers are responsible for managing and monitoring student learning.
- 4) Teachers think systematically about their practice and learn from their experiences.
- 5) Teachers are members of learning communities.

According to the NBPTS, each of these core propositions is one that an effective teacher demonstrates. Each is a practice in which teachers choose to engage to promote student learning and student achievement. Teachers must deliberately practice each proposition in order to internalize it.

The NBPTS standards appear to be more rigorous than state standards. Through 2002, only about 50% of applicants earned certification, as compared to 90% of teachers who pass state licensure exams such as the Praxis I or II (Goldhaber & Anthony, 2005). The No Child Left Behind Act of 2001 has brought attention to the need to upgrade the criteria used to screen new teachers and place them in classrooms, especially for schools in which high numbers of minority or high poverty children attend (Heck, 2007).

Teacher Leaders

Northouse (2010) defines leadership as a process in which an individual influences a group to attain a common goal. As teachers become effective and proficient, a need arises for these quality teachers to take shared leadership roles within the school building. Relying on principals alone will not create or sustain improvements because principals do not have the expertise or the time to make every decision (Williams, 2009). Quality teachers must play a role in instructional decisions that impact students. Even though they do not have positional authority, teacher leaders have the potential to lead instructional improvement by sharing specialized content and knowledge with their peers (Mangin & Stoeling, 2010). However, in the current culture of education, teachers often do not perceive themselves as leaders, or feel that their own influence is confined to the classroom (Shen, 1998).

Ramsey advocates that “not all decisions properly belong to the leader. There’s no rule that says everything has to be resolved at the top” (Ramsey, 2005, p.2). Williams (2009) also states that part of leadership is building capacity of a staff, creating an environment of professional growth, and establishing conditions for the development of leadership within a building. In addition to empowering teachers to impact student growth and achievement, creating leaders within a school ensures a commitment to teacher quality. “The more leadership is cultivated in a school, the more likely it is that everyone will get a chance to use their talents fully and the more committed everyone is likely to be” (Sergiovanni, 2006, p. 173).

Schools that exhibit high leadership capacity engage in several practices. These include:

- 1) Skillful, broad involvement in the leadership work,
- 2) Inquiry based decisions,
- 3) Collaborative roles and responsibilities,
- 4) Norms that include innovation and reflection, and

5) Effective teams focused on school-wide goals.

(Hart & Bredeson, 1996; Mangin & Stoeliga, 2010; Feeney, 2009). Through this work, teachers can play a vital role in school improvement and can improve student achievement in reading, writing, and math (Hart & Bredeson, 1996).

Teacher leaders can have a direct or indirect impact on school climate and culture. Some leadership roles include: leading professional development, assisting with planning, modeling lessons, providing feedback, analyzing data, and sharing with colleagues. Effective teacher leaders participate in focused, collaborative, job-embedded professional development as a participant and a leader (Mangin & Stoeling, 2010). Leaders impact peers not only by modeling their own professional growth, but also by showing interest in the professional growth and development of their colleagues (Silva et al., 2000).

Teacher leaders can emerge through a mentor/mentee relationship. Mentors can provide invaluable guidance and serve to shape a peer's career. Peer coaching can influence school goals and individual teacher needs because classroom teachers are content experts and they often recognize problems in the content knowledge of their colleagues. Mentors can help strengthen these weaknesses and clear up misconceptions through professional dialogue (Manno & Firestone, 2008; Tienken & Stonaker, 2007).

While research demonstrates a positive impact of teacher leaders on the professional practice of colleagues, there are few large-scale quantitative studies on the effects of teacher leadership on student achievement (Leithwood & Jantzi, 2000). Harris (2006) reports on an English study that demonstrated a positive relationship between teacher leadership within a building and student motivation. The study reports improvement in student data. Additionally, a Silins and Mulford (2004) study explored the relationships between twelve variables relating to teacher leadership and student engagement and participation. These researchers

determined that teacher leadership did not have a significant impact on student participation in school.

A quantitative study by Supovitz (2010) determined that “peer influence was a positive and significant predictor of teachers’ change in instruction. Higher levels of instructional conversation and interaction around teaching and learning and advice networks were associated with increases” in student achievement (Supovitz, Sirinides, & May, 2010, p. 44). They conclude that specifically in the area of mathematics, peer influence had two times more impact on student performance than principal leadership. These findings suggest that in content areas where principals are not comfortable, teacher leaders can provide support and help their colleagues to overcome content barriers, which will have an indirect impact on student achievement and performance.

Ball and Cohen (1999) also advocate that teachers need to be exposed to their colleagues assumptions and ideas about student and learning and content in order to grow as professionals. Teacher leadership, the mentor/mentee relationship, and professional learning communities are all examples of ways in which these exchanges can occur. In fact, educators who participate in professional learning communities are thought to be better able to adapt to challenges within the classroom, with individual students, and with interactions with parents (McLaughlin & Talbert, 1993). The results from the five year study of more than 800 teachers conducted by the Center for Research on the Context of Secondary School Teaching also reports that many teachers define their own practices through interactions with their colleagues, administrators, and professional learning communities (McLaughlin & Talbert, 1993). Teacher leadership within individual school buildings has the potential to have an impact on teacher performance.

Researchers will continue to explore the impact of teacher leadership on student performance. In order to sustain meaningful change, teachers must participate in a leadership capacity. The most effective teacher leaders work in an environment where time is built into the school day to share instructional practice and discuss student performance (Mangin & Stoelinga, 2010; Willimas, 2009). These practices make an impact on the culture and climate of the school, as illustrated in Figure 2.

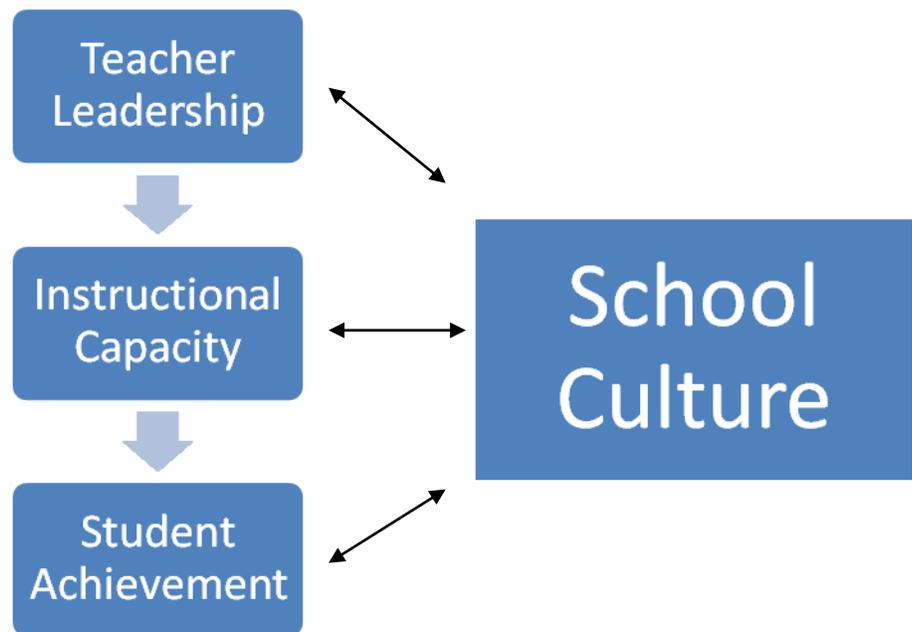


Figure 2. Impacts on School Culture

The Impact of National Board Certification on Teachers

There are many potential impacts of National Board Certification. The first is on the classroom teacher who volunteers to go through the certification process. One of the goals set forth by the NBPTS is to improve student learning. One way that this goal is meant to be achieved is through the impact on individual teachers. The certification process provides teachers a professional growth opportunity as they engage in reflection upon their teaching and classroom decisions (Rotberg, Futrell, & Lieberman, 1998). This growth opportunity is important

because most National Board Certified Teachers (NBCTs) do not go on to leave their classrooms. They are committed to students and the learning opportunities that they provide for them (Farrell, 2005; Hakel, Koenig, & Elliot, 2008).

NBCT candidates are required to show evidence of collaboration with colleagues and leadership within their school building and district. These opportunities encourage teacher growth. Farrell (2005) found that NBCTs engage in more leadership activities than non NBCTs. These activities help to build instructional capacity within school buildings and districts. Capacity building is one key in improving teaching and learning within a school. Farrell (2005) argued that it is necessary to find a way to encourage NBCTs to become instructional learners within their buildings. Reflective individuals should model the process for colleagues that will enhance teaching throughout the building. Ingvarson and Hattie (2008) claim that teachers with their National Board Certification are in high demand because they are often mentors and leaders within their building.

Kouzes and Posner (1997) developed a model to describe characteristics which teacher leaders most commonly possess. After sampling more than 1000 teachers, criteria for their model began to emerge. The following five characteristics were most chosen by teachers when determining who the leaders in their own buildings were: 1) those who challenge process, 2) those who inspire a shared vision, 3) those who enable others to act, 4) those who model best practices, and 5) those who encourage others. A study of Mississippi teachers by Waller and Kotz (2001) sampling both NBCTs and non-NBCTs found that NBCTs self-reported engaging in the Kouzes and Posner (1997) teacher leader characteristics at a significantly higher rate than non-NBCTs. The study went on to report that NBCTs are more involved in professional development and leadership activities that promote the professional development of others than colleagues who had not received National Board Certification (Waller & Klotz, 2001).

Sato, Wei, and Darling-Hammond (2008) conducted a study that observed National Board Certified and non National Board Certified candidates and teachers over a four-year period. During the candidacy year, there was an obvious increase in reflective thinking and formative assessment practices. Trends across all data sources including classroom artifacts, student surveys, teacher surveys, and teacher interviews, showed this increase continues even after the certification year. Non-NBCTs and non-NBCT candidates had a significantly lower incidence of reflective thinking and formative assessments. These data indicate that the certification had a positive impact on teacher reflection and self reported performance. The reflective process through which NBCTs go as candidates continues for the rest of their tenure. Through self-reflection, the necessary changes and adaptations in instruction will occur. These changes and refinements are intended to increase student learning.

Researchers found that NBCTs were more effective in increasing student achievement than teachers who had never applied to the program. However, there is no evidence that the certification process in and of itself does anything to increase teacher effectiveness (Goldhaber & Anthony, 2005). Supporters of the certification contend that teachers have a professional development experience and gain insight into their own instructional practices because they are required to reflect on their current teaching and practices (Rouse & Hollomon, 2005).

The Impact of National Board Certification on Students

The National Board of Professional Teaching Standards was founded on the idea that the characteristics that make teachers effective can be identified and evaluated, and then replicated in order to improve student achievement and learning (Goldhaber & Anthony, 2005). In order for National Board Certification to be effective, it must have an impact on student outcomes.

Little research exists in this area. Only a few peer reviewed studies exist that attempt to link NBPTS certification with student outcomes. In these studies, researchers suggest that there are data shortcomings because of low sample size and failure to control for student demographics (Goldhaber & Anthony, 2005). Other studies that have not been peer reviewed also exist. Some of them are invalid or unable to be generalized because of low sample size.

Rouse and Holloman (2005) conducted a study in North Carolina, one of the leading states in number of NBCTs. They studied student proficiency data on the North Carolina VOCATS, given to 9th through 12th graders. The independent variable in the study was National Board Certification. Teachers with similar experience and college degrees were matched. The mean percentages of students scoring at proficiency were compared using an independent samples t-test. The study found no significant difference between the proficiency of students taught by NBCTs and students taught by non-NBCTs (Rouse & Holloman, 2005).

Boyd and Reese (2006) reported on a study by J.E. Stone of East Tennessee State University. In this 2002 study, Stone reported that none of the sixteen National Board Certified Teachers studied in Chattanooga met a standard for exceptional teaching based on student achievement data. The Education Commission of States had four independent experts review the validity of this study. The reviewers found the study flawed because the sample of 16 teachers was too small to enable generalizations. It was also too small to have the statistical power to discover differences that may really exist. However, the reviewers acknowledged that Stone had addressed an important policy question and should continue to research learning gains produced by teachers who have earned National Board Certification (Boyd & Reese, 2006).

Humphrey, Koppich, and Hough (2005) maintain that teacher quality plays an important role on student achievement. They cited a 2004 Texas study by The Teaching Commission that attributed half the difference in test scores between white and African-American students to

variation in teacher quality. The document is based in part on research by Hanushek and others (1998) involving third through sixth graders in Texas schools. This study reveals the most effective teachers elicited a full grade level more in student growth than less effective teachers. Hanushek finds that “differences in teacher quality make a substantial contribution to the variation in test score gains” (Hanushek, Kain, & Rivkin, 1998, p. 13). Because quality teachers make a marked impact on the achievement of minority and low socioeconomic students, Humphrey, Koppich and Hough (2005) explore teacher distribution. Their research finds that other than in Los Angeles, NBCTs choose to work in higher performing schools and school districts. They examined the number of NBCTs working in high poverty, high minority, or low performing schools and found that these teachers were underrepresented in five of the six states studied.

A study by Cavalluzzo (2004) funded by the National Science Foundation and the NBPTS included more positive findings. This inquiry concludes that 9th and 10th grade students in Florida instructed by an NBC make greater gains in mathematics than those instructed by teachers who failed NBC or those that have never been involved in the process. Using a multivariate framework, this study takes into account differences in teacher, student, and school attributes. Cavalluzzo (2004) reports, “Students with NBC teachers gain 12 percent of a standard deviation more than others on the end-of-grade exam in mathematics, all else equal” (p. 25) with significance at the .01 level. These results indicate that NBC teachers produce higher average gains for students than their non-NBC colleagues. For an individual school superintendent, building principal, or parent there is a practical significance to these results. Even if 12 percent of a standard deviation does not lead to a huge numeric gain, the difference itself is important. It is natural for all stakeholders to want the highest possible difference in student scores, even if that only is a mean gain of two or three points per student.

The findings for students who receive special education services taught by NBCs are even more promising. These students scored 18 percent of a standard deviation more on the exam, which is significant with alpha set at .01 (Cavalluzzo, 2004). There are some limitations to this study however. Some of the differences are attributed to the fact that students and teachers are not randomly paired, “but that more academically successful students are more likely to be paired with more highly qualified teachers” (Cavalluzzo, 2004, p. 20). The factors contributing to this phenomenon might be the assignment of more effective teachers to more affluent and high performing schools, and the assignment of teachers and students to specific math courses. The author did not consider the power of parents. Parents request those teachers who are most effective, but it is the most involved parents, with the more successful students who are most likely to make these requests. However, “Taken as a whole, the study’s findings strongly support the view that NBC succeeds in identifying highly effective teachers” (Cavalluzzo, 2004, p. 8).

Another study conducted in the state of North Carolina by Goldhaber and Anthony (2005) focused on elementary school students. These students were chosen because of the large number of NBCTs at the level, and the ability to link teacher and student data over time by tracking yearly assessment data. This study reveals that the growth of students is slightly higher for those instructed by a NBCT than for those students instructed by nonapplicant teachers or unsuccessful NBCT applicant teachers. However, the difference is relatively small. The largest difference is in mathematics. Other factors also influence these findings. Most of the NBCTs tend to be teaching in more affluent schools and tend to instruct fewer Title 1 students. The findings for the subgroups in this study are consistent with those in the study by Hanushek (1998) that reveals that effective teachers can elicit more than a full grade level growth than less effective teachers especially for minority and low socioeconomic students. The magnitude of

the effect of NBCTs on Title 1 students is significantly larger in mathematics and reading than on non Title 1 students. Likewise, those NBCTs teaching Title 1 and minority students show significantly larger growth for these students than non-NBCTs (Goldhaber & Anthony, 2005). The authors of the study suggest that policymakers need to review these findings because they indicate that NBCTs have more impact on teaching low-income students in earlier grades. However, this evidence is in direct conflict with the previous findings of Goldhaber and Brewer (1996).

After examining the literature published on this topic, it is evident that there is conflicting research as to the impact of National Board Certified Teachers on student achievement throughout the United States. The expected relationship may be present for some teachers and under some conditions, but cannot be found consistently across the United States and among different groups of students. A summary of the peer reviewed studies appears in Table 2.

Table 2. Review of Studies on NBCTs and Student Achievement

Study	Grade Content Area	Year	State	Findings
Goldhaber & Anthony	3 rd – 5 th reading, math	1996-1999	North Carolina	NBCTs were more effective in reading, but not in math.
Harris & Sass	3 rd – 10 th reading, math	1999-2004	Florida	NBCTs were more effective in reading than others, but not in math.
Sanders, Ashton, & Wright	5 th – 8 th reading, math	1999-2003	North Carolina	No statistically significant effects for NBCTs.
Cantrell et al.	3 rd – 5 th reading, math	2003-2005	Los Angeles, California	Significant differences between NBCTs and unsuccessful applicants, but not with non-applicants.

Table 2(Continued)

Cavaluzzo	9 th – 10 th math	2000-2003	Miami, Florida	NBCTs made highest gains with students, gains statistically significant.
Clotfelter, Ladd, & Vigdor	5 th reading, math	1999-2000	North Carolina	NBCTs were more effective than others in reading, not in math. Differences were statistically significant.
Goldhaber & Anthony	3 rd – 5 th reading, math	2003	North Carolina	Small differences between NBCTs and non NBCTs in mathematics. Results not statistically significant.
Rouse & Holloman	9 th – 12 th reading, math	2005	North Carolina	No statistically significant differences between NBCTs and non NBCTs.
Boyd & Reese	3 rd – 12 th reading, math	2004	Tennessee	No statistically significant differences between NBCTs and non NBCTs.

The Impact of National Board Certified Teachers on School Culture

While there is conflicting evidence linking individual National Board Certified Teachers with increased student achievement data, there is evidence that the mere presence of National Board Certified Teachers (NBCTs) in a school and district does have an impact on student achievement. Some of these effects are attributed to spillover effects, and some are attributed to the culture of individual school buildings (Frank, 2008).

A variety of factors affects school culture, one of which is teacher collaboration.

Gruenert explored the impact of teacher collaboration on climate and culture and determined

that this phenomenon was so influential that rewarding the efforts of teachers to increase collaboration would be a motivating factor in shaping and improving school culture and climate (Gruenert, 2000). Not only is collaboration important, mentoring provided by teachers also affects school climate and culture. Teacher mentoring has a direct impact on student achievement (Gruenert, 2000).

Frank (2008) and others conducted a study that determined that NBCTs provide more help to colleagues in instructional matters than non-NBCTs. Specifically, they found using a value added approach that NBC affects the number of peers a teacher helps with instructional issues. Park, Oliver, and Johnson (2007) also found that NBCTs play a role in professional development. This research showed that NBCTs affected professional development in the following ways: by increasing reflection on teaching practices, by establishing a school community that focuses on professional discourse, by raising standards for teacher performances, and by facilitating collaboration. In a qualitative case study of a rural Alabama school, the authors found that thirteen teachers in the school building earned their National Board Certification. As more teachers earned the certification, professional learning communities began to develop, and teacher leadership began to emerge. Teachers held themselves and their colleagues responsible for school achievement and growth. The overall student achievement in the school increased. The principal attributed the change in school culture and climate to the leadership provided by the NBCTs in the building (Berry, Johnson & Montgomery, 2005).

The Status of National Board Certified Teachers in Kentucky

As of 2009, Kentucky ranks 12th in the total number of NBCTs nationwide. There are currently more than 1800 board certified teachers statewide. The Kentucky Educational Professional Standards Board website (2010) indicates less than 2% of all Kentucky teachers hold

their National Board Certification. Those districts boasting the highest numbers of board certified teachers are Jefferson County (125), Oldham County (124), Fayette County (114), Kenton County (60), and Bullitt County (55) (NBPTS, 2009). Upon examining these five districts, it is immediately evident that each of these counties includes, or is in close proximity to a more urban area such as Louisville, Lexington, or Cincinnati. The *Districts and Schools with NBPTS Qualified Personnel* shows a large discrepancy between the numbers of National Board Certified teachers in rural and more urban districts. Several of the most rural districts in far eastern Kentucky have not had any teachers earn this certification as of 2009 (KYEPSB, 2010).

For teachers earning their NBC, the state provides a \$20,000 stipend dispersed through the ten years of certification. This represents a \$2000 stipend per year. The state also assists a fixed number of candidates by paying 75% of the \$2300 certification fees (KYEPSB, 2010). In addition, districts may offer yearly stipends for National Board Certification at the local level. Oldham County, a district with one of the highest number of NBCTs, pays an additional \$2500 stipend per year (Oldham, 2010). However, this is not the case in all districts. Neither Fayette nor Jefferson counties, the two largest districts in the state, pay any additional compensation over that which the state offers.

Less than 30% of the Kentucky NBCTs currently teach in a Title 1 school. This is especially evident in Fayette and Jefferson Counties. These are the two largest districts in the state and boast the largest numbers of NBCTs, but only 25% and 13% respectively of the National Board Certified teachers in these districts teach in a Title 1 school (KYEPSB, 2010). This data differs from the trends in the rest of the United States, where more than 50% of the NBCTs teach in a Title 1 school (NBPTS, 2010).

All of this information is crucial for Kentucky legislators as they form policies that relate to National Board Certification. Ferguson (1991) asserts that additional funding for highly

qualified teachers produces greater student achievement increases than any other allocation of resources. As policy-makers determine how to improve Kentucky schools, the issue of equitable dispersal of this human capital needs to be explored. Models such as those used in the Los Angeles school district that offer greater compensation to NBCTs that are willing to work in the most highly impacted schools must be discussed to determine if this is an approach that these legislators are willing to support for the more than 600,000 school children in Kentucky.

Research Design

There are three larger approaches a researcher can utilize to investigate the proposed questions pertaining to National Board Certification: qualitative research, quantitative research, and mixed methods approaches. Creswell (2009) asserts that qualitative and quantitative approaches should not be considered as complete opposites, but instead different ends on a spectrum. A study will tend to be more quantitative or tend to be more qualitative. Mixed methods research falls in the middle of the spectrum because it utilizes elements of the qualitative and quantitative approaches. While each of these research methods has its merits, they also each have their limitations.

Strengths and Limitations of Quantitative Research

Quantitative research is an approach that tests objective theories and explores phenomena by examining relationships between variables. These variables can be measured in a way that numbers are generated on which statistical techniques can be examined and analyzed (Creswell, 2009). In a study involving quantitative design, the researcher knows what he/she is studying before the data are collected. Thus, the researcher is able to test his/her hypothesis in a systematic and methodological manner (Walker, 2005). Quantitative designs include experimental and non-experimental, quasi-experimental, and descriptive designs

(Creswell, 2008). Surveys can support longitudinal and cross-sectional studies using questionnaires or structured interviews. These results are analyzed in order to make generalizations from a sample population. Experimental designs are implemented to determine if a treatment influences a dependent variable. There are a variety of experimental designs including random assignments of subjects to groups, nonrandomized designs, and single-subject designs. As with surveys, the results of these experiments are used to make generalizations to a larger population (Creswell, 2008).

There are some limitations to quantitative research. In this approach, it is possible to fail to account for important contextual details. Other problems are involved in sampling. The sample may fail to achieve true randomization, or it may not have the population validity to enable generalizations. If individuals are aware they are participating in an experiment, they may change their behavior, nullifying the results of the experiment. Lastly, there are ethical concerns involving experimental design. When conducting experiments on humans, an issue arises with denying a group of individuals a treatment in the name of control (Walker, 2005).

Strengths and Limitations of Qualitative Research

Qualitative research is a way to explore and understand meanings that individuals or groups of people assign to social or human problems (Creswell, 2008). The goal of this research is to provide a complete and detailed description of a problem or situation. The research may include emerging questions whose answers are collected in the setting in which a participant lives or works. The data are gathered in a variety of ways including observations and interviews. The data and description generated by qualitative research are generally richer and deeper than its quantitative counterpart. Qualitative research strives to answer the “why” questions in life. Merriam (2009) provides the following example: “Rather than finding out how many retired folks take on part-time jobs after retirement, which could be done through a survey, we might

be more interested in how people adjust to retirement, how they think about this phase of their lives, the process they engaged in when moving from full-time work to retirement, and so on” (p. 5).

Like the quantitative approach, this approach also has limitations. The researcher may not know what he/she is looking for upon beginning a study. The design can emerge as the study begins to unfold. This approach can be very time consuming. It can also be subjective as individual interpretation is at the center of the study. Lastly, this approach is many times case specific, and cannot be necessarily generalized to the population as a whole (Creswell, 2008).

Strengths and Limitations of Mixed Methods Approach

Mixed methods includes the use of quantitative and qualitative approaches. Not only does it combine both types of data, “it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research” (Creswell, 2008, p. 4). Because all methods have biases and limitations, some researchers believe that the biases in any single method could balance or cancel the biases of other methods (Creswell, 2008). Mixed methods involves triangulation of data across quantitative and qualitative sources. Predetermined (as in quantitative) and emerging (as in qualitative) methods can be utilized. It can also encompass open and close ended questions. A statistical and text analysis can be performed on data, and interpretations can occur across databases.

Like quantitative and qualitative approaches, mixed methods also have limitations. One weaknesses is that it can be challenging for researchers to implement both approaches simultaneously, and a research team may be required. Since both approaches are utilized in mixed methods, the researcher is required to learn about multiple methods and be able to integrate them appropriately. This approach is more expensive than a single approach and

more time consuming. Lastly, it may be difficult to decide how to interpret conflicting results (Johnson & Onwuegbuzie, 2004).

Determination of Research Approach

Because this project will involve the analysis of student achievement data and the analysis of the instructional leadership of National Board Teachers within the context of their school settings, a quantitative approach will be utilized. A quantitative approach will be used to test for mean differences between student achievement data and the number of NBCs within a school. Surveys will be administered that contain both Likert scale and open-ended questions. These questions will be analyzed using independent sample t-tests.

Conclusion

Increasing student learning and achievement are current priorities in the United States. Teacher quality and teacher effectiveness are important elements in this goal. National Board Certification is one means by which teachers are encouraged to increase their quality and effectiveness. Teachers have the opportunity to grow professionally through this process and prove that they are accomplished in their fields. One goal of the NBPTS is to improve student learning across the United States (NBPTS, 2010). Few studies exist in which student achievement data is the means by which NBCTs are evaluated. The studies that do exist present conflicting information and evidence. National Board Certified teachers play an important role in the professional communities in which they teach. They have a positive influence on the climate and culture in the buildings where they teach. However, there is little evidence describing how NBCTs emerge as professional leaders in their respective school buildings.

CHAPTER THREE

METHODS

Introduction

This chapter describes the procedures and methodology used to examine the impact of National Board Certified teachers (NBCTs) on elementary student reading achievement and on developing the instructional capacity of colleagues in Fayette County, Kentucky. The chapter includes an introduction to the methodology. It is followed by a description of the participants, data collection methods, measures, and variables. The chapter also includes an explanation of the research design. The chapter concludes with a brief discussion of the limitations and delimitations.

Purpose

This study focused on NBCTs in Fayette County, an urban district located in Central Kentucky. It utilized databases from the Fayette County Public School system to determine if NBCTs in Fayette County elementary schools produced greater student gains on the reading MAP assessment than non-NBCTs. Additionally, it surveyed Fayette County elementary school teachers working in a school with at least one NBCT to determine if the National Board Certified teachers in these individual buildings develop the instructional capacity of other teachers a higher rate than their on-NBCT colleagues.

The research questions to be explored were:

- 1) Do National Board Certified Teachers in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-National Board Certified Teachers in second through fifth grades?

- 2) Do National Board Certified Teachers in Fayette County elementary schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?

Methodology

There are three approaches a researcher can utilize to investigate the proposed questions pertaining to National Board Certification: qualitative research, quantitative research, and mixed methods approaches. Creswell (2009) asserts that qualitative and quantitative approaches should not be considered as complete opposites, but instead different ends on a spectrum. A study will tend to be more quantitative or more qualitative. Mixed methods research falls in the middle of the spectrum because it utilizes elements of the qualitative and quantitative approaches. While each of these research methods has its merits, they also each have their limitations. This study utilized mixed-methods in order to examine multiple aspects of the phenomenon associated with National Board Certification.

Mixed methods includes the use of quantitative and qualitative approaches. Not only does it combine both types of data, “it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research” (Creswell, 2008, p. 4). Quantitative data is collected in order to generate descriptive statistics that are used to describe the data set and to generate inferential statistics in order to make inferences and draw conclusions about the data (Leedy & Ormrod, 2005). The focus of quantitative methods is often on average or group effects (Rudestam & Newton, 2001). The independent sample *t*-test is commonly used to compare the means of independent samples in a quantitative study (Walker, 2005). Each of these statistical techniques aided in determining the impact of Fayette County NBCTs on elementary student achievement scores in the area of reading.

Qualitative data provided a complete and detailed description of a problem or situation. The qualitative data in this study made use of a survey adapted from Frank et al. (2008) that incorporated both Likert scale and open ended questions. The data gathered from the Likert scale questions was analyzed using t-tests to determine statistical significance of the results gathered. The open-ended questions were coded and analyzed using independent sample t-tests to determine statistical significance as well.

Because all methods have biases and limitations, some researchers believe that the biases in any single method could balance or cancel the biases of other methods (Creswell, 2008). Mixed methods involves triangulation of data across quantitative and qualitative sources. Predetermined (as in quantitative) and emerging (as in qualitative) methods can be utilized.

The survey used in this study encompassed open-ended and close-ended questions. A statistical and text analysis was performed on the data and interpretations occurred across databases. The use of this method enabled the researcher to examine data through multiple lenses and ensured that conclusions were drawn based on more than one form of evidence.

Description of the Sample and Participants

Fayette County is located in central Kentucky, where the population of the combined urban and county area is approximately 275,000. Fayette County currently has thirty-three elementary schools in the district and serves about 36,000 students, more than 18,000 of those attending elementary school. This district is more urban than many districts in the state, yet it also represents a cross section of the state as a whole. While there is an element of urbanity it also has schools in rural parts of the county. The district represents a diverse socioeconomic population. Some of the schools in the district have less than 10% free and reduced lunch population, while others have more than 80%. The schools in this district include all

socioeconomic levels represented by Fayette County and Kentucky schools. Of those thirty-three elementary schools, approximately twenty- three schools receive school-wide Title 1 funding, which requires a free or reduced lunch percentage of 50%. This statistic shows that elementary schools in Fayette County have a population of approximately 70% of its schools serving in a low SES area. The district is also racially and ethnically diverse: approximately 58% of the students are white, 22% African-American, 10% Hispanic, 4% Asian, and 6% are coded as other. There are eighty-three native languages represented in the school system and 8% of the student population qualifies for services as English Language Learners (fcps.net, 2011).

There were approximately 1,440 certified elementary school teachers serving in the district. Sixty-six of these teachers had earned their NBC in various fields. The two most common certifications for elementary school teachers were the Early Childhood Generalist Certificate and the Middle Childhood Generalist Certificate. This calculates to a percentage of about 4.6%, which is 1% greater than the state average. Forty-two (62%) of these NBCTs work in Title 1 schools. This statistic differs from that of the state as a whole, where only 30% of all NBCTs work in a Title 1 school. The years of teaching experience for these teachers ranged from 5-31 years. All 66 of the NBCTs in Fayette County elementary schools were female, yet no other demographic information is available. Two of the elementary NBCTs currently serve as elementary school principals within the district.

Instrumentation

The Measures of Academic Progress Assessment (MAP) was designed by the Northwest Evaluation Association (NWEA). It is a computerized test that is intended to assess a student's ability and accurately measure what a child knows and needs to learn in the areas of mathematics and reading. The test can be administered to students in kindergarten through college age. The MAP is designed to adjust the difficulty of the assessment to a student's

performance. Therefore, the difficulty of the questions is based on how well the student has answered the previous questions up to that point. When students answer questions correctly, the questions become increasingly difficult and when the students answer questions incorrectly, the questions become less difficult. The test is theoretically designed to have students answer half of the questions correctly, and half incorrectly (nwea.org, 2011).

The final score of the assessment is an estimate of the student's achievement level and is given as a RIT score. The Rasch unit scale (RIT) is designed and developed by Danish mathematician Georg Rasch and used by NWEA to measure student growth and achievement. The characteristics of RIT scale include: a) it is an achievement scale, b) it is an accurate scale, c) it is an equal interval scale, d) its helps to measure growth over time, and e) it has the same meaning regardless of the age of the student (nwea.org, 2011). NWEA claims RIT is a stable and valid score that has been nationally normed.. It is an equal interval score and ranges from approximately 100 to 300. Because the RIT scores are a consistent equal interval, it enables an individual student's growth to be tracked from year to year (nwea.org, 2011).

The instrumentation for the second question involved a survey adapted from Frank (2008). The survey was divided into three parts (see Appendix B). The first section of the survey invited teachers to rate various questions using a Likert scale. The first eight questions involved teacher perceptions about National Board Certified teachers and their roles in assisting peers with issues such as instruction, behavior management, assessment, support, and mentoring. It also contained a question that elicited teacher perception about the amount of leadership that NBCTs provide within a building. Using a Likert scale, teachers responded to each statement using one of the following responses: Strongly Agree (4), Agree (3), Disagree (2), or Strongly Disagree (1). No response was included for no opinion in order to encourage teachers to really consider whether they are more or less in agreement with a given statement.

The second part of the survey involved three questions that encouraged teachers to reflect upon their own practice. Open ended questions were utilized to elicit teacher response concerning the amount of assistance that they themselves had provided to other teachers in the areas of instruction, behavior management and assessment. Teachers were asked to provide an approximate number of teachers that they had assisted in each category.

The third part of the survey was very similar to the first part of the survey. However, before teachers responded to these questions, a drop box was provided that listed the names of the NBCTs in the district. Teachers were then asked the number of times that they had been assisted by a NBCT and the number of times that they been assisted by a non-NBCT in the areas of instruction, behavior management, assessment, and support. Two additional questions asking the number of NBCTs in their buildings that they considered to be mentors and leaders versus the number of non-NBCTs that they considered to be mentors and leaders were also included in this section of the survey.

Research Design

Research Questions

Two questions drove the design of this study: 1) Do National Board Certified Teachers in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-National Board Certified Teachers for second through fifth grade students? and, 2) Do National Board Certified Teachers in Fayette County elementary schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues? While these two questions may seem unrelated at first glance, Frank et.al (2008) asserts that, "If NBPTS-certified teachers are not exceptionally effective in producing student achievement, than their helping behavior might actually be negligible, even counterproductive,

to the extent that they are supplying faulty guidance based on their own relatively ineffective practice” (p.5). Therefore, both questions must be explored in order to determine the impact that NBCTs have in the state of Kentucky.

Data sources for question one. This study requested MAP data from Fayette County Public Schools for all elementary school students in the area of reading. During the 2009-2010 school year twenty three schools took the MAP assessment in both the fall and spring. The district provided over 3500 score samples to the researcher. Fayette County has been using the MAP assessment for three years, and the data set provided was from the second year of MAP implementation. During this year, only about two thirds of the district schools were participating in this assessment. Many schools that participated only reported spring scores, so many scores had no fall matches and had to be discarded because a RIT growth could not be determined. Because growth in the RIT score was being compared, the scores had to have both a fall and spring pair in order to be used in the research. Of the scores provided, 1,186 student fall scores could be matched with a spring score in order to determine RIT growth.

Additionally, twenty three matched scores had to be excluded from the study. These twenty three students were assigned to more than one teacher in the provided data base. Therefore, there was no way to ascertain which teacher was accountable for those students and their day to day instruction.

Participant selection for question two. Additionally, this study requested Fayette County elementary teachers employed in a school with at least one NBCT on staff to participate in a survey. The teachers were invited via email to participate in a survey adapted from Frank et al. (2008) designed to determine if having a National Board Certification affected the number of colleagues that a teacher helps with instructional matters, therefore influencing and building instructional capacity. Teachers choosing to participate in the survey were assured that their

responses would remain anonymous. They then accessed the survey through a secure website, Survey Monkey, which enables data to be collected electronically and anonymously. The survey was developed in a manner that moved teachers forward through the survey, and did not allow them to go back and change their answers.

Description of Survey

The survey focused on three ways in which teachers can impact or influence the instructional capacity of others: through assistance with instruction, student behavior, and assessment. Each of these components directly impacts a teacher's ability to successfully instruct students. The survey also included questions on teacher leadership. Even though they do not have positional authority, teacher leaders have the potential to lead instructional improvement by sharing specialized content and knowledge with their peers (Mangin & Stoeling, 2010). The last focus of the survey instrument was upon mentoring. Mentors can provide invaluable guidance and serve to shape a peer's career. Peer coaching can influence school goals and individual teacher needs because classroom teachers are content experts and they often recognize problems in the content knowledge of their colleagues. Mentors can help strengthen these weaknesses and clear up misconceptions through professional dialogue (Manno & Firestone, 2008; Tienken & Stonaker, 2007). Each of these five elements, instruction, behavior, assessment, leadership, and mentoring, directly influence or contribute to one's ability to develop the instructional capacity of another. Therefore, the results of the survey gave information on the rates at which both NBCTs and non-NBCTs develop the instructional capacity of their colleagues.

Survey results describe the ways in which groups of people perceive reality (Gay & Airasian, 2003). This survey enabled the researcher to compare the ways in which the Fayette County elementary teaching population as a whole viewed NBCTs and their instructional

leadership. It also enabled the researcher to compare how teachers with and without their NBC view instructional leadership in their individual buildings. The use of an on-line survey provided a means to collect data rapidly and anonymously.

Quantitative methods were used to analyze the survey results. The results included determining mean differences in the number of teachers NBCTs and non-NBCTs self-reported assisting with instruction, behavior, and assessment. Quantitative methods were also utilized to determine results to the Likert scale questions. The survey instrument aided in comparing NBCT and non-NBCTs perceptions about the rates at which each group develops or influences the instructional capacity of their colleagues.

Data Collection

This study requested MAP data from Fayette County Public Schools for all elementary school students in the area of reading. After completing the district's IRB process, a release was signed by the researcher and data was obtained for all available elementary student MAP scores in the area of reading. During the 2009-2010 school year, twenty three schools took the MAP assessment in both the fall and spring. The district provided over 3500 score samples to the researcher. Because growth in the RIT score was being compared, the scores had to have both a fall and spring pair in order to be used in the research. The difference in these scores is an individual student's RIT growth. Many schools that participated only reported spring scores, so many scores had no fall matches and had to be discarded because a RIT growth could not be determined. Of the scores provided, 1,186 student fall scores could be matched with a spring score in order to determine RIT growth. In addition to RIT growth scores, the district provided student information on gender, grade, SES, race, and special education services.

To answer question two, this study requested Fayette County elementary teachers employed in a school with at least one NBCT on staff to participate in a survey. Six hundred

eighty-two teachers were invited via email to participate in a survey adapted from Frank et al. (2008) designed to determine if having a National Board Certification affected the number of colleagues that a teacher helps with instructional matters. Teachers choosing to participate in the survey were assured that their responses would remain anonymous. They accessed the survey by clicking on a link through a secure website, Survey Monkey, which enables data to be collected electronically and anonymously.

Hypothesis

The following hypothesis guided this study:

Hypothesis 1: Second grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than second grade students of non-NBCTs in Fayette County.

Hypothesis 2: Third grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than third grade students of non-NBCTs in Fayette County.

Hypothesis 3: Fourth grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than fourth grade students of non-NBCTs in Fayette County.

Hypothesis 4: Fifth grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than fifth grade students of non-NBCTs in Fayette County.

An additional hypothesis guided the second question of the study.

Hypothesis 5: National Board Certified Teachers in Fayette County Public Schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues.

Variables

Each research question attended to different variables. For question 1:

Do National Board Certified Teachers in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-National Board Certified Teachers in Fayette County?

The independent variables for each hypotheses was whether or not teachers held their National Board Certification and student race and SES, measured by participation in the free and reduced lunch program. The dependent variable is student growth as measured by a RIT score in reading.

For question 2:

Do National Board Certified Teachers in Fayette County elementary schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?

The independent variable was whether or not teachers held their National Board Certification. The dependent variables included the number of others teachers had assisted with instruction, student behavior, assessment, or any other mentoring type activities.

Limitations

One limitation of this study is the data set of MAP scores provided by the school district. Fayette County has been using the MAP assessment for three years, and the data set provided was from the second year of MAP implementation. During this year, only about two thirds of the district schools were participating in this assessment. Also, many schools that participated only reported spring scores, so many scores had no fall matches and had to be discarded because a RIT growth could not be determined. However, the sample size included more than 1000 student scores that could be directly matched to teachers and their individual certification. This sample was representative of the district's population including race, and free and reduced lunch. The racial demographics for the district include a student population that is 58% white, 22% African-American, 10% Hispanic, 4% Asian, and 6% coded as other (fcps.net, 2011). The

racial demographics for the sample include a student population that is 52% white, 25% African-American, 9% Hispanic, 2% Asian, and 12% other. The district reports that 47% of its students receive free and reduced lunch (fcps.net, 2011), while the sample includes a population of 41% of students receiving free and reduced lunch.

Another limitation of the study was the use of a survey for data collection. This mode of research has the common limitation of a limited participant response. The response to this survey was 21%, which decreases the power of the analysis. Likewise, the number of NBCTs who responded to the survey accounts for 19% of all responses, but the actual representation of these teachers in the district is 4.6%. Therefore, the responses to some questions might have been skewed by an increased participation by this group of teachers.

An additional limitation was possible researcher bias. The researcher is employed by Fayette County Public Schools and is also a National Board Certified Teacher with an Early Childhood Generalist certification. While the researcher was careful to remain objective and analyze and report raw data, it is possible that bias could play an unseen role in the execution of the research and the analysis of the data.

Summary

A mixed-methods approach was used to answer the research questions:

- 1) Do NBCTs in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-NBCTs for students in second through fifth grades?
- 2) Do NBCTs in Fayette County elementary schools influence the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?

The data sample to answer question one was obtained from the Fayette County Public School system. It contained more than 3000 individual student reading score samples that could

be compared to measure student growth from fall to spring. Individual *t-tests* were administered in order to determine if a difference in mean student scores for both NBCTs and non-NBCTs existed.

The data to answer question two was obtained through a survey format. Fayette County Elementary School teachers working in a school with one or more NBCTs on staff were asked to participate in a survey. The purpose of the survey was to determine the rates that both NBCTs and non-NBCTs influence the instructional capacity of their colleagues. A variety of data analysis, including *t-tests* were utilized to analyze this qualitative data.

CHAPTER FOUR

RESULTS

Introduction

Chapter four presents the results of the analyses of data collected to answer the following questions about NBCTs in central Kentucky:

- 1) Do NBCTs in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-NBCTs for students in second through fifth grades?
- 2) Do NBCTs in Fayette County elementary schools influence the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?

More than 3500 scores were obtained for second through fifth grade gains on the MAP reading assessment for the 2009-2010 school year from the Fayette County Public School system. *Statistical Package for Social Sciences (SPSS)* software was used to calculate the mean gains in RIT MAP scores for both NBCT and non-NBCT in grades 2-5. The technique used to determine if there were significant differences in the mean student reading gains for the NBCTs and non-NBCTs was an independent sample t-tests. The data was analyzed again using independent sample t-tests to determine if there was a significant mean difference of low socioeconomic status (low SES) students of NBCTs versus non-NBCTs and African American students of NBCTs versus non-NBCTs.

Additionally, more than 805 Fayette County elementary school teachers who work in a building that employs one or more NBCTs received a survey about their perceptions of NBCTs. Teachers participating in the electronic survey to provided insight into how both NBCTs and

non-NBCTs influence the instructional capacity of their colleagues. An analysis of the survey data including information on means and independent sample *t-tests* is included in this chapter.

Description of the Sample

Fayette County is located in central Kentucky. The population of the combined urban and county area is approximately 275,000. Fayette County currently has thirty three elementary schools in the district and serves about 38,000 students, more than 18,000 of those attending elementary school. Of those thirty three elementary schools, approximately twenty three schools receive school-wide Title 1 funding, which requires a free or reduced lunch percentage of 50%.

There are approximately 1,440 certified elementary school teachers serving in the district. Sixty-six of these teachers have earned their NBC in various fields. The two most common certifications were Early Childhood Generalist, and Middle Childhood Generalist. This calculates to a percentage of about 4.6%, which is 1% greater than the state average. Forty-two (62%) of these 66 NBCTs work in Title 1 schools.

During the 2009-2010 school year, twenty three schools took the MAP assessment in both the fall and spring. The district provided over 3500 score samples to the researcher. Because growth in the RIT score was being compared, the scores had to have both a fall and spring pair in order to be used in the research. Of the scores provided, 1,186 student fall scores could be matched with a spring score in order to determine RIT growth.

Testing the Hypothesis

Five research hypotheses guided the first question in this study:

Hypothesis 1: Second grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than second grade students of non-NBCTs in Fayette County.

Hypothesis 2: Third grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than third grade students of non-NBCTs in Fayette County.

Hypothesis 3: Fourth grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than fourth grade students of non-NBCTs in Fayette County.

Hypothesis 4: Fifth grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than fifth grade students of non-NBCTs in Fayette County.

An additional hypothesis guided the second question of the study.

Hypothesis 5: National Board Certified Teachers in Fayette County Public Schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues.

Hypothesis 1

The first hypothesis stated: Second grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than second grade students of non-NBCTs in Fayette County. For analysis, the measured outcome was the mean gains of student scores on the second grade MAP assessment. The average growth of all second grade students nationwide on this assessment is 10.6 (nwea.org, 2011). An independent sample t-test was performed to test whether the average gain of Fayette County NBCT's students ($M=18.25$, $SD=2.3$) was significantly greater than the average gain of non-NBCT's students ($M=12.23$, $SD=1.09$). The t-test confirmed a significant difference, $t(df=114)=2.287$, $p<.024$. NBCT students scored a mean difference of 6.02 points greater than their non-NBCT peers. Additionally, second grade students receiving instruction from an NBCT scored 7.65 more than the national average growth of 10.6. This difference accounts for more than one half of a year's growth for a typical second grade student. In fact, when a one sample t-test was performed to compare the mean growth of all Fayette County second grade teachers (both NBCT and non-NBCT) to the

mean growth of second grade teachers nationwide, all Fayette County teachers had a significantly higher mean growth than the national average, $t=5.41$, $p<.03$.

Because it was determined that Fayette County elementary school NBCTs elicit a significantly greater average gain on the MAP reading assessment than non-NBCTs, an additional independent sample t-test was performed to determine if these same NBCT's elicited significantly greater gains on the MAP reading assessment specifically for students of low socioeconomic status than their non-NBCT colleagues. As in the above example, the measure outcome was the mean gain of student scores on the second grade reading MAP assessment. An independent sample t-test was performed to test whether the average gain of low SES students of Fayette County NBCTs ($M=17.11$, $SD=9.59$) was significantly greater than the average gain of low SES students of Fayette County non-NBCTs ($M=12.12$, $SD=10.65$). The t-test determined that there was not a significant difference for the growth of students in this subgroup, $t(df=81)=1.758$, $p>.083$. An additional independent sample t-test was performed to determine whether the average gain of African American students of NBCTs ($M=17.00$, $SD=4.85$) was significantly greater than the average gain of African American students of non-NBCTs ($M=11.58$, $SD=9.65$). The t-test indicated that there was not a significant difference for the growth of students in this subgroup, $t(df=47)=1.70$, $p>.09$. A summary of this data can be found in Table 3.

Table 3. Independent Samples t-Test of Second Grade Student Performance on the MAP reading assessment of NBCTs versus non-NBCTs

Students	NBCTs		Non-NBCTs		df	t
	M	SD	M	SD		
Second Grade	18.25	10.31	12.23	10.76	114	2.28**
Second Grade Low SES	17.11	9.59	12.12	10.65	81	1.75
Second Grade African American	17.00	4.85	11.58	9.65	47	1.70

** $p < .05$

Hypothesis 2

The second hypothesis stated: Third grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than third grade students of non-NBCTs in Fayette County. For analysis, the measured outcome was the mean gains of student scores on the third grade reading MAP assessment. The average growth of third grade students nationwide on this assessment is 7.0 (nwea.org, 2011). An independent sample t-test was performed to test whether the average gain of NBCT's students ($M=15.53$, $SD=8.17$) was significantly greater than the average gain of non-NBCT's students ($M=11.58$, $SD=17.64$). The t-test confirmed a significant difference $t(df=219)=1.23$, $p<.044$. NBCT students scored a mean difference of 3.95 points greater than their non-NBCT peers. Additionally, third grade students receiving instruction from an NBCT scored 8.53 more than the national average growth of 7.0 for third grade students in the area of reading. This difference accounts for more than one entire year's growth for a typical third grade student. When a one sample t-test was performed to compare the mean growth of all Fayette County third grade teachers (both NBCT and non-NBCT) to the mean growth of third grade teachers nationwide, all Fayette County teachers had a significantly higher mean growth than the national average, $t=4.9$, $p<.039$.

Because it was determined that third grade Fayette County elementary school NBCTs elicit a significantly greater average gain on the MAP reading assessment than non-NBCTs, an

additional independent sample t-test was performed to determine if these same NBCT's elicited significantly greater gains on the MAP reading assessment specifically for students of low socioeconomic status than their non-NBCT colleagues. As in the above example, the measure outcome was the mean gain of student scores on the third grade reading MAP assessment. An independent sample t-test was performed to test whether the average gain of low SES students of Fayette County NBCTs ($M=14.95, SD=9.21$) was significantly greater than the average gain of low SES students of Fayette County non-NBCTs ($M=12.54, SD=20.08$). The t-test determined that there was not a significant difference for the growth of students in this subgroup, $t(df=159)=.57, p>.564$. A final independent sample t-test was performed to determine if there was a significant difference in the mean growth of African American students of NBCTs ($M=16.00, SD=9.11$) and the mean growth of African American students of non-NBCTs ($M=11.17, SD=9.86$). The t-test found that there was not a significant difference for the growth of students in this subgroup, $t(df=73)=1.5, p>.12$. The results of these findings are summarized in Table 4.

Table 4. Independent Samples t-Test of Third Grade Student Performance on the MAP reading assessment of NBCTs versus non-NBCTs

Students	NBCTs		Non-NBCTs		df	t
	M	SD	M	SD		
Third Grade	15.53	8.17	11.58	17.64	219	1.23**
Third Grade Low SES	14.95	9.21	12.54	20.08	159	.57
Third Grade African American	16.00	9.11	11.17	9.86	73	1.50

** $p<.05$

Hypothesis 3

The third hypothesis stated: Fourth grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than fourth grade students of non-NBCTs in Fayette County. For analysis, the measured outcome was the mean gains of student RIT scores

on the fourth grade reading MAP assessment. The average growth of fourth grade students nationwide on this assessment is 5.7 (nwea.org, 2011). An independent sample t-test was performed to test whether the average gain of fourth grade NBCT's students ($M=12.10$, $SD=7.63$) was significantly greater than the average gain of non-NBCT's students ($M=9.96$, $SD=16.08$). The independent sample t-test determined that, while there was a measurable difference in the mean growth for both groups of teacher's students, the difference was not statistically significant, $t(df=331)=.576$, $p>.56$. Additionally, fourth grade students receiving instruction from an NBCT scored an average of 12.10 growth points on the MAP compared to the national average of 5.7 growth points. This difference accounts for more than one entire year's growth for a typical Fayette County fourth grade student receiving instruction from an NBCT in the area of reading. When a one sample t-test was performed to compare the mean growth of all Fayette County fourth grade teachers (both NBCT and non-NBCT) to the mean growth of fourth grade teachers nationwide, all Fayette County teachers had a significantly higher mean growth than the national average, $t=4.91$, $p<.039$.

Even though there was not a significant difference in the mean growth of fourth grade students of NBCTs versus fourth grade students of non-NBCTs on the MAP reading assessment, an additional independent sample t-test was performed to determine if NBCTs elicited significantly greater gains on the MAP reading assessment specifically for students of low socioeconomic status than their non-NBCT colleagues. The measured outcome for this t-test was the mean gain of student scores on the fourth grade reading MAP assessment. This t-test was performed to determine whether the average gain of low SES students of Fayette County fourth grade NBCTs ($M=11.56$, $SD=5.29$) was significantly greater than the average gain of low SES fourth grade students of Fayette County non-NBCTs ($M=11.48$, $SD=19.17$). Results of the t-test indicated that there was not a significant difference for the growth of students in this

subgroup, $t(df=207)=-.016, p>.988$. An additional independent sample t-test was performed to determine if there was a difference in the means of African American students of NBCTs ($M=16.00, SD=5.65$) and the means of African American students of non-NBCTs ($M=11.30, SD=22.60$). The test determined that there while a difference in the mean scores did exist, it was not significant, $t(df=97)=-.29, p>.77$. The results from hypothesis three are summarized in Table 5 below.

Table 5. Independent Samples t-Test of Fourth Grade Student Performance on the MAP reading assessment of NBCTs versus non-NBCTs

Students	NBCTs		Non-NBCTs		df	t
	M	SD	M	SD		
All Fourth Grade	12.10	7.63	9.96	16.08	331	.576
Fourth Grade Low SES	11.56	5.29	11.48	19.17	207	.016
Fourth Grade African American	16.00	5.65	11.30	22.60	97	.292

***p<.05*

Hypothesis 4

The fourth hypothesis stated: Fifth grade students of NBCTs in Fayette County have greater gains on their MAP reading assessment than fifth grade students of non-NBCTs in Fayette County. For analysis, the measured outcome was the mean gains of student RIT scores on the fifth grade reading MAP assessment. The average growth of fifth grade students nationwide on this assessment is 4.2 RIT points (nwea.org, 2011). An independent sample t-test was performed to test whether the average gain of fifth grade NBCT's students ($M=8.54, SD=6.34$) was significantly greater than the average gain of non-NBCT's students ($M=8.86, SD=19.01$). The independent sample t-test determined that there was not a measurable difference in the mean growth for both groups of teacher's students, therefore, the difference was not statistically significant, $t(df=515)=-.150, p>.881$. However, when a one sample t-test was performed to compare the mean growth of all Fayette County fifth grade teachers (both

NBCT and non-NBCT) to the mean growth of fifth grade teachers nationwide, all Fayette County teachers had a significantly higher mean growth than the national average, $t=5.05, p<.037$.

While there was not a significant difference in the mean growth of fifth grade students of NBCTs versus fifth grade students of non-NBCTs on the MAP reading assessment, an additional independent sample t-test was performed to determine if NBCTs elicited significantly greater gains on the MAP reading assessment specifically for students of low socioeconomic status than their non-NBCT colleagues. The measured outcome for this independent sample t-test was the mean gain of student scores on the fifth grade reading MAP assessment. This t-test was performed to determine whether the average gain of low SES students of Fayette County fifth grade NBCTs ($M=8.71, SD=6.50$) was significantly greater than the average gain of low SES fifth grade students of Fayette County non-NBCTs ($M=9.51, SD=18.46$). The t-test found that there was not a significant difference for the growth of students in this subgroup, $t(df=343)=-.32, p>.742$. A final independent sample t-test was performed to determine whether the average gain of African American students of fifth grade NBCTs ($M=8.18, SD=5.50$) was greater than the average gain of African American students of fifth grade non-NBCTs ($M=8.95, SD=17.73$). The results determined that non-NBCTs produced a greater mean RIT gain for these students than NBCTs, however, the gain was not significant. Table 6 summarizes these findings.

Table 6. Independent Samples t-Test of Fifth Grade Student Performance on the MAP reading assessment of NBCTs versus non-NBCTs

Students	NBCTs		Non-NBCTs		df	t
	M	SD	M	SD		
All Fifth Grade	8.54	6.34	8.86	19.01	515	-.15
Fifth Grade Low SES	8.71	6.50	9.51	18.46	343	-.32
Fifth Grade African American	8.18	5.50	8.95	17.73	205	-.796

** $p<.05$

The findings for the four hypothesis suggest that National Board Certified teachers have significantly greater RIT reading gains on the MAP assessment in lower primary grades (second and third) than their non-National Board Certified colleagues. However, while fourth grade NBCTs have a greater mean gain than fourth grade non-NBCTs, the difference is not statistically significant, and there is virtually no difference for mean gains of NBCT versus non-NBCTs for fifth grade reading gains. A combined summary of the first four hypothesis and their outcomes appears in Table 7.

Table 7. Independent Samples t-Test of Student Performance on the MAP reading assessment of NBCTs versus non-NBCTs

Students	NBCTs		Non-NBCTs		df	t
	M	SD	M	SD		
Second Grade	18.25	10.31	12.23	10.76	114	2.28**
Third Grade	15.53	8.17	11.58	17.64	219	1.24**
Fourth Grade	12.10	7.63	9.96	16.08	331	.576
Fifth Grade	8.54	6.34	8.86	19.01	515	-.150

** $p < .05$

Hypothesis 5

Hypothesis five stated: National Board Certified Teachers in Fayette County Public Schools developed the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues. A survey was used to collect data to test this hypothesis. The survey was adapted from one used by Frank (2008) in a research project that investigated a question concerning the impact of NBCTs on their colleagues. This survey was sent to all certified teachers in the Fayette County elementary schools that currently employ at least one NBCT. SurveyMonkey, a secure website that enables data to be collected electronically and anonymously, was utilized to collect teacher responses. The survey was developed in a manner that moved teachers forward through the survey, and did not allow them to go back and change their answers. Approximately 805 teachers were invited to participate in the survey via email,

and 174 responded for a response rate of about 21%. Before taking the survey, teachers were asked if they had their National Board Certification, if they were pursuing this certification, or if they did not have this certification. These answers were coded in order to analyze the data collected.

Survey Results

Approximately 174 teachers responded to the survey. Of these, thirty three (19%) indicated that they were NBCTs. Twelve teachers (7%) indicated that they were currently pursuing their NBC and 129 teachers (74%) indicated that they were not Nationally Board certified nor were they pursuing the certification that this time.

Teachers Perceptions of NBCTs

The first set of question sought to gain teacher's perspectives about NBCTs in their buildings. These questions involved teachers using a Likert scale to respond to questions about NBCTs. Means for each question were determined. In regards to each subcategory, Fayette County teachers disagreed with the idea that NBCTs provide more assistance in any facet of the school day than their non-NBCT colleagues. The teachers surveyed did not feel as though NBCTs were more helpful than their peers in regards to instruction. More than 80% of the teachers surveyed disagreed or strongly disagreed that NBCTs assisted others with instruction more often than non-NBCTs. More than 91% of the teachers disagreed or strongly disagreed with the statement that NBCTs assist others with behavior issues more often than non-NBCTs. Over 82% of those surveyed disagreed or strongly disagreed that NBCTs assist others with assessment more than non-NBCTs and more than 87% of the respondents disagreed or strongly disagreed that NBCTs provide professional encouragement and support than their non-NBCT colleagues.

Additionally, 80% of the teachers survey disagreed or strongly disagreed that NBCTs mentor others more than non-NBCTs. A complete summary of the results can be found in Table 8.

Table 8. Summary of Survey Results of Teacher Perception of NBCTs

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
1. National Board Certified teachers assist others with instruction more often than non-National Board Certified teachers.	2.2%	17.4%	54.7%	25.7%
2. National Board Certified teachers assist other with behavior more often than non-National Board Certified teachers.	0.5%	8.2%	64.5%	26.8%
3. National Board Certified teachers assist others with assessment more than non-National Board Certified teachers.	1.7%	15.6%	52.1%	30.6%
4. National Board Certified teachers provide encouragement and support more than non-National Board Certified teachers.	2.0%	10.7%	59.6%	27.7%
5. National Board Certified teachers provide leadership in our school more than non-National Board Certified teachers.	1.7%	11.3%	62.6%	24.4%
6. National Board Certified teachers mentor others more than non-National Board Certified teachers.	2.0%	18.0%	55.3%	24.7%
7. The principal includes National Board Certified teachers more than other teachers in school leadership and decision making.	2.0%	9.3%	57.3%	31.3%
8. The principal encourages National Board Certified teachers more than other teachers to share ideas and innovations in the building.	1.3%	9.4%	61.1%	28.2%

Teacher’s Reflection on Their own Practice

The second portion of the survey focused upon teacher’s perceptions of how often they develop the instructional capacity of others. The survey answers were sorted by the answer to the first question, “Are you a NBCT?” Teachers answering yes received a code of 1 and the teachers answer no received a code of 0. The responses were entered into SPSS and means were compared for NBCTs and non-NBCTs. For analysis, the measured outcome was the mean number of colleagues that teachers self-reported assisting. An independent sample t-test was performed to test whether NBCTs self-reported assisting others with instructional issues

($M=8.46$, $SD=7.6$) than non-NBCTs ($M=7.33$, $SD=6.2$). The results of this test showed that there was not a significant difference in the mean number of teachers that each group reported assisting with instruction during the academic year, $t(df=158)=-.813$, $p>.417$.

The following question regarding the number of teachers that both NBCTs and non-NBCTs reported assisting with behavioral issues was also analyzed using an independent sample t-test. The measured outcome was the mean number of colleagues that teachers self-reported assisting with behavioral issues. The mean number of teachers NBCTs reported assisting with behavior ($M=4.85$, $SD=4.74$) was similar to the mean number of teachers non-NBCTs reported assisting with behavior ($M=4.27$, $SD=4.18$). The results indicated that there was not a significant difference in the mean number of teachers that each group reported assisting with behavior during the academic year, $t(df=152)=.634$, $p>.527$.

The final question on which teachers self-reported was regarding the number of teachers that NBCTs and non-NBCTs had assisted with assessment. For analysis, the measured outcome was the mean number of colleagues that teachers self-reported assisting in the area of assessment. These responses were analyzed using an independent sample t-test to determine whether NBCTs self-reported assisting others with assessment issues ($M=6.90$, $SD=7.5$) than non-NBCTs ($M=4.39$, $SD=4.49$). The results of this test showed that there was a significant difference in the mean number of teachers that each group reported assisting with assessment during the academic year, $t(df=152)=2.35$, $p<.02$.

The results of the findings of all three questions in which teachers self-reported are summarized in Table 9.

Table 9. Independent Samples t-Test of Teachers Self-Reported Answers on the Numbers of Colleagues They Have Assisted in Developing Instructional Capacity

Question	NBCTs		Non-NBCTs		df	t
	M	SD	M	SD		
Number of teachers I have assisted with instructional questions	8.46	7.60	7.33	6.20	158	.813
Number of teachers I have assisted with behavioral questions	4.85	4.74	4.27	4.18	152	.634
Number of teachers I have assisted with assessment questions	6.90	7.50	4.39	4.49	152	2.35**

** $p < .05$

Nominal Data

The final part of the survey consisted of six questions in which teachers had access to the names of the NBCTs in their buildings to assist them in answering the questions. Teachers responded to six different questions to which they provided a number of NBCTs in their building and a number of non-NBCTs in their building. The results follow in Table 10.

Table 10. Numbers of NBCTs and non-NBCTs Who Have Helped to Develop Instructional Capacity within Fayette County School Buildings

Questions	NBCTs	%	Non-NBCTs	%
Number of teachers who have helped me with instructional issues or questions.	49	25%	141	75%
Number of teachers who have helped me with behavioral issues or questions.	16	16%	80	84%
Number of teachers who have helped me with assessment issues or questions.	32	26%	91	74%
Number of teachers who have provided me with professional encouragement or support.	38	21%	137	79%
Number of teachers you considers to be instructional leaders within your school building.	63	24%	200	76%
Number of teachers you consider to be mentors in your school building.	55	33%	109	67%

Table 10 indicates that teachers in Fayette County schools rely more on their non-NBCT colleagues in all identified areas. However, the results of these questions may be misleading unless one considers the limited number of NBCTs within the district. Only 66 of the 805

teachers involved in this survey question have earned their National Board Certification. This means 4.6% of teachers involved in the survey are NBCTs. Therefore, the expected responses for a null hypothesis to research question two, *Do National Board Certified Teachers in Fayette County elementary schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?* would be that NBCTs for each of the six questions would receive about 4%-10% of all responses. However, in the questions above, the range in percentage of teachers who indicate they have received assistance from a NBCT during the academic year is between 16%-26%. This data indicates that 4.6% of the teaching population is providing up to 26% of the assistance in developing the instructional capacity of the teachers in these school buildings. The surveyed teachers also indicate they do not view NBCTs as serving as instructional leaders or mentors any more than their non-NBCT peers. NBCTs were chosen 24% of the time as the instructional leaders in their buildings and 33% of the time as mentors in their buildings. When considering that only 4.6% of the population has earned their NBCT, an expected result would be that these teachers would receive about 4%-10% of the responses. The data indicates that 4.6% of the teaching population is providing 33% of mentoring activities that aid in developing the instructional capacity of teachers within the sampled school buildings.

Summary

Reading MAP data for second through fifth grades was provided by Fayette County schools. Students with scores for both fall and spring for whom a RIT growth score could be calculated were included in the sample. The data was used to conduct multiple analysis using both independent sample t-tests and t-tests. Findings indicate that students of second and third grade NBCTs made significantly higher RIT gains on the MAP assessment than students of non-NBCTs. While fourth grade students of NBCT had a higher mean RIT gain than fourth grade

students of non-NBCTs, the results were not significant, and fifth grade students of each group had virtually no difference in RIT growth.

A survey used by Frank (2008) to collect data on the NBCTs and their development of the instructional capacity of others was utilized. Survey data collected from Fayette County elementary schools that employed at least one NBCT was analyzed to determine if NBCTs develop the instructional capacity at a higher rate than their non-NBCT colleagues. Means for questions were calculated, and both independent t-test and t- tests were used to determine the answer to hypothesis five. The results of the tests found that teachers in Fayette County are more likely to disagree or strongly disagree that NBCTs in their schools develop the instructional capacity of others in their buildings more than their non-NBCT colleagues. Independent t-test samples were used to determine if NBCTs self-report assisting others and developing their instructional capacity more than non-NBCTs self report engaging in these activities. These tests indicate that NBCTs do not report assisting others with instruction or behavior more than non-NBCTs. However, NBCTs do self-report assisting peers at a higher significantly rate with assessment questions and issues than their non-NBCT peers. Means were calculated to determine how often NBCT and non-NBCTs were chosen by their peers in the development of instructional capacity. While non-NBCTs were chosen at a higher rate than NBCTs, one must consider the small size of the population of NBCTs when analyzing this data. This survey provides mixed results about the instructional assistance that NBCTs provide. A further discussion of these findings occurs in Chapter Five.

CHAPTER FIVE

SUMMARY AND DISCUSSION

Introduction

As state and national funding become scarce, legislators are faced with the task of cutting and reallocating funds. Thirty-five states currently allocate funds to assist teachers in pursuing their National Board Certification (NBC) (Hakel, Koenig, & Elliot, 2008; NBPTS, 2010). In addition, teachers in thirty-two states earning this certification receive monetary compensation ranging from \$500 to \$10,000 per year, depending upon the state or district. Many states, including Kentucky, also provide paid mentors to assist teachers with the NBC process. As lawmakers continue to face difficult decisions around financial allocations, questions surrounding the impact of NBCTs on student achievement are increasingly significant. It is imperative that NBC be evaluated to ascertain if this certification is having its intended impact. The goal of this study was not to determine if the possible benefits of having NBCTs in a district is worth the financial costs, but instead to evaluate if teachers earning this certification in one Central Kentucky district are making the gains in four of five areas that NBPTS set for teachers: being committed to students and their learning, knowing their subjects and how to teach them to students, managing and monitoring student learning, and being members of professional learning communities.

This chapter is organized into five segments. The first section presents the findings of the study in the context of the existing studies and literature. The second segment discusses the limitations of this study. The third portion suggests implications of the research findings. The fourth part suggests recommendations for future studies or research. Finally, this chapter

concludes with a discussion of the specific implications for Fayette County schools and their use of National Board Certified teachers.

Findings and Analysis

This study focused specifically on elementary NBCTs in the Fayette County Public School system, a district in Central Kentucky. It utilized MAP scores in the area of reading provided by the district. It also incorporated a survey of Fayette County elementary school teachers working in a building that employs at least one NBCT. The research effort sought to determine the answers to the following questions:

- 1) DO NBCTs in Fayette County elementary schools produce greater student gains on the MAP reading assessment than non-NBCTs for second through fifth grade students?
- 2) Do NBCTs in Fayette County elementary schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues?

The first research question consisted of four individual hypotheses each focusing on a specific grade level. Two of these hypotheses were supported by the findings of the study, and two were not supported by the findings. Students of second and third grade NBCTs were found to have significantly greater RIT gains on the reading MAP assessment than students of non-NBCTs. While fourth grade students of NBCTs had a higher mean RIT gain than fourth grade students of non-NBCTs, the results were not significant, and fifth grade students of each group had virtually no difference in RIT growth.

Because of the limited research on student achievement and NBCTs, the previous studies on this topic are inconsistent. The findings for this research project were consistent with those of Goldhaber & Anthony (2003) and Sander, Ashton, & Wright (2003) that found third graders of NBCTs had a greater gain in reading than those of non-NBCTs, but fifth grade

students of NBCTs did not show a significantly greater gain. However, the findings of this study were in direct conflict with those of Clotfelter, Ladd & Vigdor (2000) who found that fifth grade students of NBCTs had significantly higher gains in reading than fifth grade students of non-NBCTs, and those of Goldhaber & Anthony (2007), who determined that there were small differences in reading scores of NBCTs in grades 3-5, but they were not significant. Hanushek (1998) indicates that qualified teachers can make up to a full grade level of growth especially for minority and low SES students, however the results of the independent t-tests did not support that finding with this particular data set.

One possible contributing factor that may lead to these conflicting results is the structure of many elementary schools in Fayette County. Teachers in second and third grades are generalists, and most instruct the same children for the entire six hour instructional day. This means that a second or third grader receiving instruction from an NBCT benefits from six hours of instruction a day, 177 days per year, or 1,062 hours. In this district, the grade level in which many schools begin to departmentalize is fourth grade. Fourth and fifth grade children may have between two and four teachers per day, depending on the structures that individual schools have chosen to implement. So instead of receiving 1,062 hours of instruction from a NBCT during the academic year, many fourth and fifth graders receive between 265-531 hours of instruction from a NBCT. Some of these students only receive one fourth of the amount of instructional time from a NBCT that their second and third grade peers obtain. This difference in the amount of instructional time could be one element that produces the discrepancy of significant differences in scores between grade levels.

The second research question that this study focused on was: Do NBCTs in Fayette County elementary schools develop the instructional capacity of other teachers at a higher rate than their non-NBCT colleagues? The researcher used a survey adapted from Frank (2008) to

collect data from Fayette County teachers and their perceptions of NBCTs and their practice in developing instructional capacity. Survey data collected from Fayette County elementary school teachers that employed at least one NBCT was analyzed to determine if NBCTs develop the instructional capacity at a higher rate than their non-NBCT colleagues. Means were determined for each Likert and open ended survey question. Independent t-test were used to determine the answer to hypothesis five.

The test results determined that Fayette County teachers are more likely to disagree or strongly disagree that NBCTs in their schools develop the instructional capacity of others in their buildings more than their non-NBCT colleagues in regards to instruction, behavior and assessment. Independent t-test samples were used to determine if NBCTs self-report assisting others and developing their instructional capacity more than non-NBCTs self report engaging in these activities. These tests indicate that NBCTs do not report assisting others with instruction or behavior more than non-NBCTs, but that they do indicate that they assist their peers with assessment questions at a significantly higher rate than their non-NBCT colleagues. Means were calculated to determine how often NBCT and non-NBCTs were chosen by their peers in the development of instructional capacity. While non-NBCTs were chosen at a higher rate than NBCTs, one must consider the small size of the population of NBCTs when analyzing this data. This survey provides mixed results about the instructional assistance that NBCTs provide in the Fayette County school system.

The mixed results of this survey are in conflict with those of Farrell (2005) and Frank (2008). These individual studies determined that NBCTs engage in more leadership activities, mentoring activities, and provide more help in instructional matters than their non-NBCT colleagues. The teachers reporting in this survey did not show significant differences in the amount of time that NBCTs and non-NBCTs spent in developing the instructional capacity of

others except in the area of assessment. However, when asked to self-report about the numbers of teachers they had helped with instruction and behavior, NBCTs reported a higher mean number of teachers than non-NBCTs. One implication of these findings may simply be that there are not enough NBCTs on site in any single school to evoke a significant change in developing the instructional capacity of others. Berry, Johnson, and Montgomery (2005) discussed a school that saw a dramatic increase in professional learning communities and in teachers assisting others and holding each other accountable for change and student growth. The school that was the subject of the qualitative study had more than ten NBCTs on staff. Perhaps as Fayette County elementary schools increase the number of NBCTs on staff, individual schools might begin to see greater evidence of the impact of NBCTs on their colleagues.

Both NBCTs and non-NBCTs disagreed or strongly disagreed that school principals and administrators include NBCTs more than other teachers in school leadership and decision making and encourage them more than other teachers in the building to share ideas and innovations. This evidence may indicate that principals value their NBCT and non-NBCT staff equally. But it could also signify that building principals are not encouraging NBCTs to tap their full leadership and mentoring potential. One of the core propositions of NBPTS is that teachers think systematically about their practice and learn from experience, while another is that teachers are members of learning communities (nbpts.org, 2010). Teachers earning their NBC understand that one of their obligations is to be reflective about their practices, and help others to do the same. Perhaps Fayette County principals are not asking or encouraging their NBCTs to take on additional roles. However, with some education about the certification, building administrators can come to understand that this is actually an obligation of teachers earning the certification. Perhaps then they would feel more comfortable in encouraging NBCTs in their buildings to take on leadership and mentoring roles.

Ingverson and Hattie (2008) claim that NBCTs are in high demand because they emerge as leaders and mentors within their buildings. However, the evidence in this district suggests that this is either not the case, or that principals are either unsure of or unwilling to utilize a potential shared leadership and mentoring resource. If the latter is the case, some administrators could be missing an opportunity to increase teachers' self esteem and work satisfaction. Likewise, since teacher leadership roles have the potential to lead to greater levels of teacher performance and retain high quality teachers, these same principals may be actually limiting a would be resource (Katzenmeyer & Moller, 2001).

Overall the findings of this study were consistent with previous studies of the impact of NBCTs on student achievement, but inconsistent with studies on the rate at which NBCTs develop the instructional capacity of their peers as compared with non-NBCTs. However, when viewed through a more pragmatic lens, even a small elevation in mean student growth and willingness to serve as leaders and mentors could be significant to an individual principal and the parent of an elementary school child. In fact, according to these results, if a child had access to a NBCT for only three years (second, third, and fourth grades), that child would have the potential to make one and one third years greater growth than a child who did not have access to a NBCT. Even without statistical significance (which does exist for second and third grade students), the practical significance for that child, their family, and their school building could have a lasting educational impact.

Limitations

This study had several limitations. One limitation was the decreased generalizability of the study due to the use of survey research. This mode of research has the common limitation of a limited participant response. The response to this survey was 21%, which decreases the ability of the study to be generalized to other school districts. Likewise, the number of NBCTs

who responded to the survey accounts for 19% of all responses, but the actual representation of these teachers in the district is 4.6%. Therefore, the responses to some questions might have been skewed by an increased participation by this group of teachers.

Another limitation is the data set of MAP scores provided by the school district. Fayette County has been using the MAP assessment for three years, and the data set provided was from the second year of MAP implementation. During this year, only about one third of the district schools were participating in this assessment. Also, many schools that participated only reported spring scores, so many scores had no fall matches and had to be discarded because a RIT growth could not be determined. However, the sample size included more than 1000 student scores that could be directly matched to teachers and their individual certification. This sample was representative of the district's population including race, free and reduced lunch, and special education.

The inequitable distribution of NBCTs in the state of Kentucky is another limitation because it decreases the ability of the findings to be generalized to the rest of the state. Even though Kentucky ranks 12th in the number of NBCTs nationwide, there are only 1864 of these teachers in the state. This is less than 2% of Kentucky public school teachers. However, in Fayette County, there are 66 NBCTs in the elementary schools alone. These teachers account for 4.6% of the elementary teaching population. This inequitable distribution of NBCTs will hinder these results from being able to be generalized to the entire state.

Implications

Based on the findings of previous studies and the results of this study, it seems that having a National Board Certified teacher in the elementary school years can lead to greater student achievement (Goldhaber & Anthony, 2003; Sander, Ashton, & Wright, 2007; Clotfeler, Ladd, & Vigdor, 2000; Goldhaber & Anthony, 2005; Cavalluzzo, 2004). As supported by Hanushek

(1998), these findings indicate that three years of instruction from a NBCT can account for more than one and one third of a year's additional growth for students.

One particularly meaningful finding from this study is in the comparison of Fayette County NBCT scores to those of the national average. For second grade students in the study year, the NBCTs growth was 18.25, while the national average growth was 10.6. The additional growth achieved by Fayette County teachers represents more than one half of a school year. For third grade students in the study year, the growth of Fayette County NBCTs was 15.53, but the national average growth was 7.0. The difference in these means accounts for more than an entire school year's worth of growth. For fourth grade students in the study, Fayette County NBCT growth was 12.10, while the national average was 5.7. Just as for third grade students, the difference in these means accounts for more than a year's worth of growth. These findings indicate that even in grade levels where there was not a significant difference between Fayette County NBCTs and non-NBCTs, there was a marked difference in the growth of Fayette County NBCTs compared to the national average. Therefore, a student receiving instruction from a Fayette County NBCT for three years (second, third, and fourth grades) would have the potential to achieve a two and a half year greater gain than one not instructed by these teachers. This growth is even greater than that reported by Hanushek (1998).

The 2003 Reading First initiative advocated the importance of reading intervention at an early age. Research supporting the grant indicated that for the majority of students, if they do not read on grade level by third grade, they never will (National Reading Panel, 2003). The National Reading Panel website reviews more than 100 scientifically research based articles that detail effective reading strategies that teachers can employ. NRP also advocates the importance of placing the most qualified teachers with the neediest students. The findings of this study on NBCTs, in light of the Reading First research, supports the idea that the most effective reading

teachers have the greatest and most lasting impact in the early primary grades. Because Fayette County NBCTs significantly outperformed their non-NBCT peers in reading growth for second and third grades, an implication for administrators may be that NBCTs have the opportunity for greatest impact at this early level. Therefore, it may be that principals and administrators might consider placing NBCTs in grades K-3 if they are desiring a significant impact on reading scores.

Additionally, some data from this study and that of previous studies indicate that NBCTs may develop the instructional capacity of their peers at a higher rate than their non-NBCT peers (Frank, 2008; Farrell, 2005; Sykes et al., 2006; Ingveson & Hattie,2008). Even a small mean difference in rates of mentoring colleagues could play an important role in both the culture and instructional capacity of an individual school building. One interesting finding was that Fayette County elementary school teachers in grades two through five have a significantly higher RIT growth than the national mean. Therefore, students in this district are making greater gains each year than many of their peers nationwide. There are many possible contributing factors to this outcome, but one that could be further explored may be that NBCTs are having the intended impacts in this district's schools and classrooms. It is possible that the spillover effects discussed by Frank (2008) exist in the areas of student achievement in this district.

Another implication of this study is that teachers in individual school buildings may not be aware of who the NBCTs in their own schools are. The first section of the survey indicated that teachers disagree or strongly disagree that NBCTs assist colleagues with building instructional capacity more than non-NBCTs. However, in the third portion of the survey, when a drop down box of names of NBCTs in individual school buildings was provided, data showed that 4.6% of the teaching population of these elementary schools was providing up to 33% of the mentoring that occurs within these buildings. This data would indicate that Fayette County elementary NBCTs are helping to build instructional capacity at a greater rate than their non-

NBCT peers. One possible conclusion from this discrepancy is that many teachers do not know who the NBCTs in their buildings are. It may or may not be that a mass email is sent when a teacher earns this certification, and that it is rarely mentioned again. However, even without knowing who these teachers are, the data indicates that many classroom teachers are naturally turning to these individuals for instructional assistance and mentoring.

One final implication of this study is that the implementation of the NBC policy in Kentucky is still experiencing a variety of obstacles. It appears that the state government has taken over the role of the formal policy implementer. The state legislature acknowledges the importance of NBCTs by providing financial support in several ways: teachers receive compensation to pursue certification, teachers receive a salary bonus after earning certification, and teachers are awarded a Rank 1 status in the state. The district and building administrators have become the intermediary policy implementers in Kentucky, and this seems to be where the obstacles may be occurring. Some of these administrators may not have the will to implement this policy because of a variety of reasons, including dissatisfaction with the policy. Others may not have the capacity to implement the policy due to a lack of understanding of how NBCTs may affect individual school districts and buildings. Regardless of the reasons, it is evident that the same amount of support advocated by the state general assembly is not evident in individual buildings across school districts.

Therefore, the findings indicate that the Fayette County Public School district may benefit from placing current NBCTs more strategically in low achieving schools, and encouraging existing NBCTs to serve as mentors and as school leaders in their buildings and in the district. The students in low achieving schools are often making the required RIT growth each year. However, in order for these at-risk students to accelerate and close the achievement gap, they need to make more than one year's growth during the academic school year. By assigning these

students to a NBCT several years in a row, the chances of these students having accelerated growth increases. In the primary grades, administrators might want to consider creating cohorts of NBCTs so that primary students could progress from kindergarten to third grade, receiving instruction from an NBCT for four consecutive years. The potential would exist for these students to make between three and four years more growth than students not instructed in this type of cohort. Such a system would most benefit the lowest achieving students who begin school at a disadvantage. These students have the academic potential, but their back ground experiences before they enter school have differed from their peers. Therefore, it is imperative that they make more than a typical year's growth if the achievement gap is to be reduced.

Because fourth and fifth grade NBCTs did not see the significant increased performance in reading, a different model might benefit students receiving instruction from these teachers. As discussed previously, these students may only see any one teacher for as few as two instructional hours per day. As with the primary example, administrators may want to consider establishing cohorts of NBCTs in these intermediate grade levels to ensure that even though students may have instruction from as many as four teachers per day, each of these teachers is highly qualified and has the potential to achieve increased growth for each student. Additionally, a variety of National Board certifications are awarded. In order to have the greatest possible impact, school administrators may want to ensure that a NBCTs certification matches the subject matter in which they are instructing. So, in order to have the greatest possible impact on reading scores, a principal would want a NBCT with a literacy certification in middle childhood to instruct reading and writing in their school if at all possible. In this way, building administrators are ensuring that teacher strength matches their instructional assignment and, therefore, is having the greatest potential impact on student performance.

Likewise, new teachers join staffs each year and need to be acculturated into the school and district norms. Therefore by encouraging NBCTs to aid in building the instructional capacity of the school, the highest and lowest achieving schools have the potential to increase the professionalism and individual strengths of their entire staffs.

Recommendations for Further Research

The present study suggests that NBCTs in Fayette County elementary schools have higher gains in student reading growth than non-NBCTs. An extension of this study over the course of several years would benefit the body of research on NBCTs. As more Fayette County elementary schools utilize MAP in the fall and spring, the data base of paired scores will increase. This will increase the sample size, ensuring more reliable results. Additionally, by utilizing anonymous student numbers, a researcher could code students and determine the number of years they receive instruction from an NBCT. These mean growth scores could be compared to determine if a greater amount of growth occurs for students receiving several years of instruction from these teachers.

Another recommendation for further research would be the study of MAP scores in mathematics. Previous studies show a discrepancy in significant growth for students of NBCTs in the areas of reading and math. Scores could be analyzed for both subjects to determine if findings for Fayette County are consistent with those of other studies.

Lastly, survey results could be analyzed to determine the degree of the impact of NBCTs on developing the instructional capacity of their peers. This type of analysis would better display whether or not NBCTs are contributing to developing instructional capacity at a higher rate than non-NBCTs.

Conclusions

The present study utilizes a sample from a large Kentucky district to present evidence on the impact of NBCTs in the district. This is one of the first studies to examine the impact of these teachers in the state of Kentucky. The findings suggest that NBCTs have a greater impact on lower primary school students than on intermediate elementary school students in the area of reading. It provides a mixed message about the impact of NBCTs on developing the instructional capacity of their colleagues. First glance at the data indicates that these teachers do not play a greater role than their non-NBCT peers, but when comparing the results to the population and percentage of NBCTs, it is evident that they are assuming these roles at a higher rate than expected.

Overall, the findings support many of those presented in the literature review of previous research. But it cannot be inferred that National Board Certification can have the expected and hoped for impact on Kentucky and United States students that the founders of this certification had foreseen. This is because of the varying degrees of the significance of student achievement growth and gains at different grade levels. However, when analyzing the increased growth of these central Kentucky NBCTs over the national average gains, with gains for some grade levels being more than one year of growth for an average United States student, perhaps the issue of NBCTs significantly outperforming non-NBCTs in one district is not important. Perhaps these gains are evidence of the beginning of the spillover effects discussed previously. It could be that NBCTs are already impacting instruction and assessment and that is why there are not significant score differences in some grade levels.

However, when viewed through a pragmatic lens, even small differences could have a practical influence on student growth. It is practical for a principal to want to hire and retain those teachers that are producing the greatest student gains, even if they are only slightly

higher than other teachers. It is also practical for parents to want these same gains for their children. In the field of education, which plays such a lasting role in child development, sometimes statistical significance may not be the most important influencing factor. Maybe the practical administrator and parent want even the slight academic edge that NBCTs may provide to young students.

As stated in the opening paragraph of this chapter, legislators continue to face the task of cutting and reallocating funds in the face of an uncertain economy. It is estimated that more than \$600 million in grants and fees, along with \$1 billion in salary incentives across the United States have already been spent on National Board Certification (Podgursky, 2001). These types of investments raise important questions about the impact of National Board Certification and if such funding can be justified both on a state and national level. As this certification process and the impacts of its teachers begin to be formally evaluated, information such as that presented in this study can aid legislators as they confront the challenge of how to best utilize resources to impact the good of the Commonwealth.

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APPENDIX A:
Request for Data

From: Boulden, Shelly
Sent: Wednesday, March 23, 2011 9:55 AM
To: McCormick, George
Cc: Reynolds, Michele
Subject:

Mr. McCormick,

My name is Shelly Boulden and I work at Squires Elementary School. I am currently a student at Eastern Kentucky University, and I am completing my dissertation on National Board Certified Teachers. I would like to complete part of my study specifically on NBCs here in Fayette County and their impact on student achievement. I would also like to survey teachers to gain some insight into their perceptions about NBCTs in their buildings.

I would like to do an analysis of MAP scores in Fayette County. I would specifically like to look at MAP data from the 2009-2010 school year for grades 2-5. I would like to look at every school's data who participated in the MAP assessment. I want to compare the RIT growth scores in reading for NBCT and non-NBCT teachers. This means I would need student fall 2009 RIT score and a spring 2010 RIT score by teacher. Can you please let me know what I need to do to be allowed to have access to this data? I have submitted by IRB proposal to ECU and expect that back by the middle of next week.

Thanks so much for your help with this project!

Shelly,

Attached is a file with MAP data for students in grades 2-5 per elementary school. There are two tabs at the bottom of the spreadsheet. The first, "Teacher", gives a list of all teachers as well as any students they had in any of their courses. The second, "Course", gives a list of the teachers along with their courses and students that were in each course. The Teacher list will have less data and less duplicates as opposed to the Course list (because a student may have the same teacher for numerous courses). I included the Course list if you wanted to eliminate courses that were not needed. Also, not all elementary schools roster students into a "Reading" course – they may just be in a homeroom course.

Hope this is what you need.

Reply/Forward by:

Daphne Jenkins

859-381-4186

FCPS - Office of Data, Research, & Evaluation

From: McCormick, George

Sent: Thursday, March 24, 2011 12:27 PM

To: Jenkins, Daphne

Subject: FW: data/research request

George E. McCormick

Fayette County Public Schools
Office of Data, Research, and Evaluation
701 E. Main St.
Lexington, KY 40502
859-381-4245

You live and learn. At any rate, you live.

Douglas Adams

APPENDIX B:

Teacher Perception Survey—Adapted from Frank (2008)

1. School Name
2. I am a National Board Certified Teacher
 - a. Yes
 - b. No
3. I am currently pursuing National Board Certification.
 - a. Yes
 - b. No
4. NBCTs assist others with instruction more often than non-NBCTs.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
5. NBCTs assist others with student behavioral issues more often than non-NBCTs.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
6. NBCTs assist others with assessment questions more than non-NBCTs.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
7. NBCTs provide encouragement and support more than non-NBCTs.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
8. The NBCTs in my school fill leadership roles in our school more often than non-NBCTs.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
9. NBCTs mentor others more than non-NBCTs.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
10. The principal includes NBCTs more than other teachers in school leadership and decision making.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree

11. The principal encourages NBCTs more than other teachers to share ideas and innovations in the building.
- a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
12. Number of teachers I have assisted with instructional questions this year. _____
13. Number of teachers I have assisted with student behavioral questions this year _____.
14. Number of teachers I have assisted with assessment questions this year _____.
15. Number of teachers who have helped me with instructional issues or questions this year.
- NBCTs _____ non-NBCTs _____
16. Number of teachers who have helped me with student behavioral issues or questions this year.
- NBCTs _____ non-NBCTs _____
17. Number of teachers who have helped me with assessment issues or questions this year.
- NBCTs _____ non-NBCTs _____
18. Number of teachers who have provided with me professional encouragement or support this year.
- NBCTs _____ non-NBCTs _____
19. Number of teachers you consider to be instructional leaders within your school building.
- NBCTs _____ non-NBCTs _____
20. Number of teachers you consider to be mentors in your school building.
- NBCTs _____ non-NBCTs _____