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NATIONAL BOARD CERTIFICATION AND STUDENT ACHIEVEMENT:

DO THEY RELATE IN LOUISIANA?

By

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The state of Louisiana has spent a large amount of money over the past years to ensure highly qualified teachers for every student. This study aimed to discover whether or not there was a statistically significant association between teachers who attain National Board Certification and student gains in achievement on standardized tests specifically the Louisiana Educational Assessment Program (LEAP) in an urban Louisiana school district.

The research was to determine if students taught by Nationally Board Certified teachers (NBCTs) outperformed students of comparable backgrounds taught by Non-Nationally Board Certified Teachers (Non-NBCTs). To accomplish this, the research examined English Language Arts and Mathematics test scores of fourth and eighth grade students taught by NBCTs and compared them with those of students taught by Non-NBCTs to determine if the gains made by the group taught by NBCTs were statistically significantly different from those taught by Non-NBCTs.

The results of the data analysis indicated that there was a statistically significant difference between the score differences of fourth grade English Language Arts students and eighth grade English Language Arts students taught by NBCTs when compared to those taught by Non-NBCTs. The fourth and eighth grade score differences of students taught by NBCTs were statistically significantly higher. However, the analysis of the data also revealed there was not a statistically significant difference between the score differences of 4^{th} grade math students taught by NBCTs when compared to those taught by Non-NBCTs. There were no NBCTs for 8^{th} grade Mathematics students.

One recommendation for further research should be to focus on more than one district to determine if results would be similar. Another recommendation, the Louisiana Department of Education should study all areas of high-stakes testing within the state to determine if teacher certification, especially NBCTs, have an impact on student achievement. The Louisiana Department of Education's should use its extensive data base for a study determine whether National Board Certification contributes to increases in student achievement across all grade levels.

DEDICATION

I would like to dedicate this research to my family, who has supported me throughout this long and arduous process. To my parents, Liv and Charles Brand, who have always encouraged me to "get an education." To my daughters, Marlana and Calleen, though near adulthood when I started this project, who encouraged me to pursue my dreams. I hope neither of you ever felt neglected because of my studies. To my "babies," Aiden, McKenzie, and Kylie, who always bring a smile to my face, Nana loves you all very much. Finally, to my husband, Aubrey, who supported and pushed me to "get 'er done!" It took me a while to finish this undertaking, but it is my hope that I have made you all proud, for I am proud of myself for completing this project.

ACKNOWLEDGMENTS

I want to take this opportunity to thank all those involved in providing me with assistance with this research. As this process has taken me some time to complete, I have had several different committee chairs over the years. To Dr. Dwight Hare, my current and final chair, I owe much gratitude for pushing and staying on top things to help me get this research finished. Quick and prompt responses were greatly appreciated even when I may have been slow to move and respond. To my many co-workers at the Louisiana Department of Education, thank you for your help in providing information, support, and words of encouragement along the way . . . there is a light at the end of the tunnel.

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CHAPTER I

INTRODUCTION

According to Wayne and Youngs (2003), there have been an extensive number of studies examining the relationship between teacher characteristics and student achievement gains. In order to improve student achievement, policy makers and researchers have always focused on teachers. Wayne and Youngs' research focused on teacher quality with an emphasis on teachers' characteristics as well as the standardized test scores of students taught by these teachers. Other studies exist that examined the characteristics of effective teachers.

Studies by Coleman (1966), Murname (1975), Summers and Wolfe (1977), Link and Ratledge (1979), Murname and Phillips (1981), Harnisch (1987), Ferguson (1991a,b), Hanushek (1992), Ehrenberg and Brewer (1994), Ehrenberg and Brewer (1995), Ferguson and Ladd (1996), Gourman (1996), Rowan, Chiang, and Miller (1997), Goldhaber and Brewer (1997), Ferguson (1998), and Goldhaber and Brewer (2000) indicate four teacher characteristics that have been consistently identified, studied, and found to have an impact on students' test scores. Wayne and Youngs (2003) identified four such characteristics as follows: (a) the ratings of teacher's undergraduate institutions, (b) the teachers' test scores, (c) the teachers' degrees and courses of study, and (d) the teachers' certification status. Based on the findings from their extensive review of the literature, no mention was made to the relationship between the achievement gains of

students taught by teachers who had received National Board Certification (NBC) and the achievement gains of students taught by teachers who had not received NBC. Teachers who successfully obtain NBC are considered to be experts in the area in which they teach as well as highly qualified and able to utilize a myriad of instructional methods (National Board for Professional Teaching Standards [NBPTS], 2002).

Statement of the Problem

With the implementation of President George Bush's *No Child Left Behind Act of 2001* (NCLB; 2002), there has been a huge emphasis on the placement of a highly qualified teacher in every classroom. Schools are accountable for the growth of their students as measured by test scores. By looking at teacher characteristics, the research has shown there are certain teacher characteristics that have an effect on students' achievement gains. While examining the research for the teacher characteristics mentioned above by Wayne and Youngs (2003), one characteristic which was not studied, especially in the area of teacher certification, was that of teachers who hold NBC. A large number of teachers across the country have gone through this certification process and successfully achieved NBC from the NBPTS. From the 1993-1994 school year through the 2005-2006 school year, the NBPTS reported 55,328 teachers across the country holding NBC (NBPTS, 2007a). As of January 2007, Louisiana ranked 10th in the United States relative to the overall total number of teachers who hold NBC (Louisiana Department of Education, Press Release, February 1, 2007). The question arises whether a teacher successfully obtaining NBC, has a significant effect on student achievement gains, especially for Louisiana students.

Statement of the Purpose

The purpose of this study was to examine the relationship between National Board Certified Teachers (NBCTs) and student achievement as measured by the Louisiana Educational Assessment Program (LEAP). The study will examine the achievement score differences of fourth and eighth grade students of NBCTs in the subject areas of English Language Arts and Mathematics as compared to a matching group of Non-National Board Certified Teachers (Non-NBCTs).

Significance of the Study

By looking at the comparison of LEAP test scores (English Language Arts and Mathematics) of fourth and eighth grade students who were taught by NBCTs and Non-NBCTs, the study determined there was a statistically significant difference in student achievement based upon whether teachers possess or do not possess NBC. The study further adds to the body of research in order to determine if NBC is or is not a significant teacher characteristic contributing to students' achievement gains.

A study by Brooks (1992) explored the attitudes of school administrators toward NBC teachers. A national survey of 1,499 school administrators was conducted. The administrators agreed that teachers with NBC should have priority over other teachers for vacancies that must be filled in schools. In January 2007 the Louisiana Department of Education posted a press release, *Louisiana Ranks 10th in Number of National Board Certified Teachers,* which stated:

> Louisiana law requires the governing authority of any public school to give a minimum $5,000 pay supplement per year for 10 years (the life of the certificate)

> to teachers who are NBC and meet the annual eligibility criteria. School districts may receive reimbursement from the state of up to $5,000 per teacher, per year, subject to legislative appropriation. (para. 6)

The study could be of interest to public schools in Louisiana and the Louisiana Department of Education since teachers with NBC receive financial rewards for earning NBC and these are expenditures for which these entities are responsible.

Information collected from the results of the study could be used by Louisiana teachers as a guide in their decision-making process as to whether they should seek NBC. Results could also help teachers decide if the process might improve their ability to communicate with colleagues, parents, and the community.

Research Questions

The following research questions served as a guide for this study:

1. Do fourth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?
2. Do fourth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?
3. Do eighth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?
4. Do eighth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?

Limitations

The study was conducted with the following limitations:

1. The teachers may or may not be identical to other geographic areas or to the nation as a whole.
2. The researcher did not take into consideration the other teachers that students may have encountered beyond the teacher of record.

Delimitations

This study was conducted with the following delimitations:

1. The NBPTS offers 24 areas of certification. Only the certification areas of Generalist, Early Adolescence, Early Childhood, Literacy, Reading Language Arts, Early Childhood, and Middle Childhood were used. All of these areas of certification cover fourth and eighth grades. The findings of this study were limited to these certification areas and are not to be considered general to the remaining areas of certification.
2. One large urban school district in Louisiana was used; therefore, the findings are specific to NBCTs and Non-NBCTs in this school district.
3. All teachers in this study were from a single, large, urban school district in the state of Louisiana.
4. The researcher is not a NBCT, and there are no apparent biases that could diminish the integrity of the study.
5. The participants of this study were NBCTs and Non-NBCTs who were certified in the subject areas of English Language Arts or Mathematics. The test scores came

from LEAP data for the fourth and eighth grade students during the spring of 2007.

6. Matched groups of NBCTs and Non-NBCTs came from the same district, grade level, subject area, and area of certification.

Definition of Terms

The following explanation of terms is offered for the purpose of this study.

Highly Qualified: A teacher who must have full state certification or must have passed a teacher licensing exam, and hold a license to teach and certification or licensure requirements have not been waived on an emergency, temporary, or provisional basis. A teacher can fulfill certification or licensure requirements if the teacher has fulfilled certification/licensure requirements applicable to the years of experience the teacher possesses and if the teacher participates in an alternate route to certification program that meets certain requirements (United States Department of Education, 2003).

Integrated Louisiana Educational Assessment Program (iLEAP): Since the Iowa Tests alone did not meet the requirements of the NCLB, the iLEAP was developed. Beginning in spring 2006, the iLEAP tests were administered to public school students in grades 3, 5, 7, and 9. The two main differences between iLEAP and LEAP are as follows: (a) iLEAP contains both criterion-referenced and norm-referenced test items and (b) Louisiana's high-stakes testing policy does not require that students in the iLEAP grades attain a specific achievement level to be promoted to the next grade level (Louisiana Department of Education, Feb. 2007). The assessment is most commonly referred to as iLEAP and is referred to as such.

Louisiana Educational Assessment Program (LEAP): Criterion-referenced tests in English Language Arts, Mathematics, Science, and Social Studies that assess student performance relative to specific benchmarks established in the state's content standards and that provide data for evaluating student, school, and district performance. The tests assess a student's complex thinking skills as well as knowledge and application of information. These high-stakes tests are tied to promotional policy for grades 4 and 8 (Louisiana Department of Education, Bulletin 118). The assessments are most commonly referred to as LEAP.

National Assessment of Educational Progress (NAEP): The NAEP, also known as "the Nation's Report Card," is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Since 1969, assessments have been conducted periodically in mathematics, reading, science, writing, U.S. History, geography, civics, the arts, and other subjects (NAEP, n.d.). The national assessment is commonly referred to as NAEP.

National Board Certification (NBC)*:* A distinction given by the NBPTS. A process that involves a teacher demonstrating knowledge and skills through a series of performance- based assessments that include student work samples, videotaping and analysis of his or her classroom teaching and student learning. Its mission is to advance the quality of teaching and learning by maintaining high and rigorous standards for what accomplished teachers should know and be able to do. According to the Guide to National Board Certification (NBPTS, 2007c), certification is valid for 10 years. This certification is most commonly referred to as NBC.

National Board Certified Teacher: A teacher who, for the purpose of this study, has been certified by the NBPTS and is certified to teach in the state of Louisiana. These teachers are referred to as NBCTs.

National Board for Professional Teaching Standards: According The Guide to National Board Certification (NBPTS, 2007c), this organization is an independent, nonprofit, nonpartisan, and nongovernmental organization governed by a board of directors, the majority of whom are classroom teachers. It was formed in 1987 by an innovative coalition of teachers, policymakers, and academic and corporate leaders as a vanguard effort to develop professional standards for early childhood, elementary, and secondary school teaching. This organization is commonly referred to as NBPTS.

No Child Left Behind Act: An act enacted by Congress in 2001 as part of the reauthorization of the Elementary and Secondary Act first enacted in 1965. This federal legislation emphasizes state and school accountability for student progress and includes mandated standardized test, teacher qualifications, and public access to school data as important components (United States Department of Education, 2003). The law is referred to as NCLB.

Non-National Board Certified Teacher: A teacher who, for the purpose of this study, has not been certified by the NBPTS, but is certified to teach in the state of Louisiana. These teachers are referred to as Non-NBCTs.

Student Achievement: Refers to a student's performance on a standardized test such as the iLEAP or LEAP.

CHAPTER II

REVIEW OF LITERATURE

This chapter contains a review of the literature. The chapter is presented in seven sections: (a) National Board Certification; (b) rating of teachers' undergraduate institutions; (c) teachers' test scores; (d) teachers' verbal skills; (e) teachers' degrees and coursework; (f) teachers' certification status; and (g) summary.

A review of the existing body of knowledge by Wayne and Youngs (2003) regarding the relationships between teacher characteristics and students' achievement gains focuses on the following teacher characteristics: ratings of teachers' undergraduate institutions, teachers' test scores, teachers' degrees and coursework, and teachers' certification status. As Wayne and Youngs reviewed the empirical research pertaining to teacher characteristics and student achievement gains, they applied a set of study design criteria to the studies they chose to include in their review. The first criteria utilized by Wayne and Youngs included using observed teacher characteristics as well as the standardized test scores of these teachers' students. Next, they focused only on students in the United States. Finally, the study design accounted for prior achievement of the students and the socioeconomic status of the students. Because these criteria appeared to focus more on actual student achievement matched to the teachers who taught them, they have also been applied to this literature review. Since this study is based on teachers with NBC, the researcher first reviewed the process of NBC.

National Board Certification

Spurred by the federal report, *A Nation at Risk* (National Commission on Excellence in Education, 1983), the Carnegie Task Force on Teaching issued its pivotal report, *A Nation Prepared: Teachers for the 21st Century* (Carnegie Forum on Education and the Economy, 1986). Its leading recommendation called for the establishment of a NBPTS. The following year, NBPTS was begun. The NBPTS's mission is to advance the quality of teaching and learning by:

- maintaining high and rigorous standards for what accomplished teachers should know and be able to do,
- providing a national voluntary system certifying teachers who meet these standards, and
- advocating related education reforms to integrate National Board Certification in American education and capitalize on the expertise of NBCTs. (NBPTS, 2002, p.1)

According to NBPTS (2002), NBC was developed by teachers, with teachers, and for teachers. Additionally, linked to their standards is a new generation of fair and trustworthy assessment processes that honor the complexities and demands of teaching. NBC is to focus on teacher work and the difficult issues that accomplished teachers confront on a regular basis. The NBPTS assessments for NBC include having teachers construct a portfolio that represents an analysis of their classroom work and participate in exercises designed to tap the knowledge skills, disposition, and professional judgment that distinguish their practice.

At the time NBPTS was founded in 1987, it was understood that a critical first task was the development of a policy that would spell out NBPTS's vision of accomplished practice. In 1989, NBPTS (2002) issued its policy statement, *What Teachers Should Know and Be Able To Do*, which has served as a basis for all of the standards development work NBPTS has conducted. The policy statement is the cornerstone of the system of NBC and has served as a guide to school districts, states, colleges, universities, and others with a strong interest in strengthening the initial ongoing education of America's teachers. The policy statement also holds the promise of being a stimulus to self-reflection on the part of teachers at all levels of accomplishment as well as a catalyst for healthy debate and the forging of a new professional consensus on accomplished practice in each field of teaching (NBPTS, 2002).

The NBPTS (2002) identified five core propositions which it felt would best "identify and recognize teachers who effectively enhance student learning and demonstrate the high level of knowledge, skills, abilities, and commitment" (p. 3). The five core propositions are as follows:

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 experience.
5. Teachers are members of learning communities. (p. 3)

National Board Certification is designed to test teachers' knowledge, to examine

teachers' ability to apply information to age-appropriate activities, and to gauge mastery of pedagogy to help students learn (NBPTS, 2002). Other types of teacher assessments like the National Teachers Examination (NTE) are only selected-response formats. This type of test assesses knowledge that is only one indicator of teaching quality. A content-based evaluation may miss the most critical aspect of success in the classroom. National Board Certification is thought to be more reflective of the "complex nature of teaching and serves to promote teaching effectiveness" (Davis, Wolfe, & Borko, 1999, p. 97).

NBC was established to recognize teachers who use a variety of teaching techniques to improve student learning to address weaknesses identified in the NCLB legislation (2002). The goal of NBC was to identify the observable teacher behaviors associated with high quality instruction. According to Pershey (2001), the charge of NBC was to:

> assess and certify teachers who meet its rigorous standards of teaching performance, including a high level of professional commitment, subject area expertise responsible monitoring of student learning, frequent reflection on the teaching practice, and interaction with fellow teachers as members of learning communities. (p. 201)

Earlier in this review the federal report, *A Nation at Risk* (National Commission on Excellence in Education, 1983), was cited. This report was not the first to express concern over the plight of public education. A report, *Equality of Educational Opportunity (EEOS),* by Coleman (1966) widely referred to as the "Coleman Study" was the beginning of a multitude of studies on the impact of teacher characteristics and student achievement gains. The report has played a significant role in the study of teacher

characteristics and student achievement gains. Many of the studies included in this review of the literature make reference to the Coleman Study as being the landmark study for the beginning of looking at how teacher characteristics affect student achievement gains. The Coleman Study was:

> commissioned by the United States Department of Health, Education, and Welfare in 1964 to assess the availability of equal educational opportunities to children of different race, color, religion, and national origin. This study was conducted in response to provisions of the Civil Rights Act of 1964 and serves as an example of the use of a social survey as an instrument of national policy-making. The EEOS consists of test scores and questionnaire responses obtained from first-, third-, sixth-, ninth-, and twelfth-grade students, and questionnaire responses from teachers and principals. These data were obtained from a national sample of schools in the United States. Data on students include age, gender, race and ethnic identity, socioeconomic background, attitudes toward learning, education and career goals, and racial attitudes. Scores on teacher-administered standardized academic tests are also included. These scores reflect performance on tests assessing ability and achievement in verbal skills, nonverbal associations, reading comprehension, and mathematics. Data on teachers and principals include academics, discipline, assessment of verbal facility, salary, education and teaching experience, and attitudes toward race. (p. v)

The Coleman Study was released in the summer of 1966 and analyzed data for 568,743 public school students, 66,826 teachers, and 4,081 principals. According to Ehrenberg and Brewer (1995), the Coleman Study “represented an important step in

educational research and the beginning of the 'educational production function' literature" (p. 2). Several of the studies cited in this literature review have revisited the Coleman Study and reanalyzed the data gathered for this landmark study.

Since the release of the Coleman Study (1966), student achievement in education has been studied in an effort to discover what characteristics constitute quality in a teacher. A variety of characteristics abound throughout the literature to try to discover what makes a difference in teacher characteristics and student achievement. Some of the more prominent characteristics, as researched by Waynes and Young (2003), are examined more closely.

In a study conducted by Holland (2006), an analysis was conducted on two groups of randomly selected third-fifth grade students from Mississippi school districts to determine if there was a statistical difference on Mississippi Curriculum Test (MCT) scores of those students taught by NBCT versus non-NBCTs. Fifty students were tracked over the course of three consecutive years. Holland found "students taught by NBCTs were more likely to have higher MCT scores in reading language arts. Math MCT scores were very similar among students who were taught by NBCTs and those who were taught by non-NBCTs." (p. 49)

Ratings of Teachers' Undergraduate Institutions

While examining the literature, three studies were found which referenced the ratings of teachers; undergraduate institutions. These studies researched whether students scored higher when taught by teachers who graduated from institutions with better ratings. The rating of an undergraduate institution involved looking at each institution's

facilities, departments, administration, faculty, services for students, alumni support, and other general areas. Two of the three studies concluded there was some statistical significance in the quality of the teachers' institution. The results of the two studies showed a higher learning rate of students taught by teachers graduating from an institution with a higher rating. The results of the third study showed no significant difference in the student achievement in relation to the rating of the teachers' institution.

Summers and Wolfe (1977) used information from 150 randomly selected schools in the Philadelphia School District. Data from pupil files for the 1970-1971 school year were gathered. Samples from 627 elementary students in the sixth grade; 553 junior high, K-8, and middle school students in the eighth grade; and 716 senior high students in the twelfth grade were used. Gains from the third to sixth grade, sixth to eighth grade, and ninth to twelfth grade were examined. Summers and Wolfe only reported results from the elementary school data in this study. According to the researchers, the eighth-grade sample produced similar results and the twelfth-grade sample drew upon too few schools (five), therefore limiting the results. The study looked at the students' current teachers, previous teachers, teachers' scores on the National Teacher's Examination (NTE), teachers' years of experience, and the Gourman rating of each teacher's undergraduate institution.

Gourman (1977) utilized information from institutions and other sources on each institution's facilities, departments, administration, faculty, services for students, alumni support, and other general areas in order to rate an undergraduate institution. A total of 18 criteria were used for evaluating undergraduate programs. Each criterion was rated on a

scale of one to five and an average of the ratings on each criterion gives the institution its overall rating.

> A study conducted by Summers and Wolfe (1977) revealed the following: teachers who received Bachelor of Arts (BAs) from higher rated colleges were associated with students whose learning rate was greater-and it was students from lower income families who benefited most. (A student whose family income was $5,000 grew 8.6 months more with a teacher from a higher rated college than with teaches from other colleges; a student whose family income was $10,000 grew 3.7 months more). (p. 644)

Murname and Phillips (1981) took two approaches to their study of educational production function research and process-product research to investigate the extent to which variables explain differences in the effectiveness of teachers in improving vocabulary skills of inner-city Black children in four elementary grade levels. A primary goal of their research was to test the hypothesis implicit in production function research that variables describing teachers' backgrounds and training serve as useful proxies for teacher classroom behavior.

Murname and Phillips (1981) conducted a study where data were collected in conjunction with a federally funded welfare reform experiment. All families in the experiment were Black; more than half of them were headed by females; and most had very low incomes. Teachers in the study consisted of predominantly Black females, had many years of experience, and most held masters degrees. The information used in this study was collected from school records and included achievement test scores, class assignments, and school characteristics. Murname and Phillips conducted interviews with

parents to obtain information relative to children's demographic characteristics and home environments. For the purpose of collecting information on their background, attitudes, and behavior, elementary school teachers completed a questionnaire, Murname and Phillips applied the following criteria to the analysis samples that included all children in grades three through six:

1. Their families participated in the welfare reform experiment.
2. Achievement test scores were available.
3. Their classroom teacher completed the teacher questionnaire. (p. 87)

The hypotheses involved in Murname and Phillips' (1981) research addressed the extent to which the differences among classrooms explained student achievement, the ability of the teacher characteristics to account for the variation in student achievement, and the ability of the variables describing teacher behavior to account for this same variation. As a group, the teacher characteristics explain a significant portion of the variation in the vocabulary achievement of students in all four grade levels. Yet, according to the results of their study, the prestige of the undergraduate institution was not significantly related to student achievement in any grade level.

In a study conducted by Ehrenberg and Brewer (1994), the researchers used a data set from U. S. Department of Education's High School and Beyond (HSB) longitudinal survey. The researchers' purpose was:

> to estimate the extent to which school and teacher characteristics influence the probability that public school students drop out of high school between their sophomore and senior years and for those who do not drop out, whether these

characteristics influence the extent to which students scores on achievement tests increase during the two-year period. (p. 2)

The HSB study was a stratified national probability sample of over 1,100 secondary schools. The sample consisted of 36 sophomores and 36 seniors initially interviewed from each school in the spring of 1980. When the sophomores became seniors in 1982, they were resurveyed and those still enrolled in school were administered the achievement test. Ehrenberg and Brewer (1984) used a composite score derived from combining mathematics, vocabulary, and reading scores to measure student achievement as sophomores and then compared this same combination of scores to the same students' scores as seniors.

Ehrenberg and Brewer (1984) used Barron's six-category selectivity rating system which calculates the average ranking of the teachers' undergraduate institutions and then matched them to the information provided by the teachers' survey responses for that corresponding year. Approximately 25 teachers from about 320 HSB schools were interviewed providing responses to a number of questions that included the name of the institution at which they received their Bas degrees. Barron's uses a six-point scale to rank undergraduate institutions with one being the most selective and six being nonselective. The researchers performed their analyses separately on students in different race and ethnicity categories and found that when it comes to the selectivity of the undergraduate college that teachers in the schools attended, the "gain scores are statistically significant related to the index" (p. 10).

In summary, when it comes to the ratings of a teachers' undergraduate institution, there is some statistical significance in the quality of the institution. Students from the

Summers and Wolfe (1977) study had a higher learning rate from teachers who received degrees from higher rated institutions. Murname and Phillips (1981) concluded there was no statistical significance in the rating of the institution to student achievement. While Ehrenberg and Brewer (1994), found a statistical significance in gain scores in relationship to rating of the institution.

Teachers' Test Scores

Seven studies were found that met the Wayne and Youngs (2003) criteria and examined student achievement based on teachers' test scores. This involved looking at the significance of how well teachers scored on tests of verbal skills, on licensure exams, and on other test score measures. Summers and Wolfe (1977) used scores from the NTE and Ferguson (1991a) used scores from the Texas Examination of Current Administrators and Teachers (TECAT). Ehrenberg and Brewer (1995) revisited the Coleman Report to address whether teacher characteristics influenced "synthetic gain scores" (p. 12) of students. Murname and Phillips (1981) focused on students' Iowa Test of Basic Skills (ITBS) vocabulary scores to determine whether teachers' verbal ability was associated with increased student achievement gains. Hanushek (1992) examined a Quick Word Test to research student achievement gains. The two later studies found were conducted by Rowan, et al. (1997), which used teachers' responses to a single multiple-choice mathematics test item, and Ferguson and Ladd (1996) which used composite American College Testing Program (ACT) scores, both to check student achievement gains. According to Wayne and Youngs (2003),

> The number of states employing tests of verbal skills, content knowledge, and/or professional knowledge for licensure dramatically increased (from the early 1980s), to more than 40. As of 2002, 41 states used tests in one or more of these areas to make decisions about admission to teacher education programs or initial licensure. (p. 98)

In the Summers and Wolfe (1977) study described earlier, scores from the NTE were also examined. The researchers found the following:

> … a perverse relationship between the NTE score and learning. The discriminatory powers of the exam were evaluated by the Philadelphia School District in 1972. They (the school district) concluded that the scores should not be used as the only measure of the potential of a teacher—these findings suggest that they should not be used as any measure. (p. 645)

Ferguson (1991a) used data obtained from the 1986 TECAT which tested basic literacy skills. The TECAT was given to all primary and secondary school teachers and administrators in order to earn recertification. The passing rate on the first round of exams given in March of 1986 was 96.7% and teachers were allowed to retake the exam if they failed. According to Ferguson, few teachers lost their jobs because of poor performance on the exam.

Ferguson (1991a) focused his analysis on computing the mean teacher TECAT scores for each Texas school district from which data could be obtained. Student data were also aggregated to the district level. The 1986 Texas Educational Assessment of Minimum Skills (TEAMS) exams provided students' reading and math scores. The multiple-choice tests were administered to students in the first, third, fifth, seventh, ninth,

and eleventh grades. Ferguson analyzed data from almost 900 school districts and computed the difference for each district between the mean achievement scores of first, third, fifth, and seventh graders in 1986 and the mean scores of fifth, seventh, ninth, and eleventh graders in 1990 which would be the same group of students assuming the natural grade migration. Ferguson found that districts where teachers had higher TECAT test scores were more likely to have higher gains in student test scores, especially between third and seventh grades.

Ferguson (1998) reinforced the findings of his 1991 study by showing that the gains of each district's elementary students differed from the gains of its secondary students, depending on the TECAT score differences between the district's elementary teachers and its secondary teachers. Ferguson grouped districts into four sets:

> unusually high TECAT scores but low first and third grade mathematics scores (sample size is three districts); unusually high TECAT scores and high first and third grade mathematics scores (thirty-seven); unusually low TECAT scores and low first and third grade mathematics scores (twenty-five); and unusually low TECAT scores and high first and third grade mathematics scores (four). (p. 355)

His referral to "unusually high" or "low scores" was defined as a district average TECAT score of more than one standard deviation above or below the statewide mean. The students' scores were more than one-half standard deviation below the statewide mean for both years. Ferguson found that in those districts where teachers' scores were more than a standard deviation above the statewide mean, the students showed greater gains by the 11^{th} grade than did those where the teachers' scores were more than one standard deviation below the statewide mean.

In summary, when it comes to teachers' test scores, there is some statistical significance in the student achievement based on teachers' test scores. Ferguson (1998) found the greatest significance in teachers' test scores and student achievement gains. The higher the teachers' test scores, the greater the students' achievement gains.

Teachers' Verbal Skills

Ehrenberg and Brewer (1995) revisited the Coleman Study to address whether teacher characteristics influenced "synthetic gain scores" of students. (p. 1) Murname and Phillips (1981) focused on students' ITBS vocabulary scores and Hanushek (1992) examined the same data, but his dependent variables were changes in achievement on both ITBS reading and vocabulary test scores.

As previously stated, Ehrenberg and Brewer (1995) revisited the Coleman Study to address whether teacher characteristics, especially teacher verbal ability, influenced synthetic gain scores of students. According to Ehrenberg and Brewer, most social scientists, and public attention, focused on The Coleman Study's conclusions concerning the extent of race segregation in schools and the importance of family background characteristics in explaining variations in student achievement. Less well known, or well remembered, was that the underlying data set contained information on teacher verbal ability (as measured by scores on a verbal aptitude test) and that the average verbal aptitude of teachers in a school was seen to be positively correlated with student test scores. The original Coleman Study and subsequent reanalysis of its data found this correlation and some researchers concluded that the correlation appeared stronger at higher grade levels. Of primary interest to Ehrenberg and Brewer was "the effect of the

racial composition of teachers in a school and their verbal abilities on the gain scores of students of each racial group" (p. 3).

Ehrenberg and Brewer (1995) arrived at their synthetic gain scores by taking the difference between the mean test scores of sixth graders in a school and the mean test scores of third graders in a school at the survey date. They took the difference as an estimate of how much third graders in the school would learn if they remained in the school for three more years. Then they limited their attention to only those elementary and secondary schools for which data were reported for both grades. Due to the much larger elementary sample sizes, their analyses of the data focused mostly on the elementary data. Ehrenberg and Brewer (1995) reported,

> Elementary school teachers in the sample averaged close to 16 years of teaching experience, about 17% of them had earned at least a MA degree and, on average, they answered correctly slightly more than 75% of the questions on a verbal aptitude test that was administered to them. (p. 4)

After careful analyses of the data, the researchers found that "teacher verbal ability is positively related to gain scores for both groups of students and the magnitude of the relationship is about the same" (p. 8).

Murname and Phillips (1981) focused on students' ITBS vocabulary scores to examine student achievement. As previously stated, the researchers conducted a study where data were collected in conjunction with a federally-funded welfare reform experiment. Six of the commonly used teacher characteristics in production function studies were also used in their research. They included years of teaching experience,

verbal ability, prestige of undergraduate college, amount of formal education, race, and sex. After analyses of the data, the researchers concluded the following:

> Teachers' verbal ability, as measured on a self-administered test, is unrelated to student achievement in three grades. For the sixth grade sample, it is negatively related to student achievement. We believe that this result is spurious, however, because a large number of teachers used aids in completing the test. As a result, the scores are unreliable as measures of ability. (pp. 97-98)

Hanushek (1992) analyzed data generated over a four-year period by the Gary Income Maintenance Experiment. These data were merged with information about achievement and school experiences of children from the experimental families between1971 and 1975. The student schooling information included data on specific teachers along with test scores from the Iowa Reading Comprehension and Vocabulary Tests. All families involved in the study were of relatively low income and were Black.

Teachers in the Hanushek (1992) study were given the following:

> … a short-word test, which is frequently interpreted as a substitute for a general IQ test. There is mixed evidence about the relationship of teachers who score higher and student performance. "Smarter" teachers appear to do better in improving reading performance, but not vocabulary performance. This ambiguous result is, however, similar to previous studies that found inconsistency in the relationship with teacher tests (Hanushek 1986). (p. 110-111)

Later studies looked at teacher test scores including a study conducted by Rowan, et al. (1997) who analyzed nationally representative achievement data from the National

Educational Longitudinal Study of 1988 (NELS:88). Also, Ferguson and Ladd (1996) used the ACT composite scores to determine impact on student achievement gains.

Rowan, et al. (1997) used data from the NELS:88 "to investigate the effects of teachers' ability, motivation, and work situations on 10^{th}-grade students' mathematics achievement" (p. 257). These researchers focused on two specific factors: (a) knowledge of subject matter and (b) teachers' use of appropriate teaching strategies. One of the hypotheses of the study was that students whose mathematics teachers scored higher on the math quiz will have higher levels of achievement on the NELS:88 math test than will students whose teachers scored lower.

Rowan, et al. (1997) examined at the effects of several teacher characteristics that included teacher ability, subject matter knowledge, type of degrees earned in college, teaching strategies, teachers' motivation, and work situations. In the study, three measures of teachers' ability were used: (a) the teacher's score on the math quiz included in NELS:88, (b) whether or not the teacher majored in mathematics in undergraduate and/or graduate school, and (c) the teachers' emphasis on Higher Order Thinking (HOT) instruction. The results indicated the following:

> Students whose teachers answered the math quiz item correctly had higher levels of achievement than did those whose teachers answered the question wrong and that students who were taught by a teacher with a high degree in mathematics had higher levels of achievement in mathematics. The results did not confirm that teachers' emphasis on HOT instruction affected students' mathematics achievement. (p. 269)

In a study conducted by Ferguson and Ladd (1996), both district-level and student-level data from Alabama were used. The district-level analysis allowed them to compare results from Alabama with those from Ferguson's widely cited study of Texas school districts while the student-level analysis allowed them to compare the district results with those from a more disaggregated analysis that is more methodologically sound. The researchers used variables that measured a specific grade in a specific year within a school. Because they had test scores for individual students and could match a student's test scores to prior-year test scores, their achievement equations included the prior-period test scores of the identical students whose achievement they were trying to explain. They focused on the students' reading and math scores.

Ferguson and Ladd (1996) restricted the sample of students to those who were enrolled in that grade in that school throughout the year. They included a variety of family and school background variables. Some variables were from administrative data at the school level and others were from the census at the level of the zip code area or the school district. Their focus was on a single cohort of students, specifically those in the fourth grade in Alabama in 1990-1991, which consisted of 29,544 students in 690 schools.

Teachers' test scores from the ACT exams that the teachers took in the process of applying to college were used by Ferguson and Ladd (1996). Unfortunately, according to the researchers, ACT scores were not available for all fourth-grade teachers. Only 35 of the 690 schools had ACT scores on all fourth-grade teachers. When all scores were not available at a school, they took an average of the fourth-grade teachers' scores for that school. When no scores were available at the school level, they substituted the mean of

fourth-grade teachers' test scores at the district level. Ferguson and Ladd (1996) concluded the following:

> The first measure of teachers' test scores (and the only one based on complete data) enters with a positive and statistically significant coefficient in the reading equation. The coefficient in the math equation is positive but smaller relative to its standard error. (p. 277)

The same conclusion was reached by Ferguson and Ladd (1996) when at the district-level they conducted an analysis on student test scores for 127 public school districts in Alabama. Ferguson and Ladd stated the following,

> Our analysis of student test scores for 127 public school districts in Alabama indicates once again that students learn more when their teachers are more skilled as measured by their own test scores, when a larger proportion of teachers have master's degrees, and when class sizes are smaller. (p. 280)

Wayne and Youngs (2003) offered a plausible explanation of the divergent findings that emerged from the seven above mentioned studies by examining the controls used in each study. Two of the studies generated negative findings when both controlled for college ratings, while none of the five studies with positive findings controlled for college ratings. Wayne and Youngs stated, "Thus, the negative findings may support the five positive findings –that students learn more from teachers with higher test scores. Test scores matter, if college ratings have not already been taken into account" (p. 100).

Teachers' Degrees and Coursework

Studies that have looked at teachers' degrees and coursework were examined from the literature. The researchers looked at whether the teachers had obtained a BA degree or MA degree and what subject-specific degrees the teachers held. Wayne and Youngs (2003) found most of the studies were indeterminate, while four revealed determinate findings both positive and negative.

Murname (1975) authored a study that investigated the nature of relationships between school resources and the cognitive achievement of children. This study provided new information about the impact of school resources, especially teachers, on the learning of children. There were 875 inner city Black children were in the study. The study focused on individual children in individual classrooms.

When Murname (1975) looked at the highest degree attained by the teacher, there was no consistent relationship between this variable and student performance in math and reading. Murname stated the following:

> Teachers who have a master's degree are not more effective than teachers who have only a bachelor's degree. Teachers who were education majors as undergraduates were not found to be more or less successful than teachers who majored in other areas. (p. 68)

Link and Ratledge (1979) examined the determinants of reading achievement for fourth-graders in the Wilmington, Delaware school district. There were four characteristics which made the data unique: (a) each student's characteristics were matched with those of his teacher (e.g., sex, race, nationality); (b) IQ information for each student was available from fall testing; (c) a reading pretest was given at the

beginning of the year; and (d) a questionnaire was also administered to the students at the beginning of the year. The Delaware Department of Public Instruction provided teacher characteristics which included age, race, experience, and educational attainment.

According to the research of Link and Ratledge (1979), “None of the traditional measures of school quality or teacher quality entered the achievement relationship at the five percent level of significance” (p. 107). Also noted in this study was that “Traditional educational inputs such as teacher education, class size, and teacher experience were relatively unimportant factors in producing higher reading achievement for the Wilmington sample” (p. 109).

Harnisch (1987) used HSB data to identify school characteristics associated with four cognitive achievement measures -- verbal, mathematics, science, and a composite performance measure -- during a student’s last two years of high school. The HSB study used data gathered from 18,684 public school students who completed two batteries of tests, one in 1980 and the other in 1982. Administrators from each sample school completed a questionnaire about school characteristics and practices. Students also completed questionnaires and a battery of tests. These sets of data were combined to provide a comprehensive database for examining the relationship between school characteristics and outcome measures. Harnisch concluded that the percentage of teachers with higher degrees did not have a significant positive or negative effect on performance measures.

Ferguson and Ladd (1996) reported the results of an attempt to measure the systematic effects of school inputs on student test scores. Their study was based on both district- and school-level data from Alabama and compared to those from Ferguson’s

(1991a) widely cited study of Texas school districts that found systematic relationships between school inputs and student outcomes. According to Ferguson and Ladd (1996), "standardized tests remain the best available measures of output that are valid for comparisons over time and across schools" (p. 267). Ferguson (1991a) and Ehrenberg and Brewer (1995) were reported by Ferguson and Ladd (1996) to document that teachers with higher test scores tend to increase the learning of their students more than teachers with lower scores and school districts have to pay more to attract and retain teachers with higher test scores.

As part of their study, Ferguson and Ladd (1996) reviewed three variables that measure the characteristics of teachers: (a) the percentage of teachers with more than five years of experience, (b) the percentage of teachers with a MA degree, and (c) the average teachers' test scores. They stated,

> Although the fraction of teachers with MA degrees appears to have little or no effect on reading scores, it exerts a small positive effect on student math scores: a one-standard deviation increase in the fraction of teachers with a MA degree (0.33 points) would increase student test scores by 0.026 standard deviations, about one-quarter the effect of a standard deviation increase in teacher test scores. In contrast, the teacher experience variable, teachers with five or more years of experience, apparently exerts no significant effect in either subject. (p. 278)

The analysis of student test scores for the 127 public school districts in Alabama included in the study indicates that students learn more when their teachers are more skilled as measured by their own test score, when a larger proportion of teachers have MA degrees, and when class sizes are smaller.

Ehrenberg and Brewer (1994) also used data from the HSB study. These researchers estimated the extent to which school characteristics and teacher characteristics influenced the probability that students dropout of high school between their sophomore and senior years. The researchers concluded that school and teacher characteristics appeared to influence gain scores more than they influenced dropout probabilities. Ehrenberg and Brewer noted that "the greater the percentage of teachers with at least a MA degree, the lower the white students gain scores appear to be, but the scores of black students are higher" (p. 10).

In conclusion, Murname (1975), Link and Ratledge (1979), and Harnisch (1987) all found no significant difference in the relationship between the degree a teacher attains and student achievement gains. Ferguson and Ladd (1996) and Ehrenberg and Brewer (1994) both found that students learn more when their teachers had MA degrees.

Teachers' Certification Status

Studies that looked at teachers' certification status were examined in the literature. Researchers looked at whether the teachers held a certificate without a subject area focus, held non-standard certification, or held subject specific certification. Wayne and Youngs (2003) found only two studies which matched their review criteria and one which looked at length on the type of certification held by the teacher. Certification status refers to the type of certificate held by the teacher (i.e., subject area specific, temporary, provisional, emergency, or no licenses). The first yielded only one determinate relationship while the second study revealed a positive relationship.

Goldhaber and Brewer (1997) conducted a study using two models. As was true when looking at a teacher's degree, the effects of teacher certifications appear only when teachers have certification for the subject area taught. Goldhaber and Brewer used data from the NELS:88. The first model looked at whether a teacher was certified without reference to any particular subject area. Results for teacher certification proved to be statistically insignificant except in English, where teacher certification was significant and negative.

Using the same data, Goldhaber and Brewer (1997) added subject-specific teacher characteristics in four major subject areas (math, science, English, and history). Goldhaber and Brewer stated,

> In math and science, teacher subject-specific training has a significant impact on student test scores in those subjects. A teacher with a BA in math, or an MA in math, has a statistically significant, positive impact on students' achievement relative to teachers with no advanced degrees or degrees in non-math subjects. We also see that teachers with BA degrees in science have a positive impact relative to those who teach science but have either no degree or a BA in another subject. … By contrast, we find no evidence that subject-specific degrees or certification have an effect on student achievement in English or history, where the subject-specific variables were statistically insignificant. (p. 11)

Goldhaber and Brewer (2000) again used the NELS:88 data to look at high school teacher certification status and student achievement. The researchers found that the type of certification a teacher holds is an important determinant of student outcomes. Students of teachers of mathematics who hold a standard certification have higher scores than

those whose teachers are either not certified in their subject or hold a private school certification. Students' science scores mimic those of mathematics; however, teachers who hold private school certification or are not certified in their subject area have a negative impact on science test scores.

When it comes to teachers' certification status, Goldhaber and Brewer (1997) found no significant difference in a teachers' cerfication status and student achievement. Yet in their 2000 study, Goldhaber and Brewer found a direct correlation between teachers being certified in the subject area in which they taught and student achievement gains.

Summary

Over the years researchers have looked to teachers to try to determine if there is a relationship between certain teacher characteristics and student achievement. Ratings of teachers' undergraduate institutions, teachers' test scores, teachers' verbal skills, teachers' degrees and coursework, teachers' certification status, and NBC have been reviewed. Some of the studies found a significant difference in teacher characteristics and student achievement, while others found none. Since NBC came into existence little research has been done on the effect of this particular characteristic on student achievement gain. The purpose of this research was to determine if NBC related to student achievement in Louisiana; hence, adding to the body of research on teacher characteristics and student achievement.

CHAPTER III

METHODOLOGY

This chapter discusses the methods and materials used in this study. The chapter is presented in seven sections: (a) research design, (b) test design and item development of LEAP, (c) setting, (d) data collection, (e) data analysis, (f) threats to internal validity, and (g) factors affecting external validity.

Research Design

The purpose of this study was to examine the differences between the achievement scores of students taught by NBCTs and the achievement scores of students taught by Non-NBCTs as measured by the LEAP. This study examined the achievement scores of fourth and eighth grade students of NBCTs in the subject areas of English Language Arts and Mathematics. A matched pairs design was used for this study. According to Gay (1996), “matching is a control technique used if a researcher has identified a variable believed to be related to performance on the dependent variable” (p. 327). Breaugh and Arnold (2007) stated, “with matched pairs design, research units that differ on a hypothesized causal variable are matched on one or more nuisance variables in an attempt to control for potential confounding” (p. 523).

The matched pairs design was used to establish consistency. In the matched pairs

design, each participant from one group is matched with a participant of another group. In this study, NBCTs were matched with Non-NBCTs from the same school district. The matching variables were the areas of certification, gender, age, race, highest degree received, grade-level taught, subject area taught, and number of years of teaching. The teachers selected for this study had a minimum of five years of teaching experience because of the NBPTS guidelines of the certification process. In order for a teacher to apply for NBC, NBPTS stated that the teacher must have successfully completed three years of teaching experience. Taking into consideration three years of teaching experience, one year to complete the NBC process, and then one year to deliver instruction to students with successful completion of NBC, a minimum of 5 years teaching experience was established. The researcher analyzed data for teacher-matched pairs (i.e., NBCT and appropriate Non-NBCTs) within the same Local Education Agency (LEA), teaching the same subject (English Language Arts or Mathematics) at the same grade level (Grade 4 and Grade 8). The pre-test data (2006 iLEAP scores) were used to create a baseline for the students enrolled with each 2007 NBCT and matching Non-NBCT. The post-test data (2007 LEAP scores) were used for comparison and analysis. An analysis of variance was used on the pre-test and post-test data score differences to determine the amount of growth each group achieved over the course of the year for each NBCT and matching Non-NBCT to determine if there was a statistically significant difference.

Test Design and Item Development of Louisiana Educational Assessment Program

This study used the spring 2006 iLEAP and 2007 LEAP results as the source of test data. The following is an overview of the development of the LEAP by the Louisiana Department of Education (LDE):

> In May 1997 the State Board of Elementary and Secondary Education (SBESE) approved content standards in English Language Arts, Mathematics, Science, Social Studies, Foreign Languages, and the Arts. These standards reflect the essential knowledge and skills that content teams of expert Louisiana educators deemed necessary for students to become good scholars and productive citizens. Common threads that form a base for all content standards are the foundation skills, which were also identified as essential competencies needed to meet the demands of the classroom and the world beyond. These foundation skills are: (1) communication, (2) problem-solving, (3) resource access and utilization, (4) linking and generating knowledge, and (5) citizenship. The LDE initiated criterion-referenced tests to align with the content standards in four of the six content areas: English Language Arts, Mathematics, Science, and Social Studies. In 1997 Regular Session of the Louisiana Legislature, state law was changed to require that criterion-referenced tests be administered in grades 4 and 8 rather that in grades 3, 5, and 7 (iLEAP is given in these grades which is a norm-referenced, criterion-referenced test). These grades are consistent with the grades which the content standard and benchmarks are clustered (K through 4, 5 through 8, and 9 through 12), as well as with the grades assessed by the NAEP. (LDE, 2006, p. 3)

According to the LDE (2006), in 1997, projects were initiated to develop item specifications and test items for LEAP. Assessment Advisory Committees (AAC), composed of educators representing kindergarten through higher education and of assessment specialists, met with the LDE and national consultants to create assessments that would reflect the content and instructional strategies embraced by the new standards. Testing contractors developed test items for LEAP. The AAC critiqued the items based on congruence with the specifications, technical quality, and age-appropriate content validity. A Bias Review Committee viewed the items for sensitive or biased material regarding gender, ethnicity, and issues related to special populations of students.

In the spring of 1998, field testing of Grades 4 and 8 English Language Arts and Mathematics items was conducted. Participating schools for the field tests were randomly selected based on stratification of the state's school subpopulations on the factors of ethnicity, socioeconomic status, school size, and achievement performance. Data from the field-tested items were submitted to the AAC for a final empirical review. According to the LDE (2006),

> Because the LEAP test carries high stakes for students and yields valid and reliable longitudinal data, the difficulty level of the tests must be equivalent from year to year. Consistency is maintained by scaling the scores in a process called *test equating*. Scaling allows the use of raw scores to compute students' scaled scores and to establish a common achievement-level standard from test form to test form. (p. 3)

Louisiana places great value on its high-stakes testing program as evidenced in individual schools and school districts' local promotion and graduation policies. Students

who are not proficient in content areas or receive a passing score on certain LEAP tests are not promoted to the next grade level or do not receive credit toward graduation for certain courses. No fourth grade or eighth grade student can be promoted if he or she does not achieve *Approaching Basic* or above on either the English Language Arts or the Mathematics test. Students taking the LEAP receive one of the following five achievement ratings:

> *Advanced:* A student at this level has demonstrated superior performance beyond the level of mastery;
>
> *Mastery:* A student at this level has demonstrated competency over challenging subject matter and is well prepared for the next level of schooling;
>
> *Basic:* A student at this level has demonstrated only fundamental knowledge and skills needed for the next level of schooling;
>
> *Approaching Basic:* a student at this level has only partially demonstrated the fundamental knowledge and skills needed for the next level of schooling; and
>
> *Unsatisfactory:* A student at this level has demonstrated the fundamental knowledge and skills needed for the next level of schooling. (LDE, 2006)

Setting

For this study, the students were taught by teachers directly involved with instructing in one or more of the following LEAP areas: (a) fourth grade English Language Arts, (b) fourth grade Mathematics, (c) eighth grade English Language Arts, and (d) eighth grade Mathematics. In 2006-2007, the Louisiana public school system was composed of 69 school districts and 1,339 schools with a total of 49,399 teachers and

651,840 students (LDE, 2007). Of these 49,399 teachers, 1,032 (2.09%) were NBC (NBPTS, 2007a).

Bayou School District (a pseudonym), a large urban school district located in Louisiana, provided the location for this study from which the NBC and Non-NBC teacher and student data were selected. The district is composed of about 90 schools, employs about 3,700 teachers (some 100 [2.8%] of whom are NBCTs) and has a Pre-school through grade 12 student enrollment of about 46,000, of which approximately 80% qualify for free/reduced lunch. The researcher determined the following in reference to Bayou School District's teaching force in fourth and eighth grades: (a) NBC, (b) year of NBC, (c) type of state certificate, (d) years of teaching experience, (e) highest degree earned, (f) subject/grade level taught, (g) gender, and (h) ethnicity. The NBCTs were matched with the appropriate Non-NBCTs in the same subject area and grade-level within Bayou School District. For example, a NBCT, with 10 years teaching experience holding a Life-time (Type A or B) license in Louisiana teaching eighth grade Mathematics was matched with a Non-NBCT, with 10 years of teaching experience holding a Life-time (Type A or B) license in Louisiana teaching eighth grade Mathematics.

Data Collection

The researcher obtained permission from the Institutional Review Board (IRB) of Mississippi State University (see Appendix A) and the LDE (see Appendix B) to collect teacher data and student test data. The LDE was contacted to provide teacher certification information, district information, and student test results data. Data was organized by

teacher, gender, ethnicity, grade taught, subject taught, type of license/certificate held, number of years of experience, and area of certification to allow for coding of students which have been taught by a NBCT and those who have been taught by a Non-NBCT. The data included individual student 2006 iLEAP mean scores matched to 2007 LEAP mean scores in either English Language Arts or Mathematics for every student taught by the selected teachers, as well as gender, ethnicity, and free/reduce lunch status of each student involved in the study. To have a teacher comparison group required the existence of at least one NBCT and one Non-NBCT who taught the same instructional area (English Language Arts and Mathematics) and the same grade level (4 or 8), and who had the same number of years teaching experience.

Once all data were collected for staff and students, a master spread sheet was developed for each of the following: fourth grade English Language Arts Non-NBCT, fourth grade English Language Arts NBCT, fourth grade Mathematics Non-NBCT, fourth grade Mathematics NBCT, eighth grade English Language Arts Non-NBCT, eighth grade English Language Arts NBCT, eighth grade Mathematics Non-NBCT, and eighth grade Mathematics NBCT. The spreadsheets were constructed and data were coded in columns as indicated below.

1. Teachers were coded “0” if they were a NBCT and “1” if they were a Non-NBCT.
2. The year the teacher became a NBCT was indicated.
3. The number of years of teaching experience was recorded for each teacher.

4. The type of state teaching license/certificate for each teacher was coded – teachers with a Life-time (Type A or B) license were coded with a “0” and teachers with a Type C licenses were coded with a “1.”
5. The highest degree earned was coded for each teacher. The degree levels included BAs, MAs, or MAs plus 30 additional graduate credit hours (hereafter referred to as MAs plus 30). Teachers with BAs were coded with a “0,” teachers with MAs were coded with a “1,” and teachers with MAs plus 30 were coded as a “2.”
6. Ethnicity was coded for each teacher. White teachers were coded with a “0,” African American teachers were coded with a “1,” and any others were coded with a “2.”
7. Gender was coded for each teacher. Female teachers were coded with a “0” and male teachers were coded with a “1.”
8. Ethnicity was coded for each student. White students were coded as a “0,” African American students were coded as a “1,” and any other students were coded as a “2.”
9. Gender was coded for each student. Female students were coded as a “0” and male students were coded as a “1.”
10. Free or reduced lunch status was recorded for each student. Students receiving free or reduced lunch were coded as a “0” and those not receiving free or reduced lunch were coded as a “1.”

11. Columns were developed to compute student score differences between NBCTs and Non-NBCTs. Separate spreadsheet columns were established with the columns labeled as follows:
    a. Individual student English Language Arts mean scores on the 2007 LEAP were matched to the students' English Language Arts mean scores on the 2006 iLEAP
    b. Individual student mathematics mean scores on the 2007 LEAP were matched to the students' mathematics mean scores on the 2006 iLEAP

Growth for English Language Arts and for Mathematics was determined by subtracting the 2006 scores from the 2007 scores. The following were the independent variables of this study for the teachers: gender, ethnicity, highest degree received, grade-level taught, subject area taught, and number of years of teaching. To account for pre-existing standardized test score differences between each teacher's group of students, the dependent variable, the students' prior year (2006) iLEAP performance in the evaluated area (English Language Arts or Mathematics), was used as a baseline. The 2007 LEAP test score for each student was used to determine the amount of growth each teacher's students made over the course of the school year. Only students who had a 2006 iLEAP score and a 2007 LEAP score were included in this study.

Data Analysis

The data were analyzed for each research question. Explanations are provided.

Research question 1: Do fourth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?

Procedure: The researcher entered collected data into SPSS and used an analysis of variance (ANOVA) to determine if there was a statistical difference between the two groups in the LEAP mean score growth of fourth grade English Language Arts students and reported the findings using NBCTs and Non-NBCTs as variables.

Research question 2: Do fourth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?

Procedure: The researcher entered collected data into SPSS and used an ANOVA to determine if there was a statistical difference between the two groups in the LEAP mean score growth of fourth grade Mathematics students and reported the findings using NBCTs and Non-NBCTs as variables.

Research question 3: Do eighth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?

Procedure: The researcher entered collected data into SPSS and used an ANOVA to determine if there was a statistical difference between the two groups in the LEAP mean score growth of eighth grade English Language Arts students and reported the findings using NBCTs and Non-NBCTs as variables.

Research question 4: Do eighth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?

Procedure: The researcher entered collected data into SPSS and used an ANOVA to determine if there was a statistical difference between the two groups in the LEAP mean score growth of fourth grade Mathematics students and reported the findings using NBCTs and Non-NBCTs as variables.

Upon completion of the analysis of the data for each research question, the researcher ran an Analysis of Covariance (ANCOVA) to assess the variation in student achievement based on student demographics and a possible relationship to teacher certification. The researcher looked for a statistical difference between groups (NBCTs vs. Non-NBCTs) as well as within groups (student type with NBCTs vs. student types with Non-NBCTs).

Threats to Internal Validity

Gay (1996) stated, "Internal validity refers to the condition that observed differences on the dependent variable are a direct result of manipulation of the independent variable, not some other variable" (p. 345). Gay identified the following as threats to internal validity. They are (a) history, (b) maturation, (c) testing, (d) instrumentation, (e) statistical regression, (f) differential selection of subjects, (g) mortality, and (h) selection-maturation interaction. Seven of the eight possible threats to internal validity are not applicable in this study. However, for this study, the differential selection of subjects may be a threat to internal validity that might challenge the generalizability of the study. As the selection of subjects came from one school district was not, technically, drawn randomly, the generalizability of the study results will be limited to the individuals from Bayou School District.

Factors Affecting External Validity

Gay (1996) stated, "External validity refers to the condition that results are generalizable, or applicable, to groups and environments outside of the experimental

setting" (p. 346). Gay identified the following as threats to external validity: (a) pre-test treatment interaction; (b) multiple-treatment interference; (c) selection-treatment interaction; (d) specificity of variables; (e) experimenter effects; and (f) reactive arrangements. Of the above six stated possible threats to external validity, the researcher has determined none had a bearing on this study.

CHAPTER IV

FINDINGS

This chapter addresses the research questions to determine if there is a statistically significant difference between the scores of students taught by NBCTs and those taught by Non- NBCTs. Further analyses of the data were conducted to determine if any other factors presented themselves.

The purpose of this study was to determine if there was a significant difference between the score differences of students taught by NBCTs versus Non-NBCTs. Fourth and eighth English Language Arts and Mathematics students' scores were collected from Bayou School District for analysis. The researcher used the scores from the iLEAP and LEAP as the pre- and post- test.

The research questions for this study were as follows:

1. Do fourth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?
2. Do fourth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?
3. Do eighth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?
4. Do eighth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?

Existing data were retrieved from the LDE. The LDE also removed all information that identified the students and teachers. After the NBCTs group was identified, the Non-NBCTs group was selected by identifying teachers with similar years of experience, degree level, and teaching assignment. Data were compiled on 678 fourth grade English Language Arts students, 628 fourth grade Mathematics students, and 344 eighth grade English Language Arts students from the identified groups of teachers. Once data were reviewed, the researcher ascertained in the eighth grade Mathematics group there were no NBCTs in Mathematics.

Teacher demographic data included as independent variables were gender, race, highest degree received, and years of experience. Students' scores included the difference between the students' 2007 fourth grade LEAP and 2006 third grade iLEAP scores in English Language Arts and Mathematics as well as the difference between the students' 2007 eighth grade LEAP and 2006 seventh grade iLEAP scores in English Language Arts and Mathematics. An ANOVA was used to analyze the data in order to determine if there was a significant difference between the groups.

Descriptive Data of Group Members

Existing teacher and student data were obtained from the Louisiana Department of Education (LDE). The LDE removed all personal student and teacher information and assigned codes for each teacher and student. The data were placed on a master spreadsheet for each of the following: fourth grade English Language Arts Non-NBCT, fourth grade English Language Arts NBCT, fourth grade Mathematics Non-NBCT, fourth grade Mathematics NBCT, eighth grade English Language Arts Non-NBCT,

eighth grade English Language Arts NBCT, eighth grade Mathematics Non-NBCT, and eighth grade Mathematics NBCT. From these spreadsheets, NBCTs were matched with Non-NBCTs by subject area and teachers' years of experience. NBCTs which did not match the certification criteria were removed from the group as were students not taught by English Language Arts and Mathematics teachers. After the master spreadsheets were created for each of the groups, they were merged by grade and the data were imported into SPSS 18.0 for analysis using ANOVA.

Teacher Demographics

There were a total of 58 teachers in this study. NBCTs areas of certification are as follows: fourth grade English Language Arts -- Generalist/Early Childhood and Generalist/Middle Childhood; fourth grade Mathematics -- Generalist/Middle Childhood; and eighth grade English Language Arts -- English Language Arts/Early Adolescence. For the eighth grade Mathematics group there were no NBCTs; therefore, no data is presented for eighth grade Mathematics. For the three remaining groups (fourth grade English Language Arts, fourth grade Mathematics, and eighth grade English Language Arts), the 58 teachers were white females. Table 4.1 presents the years of experience and education level for all teachers in all groups.

Table 4.1

Teachers' Years of Experience and Education Level

Years of Experience	English Language Arts fourth Grade	Mathematics fourth Grade	English Language Arts eighth Grade
6	5	4	-
7	3	3	-
9	-	-	5
10	-	-	6
17	-	-	2
18	7	5	-
19	2	2	-
21	4	2	-
24	4	4	-
Total	25	20	13
Education Level			
BA	16	14	7
MA	9	6	6
MA +30	-	-	-

Student Demographics

There were a total of 1,650 students in this study. The following table (Table 4.2) identifies the students' mean score differences of the pre-test and post-test for each group. Table 4.3 and Table 4.4 provide information on the students' demographics and the mean age for each student group, respectively.

Table 4.2

Students' Score Difference (Pre- Post-Test) Mean

National Board Certification Status of Teachers	Mean English Language Arts fourth Grade	Mean Mathematics fourth Grade	Mean English Language Arts eighth Grade
NBCTS	35.37	39.63	18.66
Non-NBCTs	41.58	36.67	8.22
Total	38.47	38.15	13.44

Table 4.3

Students' Demographics

	English Language Arts fourth Grade	Mathematics fourth Grade	English Language Arts eighth Grade
Female	318	312	204
Male	360	316	140
	English Language Arts fourth Grade	Mathematics fourth Grade	English Language Arts eighth Grade
White	124	105	108
African American	508	484	216
Other	46	39	20
Free/Reduced Status	487	457	219

Table 4.4

Students' Mean Age

	Mean English Language Arts fourth Grade	Mean Mathematics fourth Grade	Mean English Language Arts eighth Grade
Minimum	9.28	9.28	10.45
Maximum	13.97	13.97	16.35
Mean	10.24	10.26	14.16

Analysis of Research Question One

The first research question was: Do fourth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?

An ANOVA was run on the data for fourth grade English Language Arts students to compare the score differences of NBCTs students to those students of Non-NBCTs. Table 4.5 displays the results of this analysis between groups and within groups.

Table 4.5

Fourth Grade English Language Arts Students' Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6535.435	1	6535.435	4.425	.036
Within Groups	998403.776	676	1476.929		
Total	1004939.211	677			

The results of the analysis indicated that there is a statistically significant difference between the score differences of students taught by NBCTs when compared to those taught by Non-NBCTs (p = .036). Fourth grade students taught by NBCTs score differences were higher in English Language Arts than those of students taught by Non-NBCTs.

Analysis of Research Question Two

The second research question was: Do fourth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?

An ANOVA was run on the data for fourth grade Mathematics students to compare the score differences of NBCTs students to those students of Non-NBCTs. Table 4.6 shows the results of this analysis between groups and within groups.

Table 4.6

Fourth Grade Mathematics Students' Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1380.193	1	1380.193	.944	.332
Within Groups	914870.436	626	1461.454		
Total	916250.629	627			

The results of the analysis indicated that there is not a statistically significant difference between the score differences of students taught by NBCTs when compared to those taught by Non-NBCTs (p = .332). Fourth grade students taught by Non-NBCTS score differences were higher in Math than those of students taught by NBCTs.

Analysis of Research Question Three

The third research question was: Do eighth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs?

An ANOVA was run on the data for eighth grade English Language Arts students to compare the score differences of NBCTs students to those students of Non-NBCTs. Table 4.7 shows the results of this analysis between groups and within groups.

Table 4.7

Eighth Grade English Language Arts Students' Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9366.352	1	9366.352	9.043	.003
Within Groups	354230.366	342	1035.761		
Total	363596.718	343			

The results of the analysis indicated that there is a statistically significant difference between the score differences of students taught by NBCTs when compared to those taught by Non-NBCTs (p = .003). Eighth grade students taught by NBCTs score differences were higher in English Language Arts than those of students taught by Non-NBCTs.

Analysis of Research Question Four

The fourth research question was: Do eighth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs?

There were no teachers in the eighth grade Mathematics group of students that met the NBC criteria in Mathematics. Therefore, no analysis could be conducted on the data.

Upon completion of the data analysis for each research question, an ANCOVA was run using SPSS 18.0 for each set of data to determine if there was a possible relationship between student demographics and teacher certification. In reviewing the results of the ANCOVA for each data set, the researcher determined student demographics did not have a statistically significant impact in relation to teacher certification.

Summary

The purpose of this study was to analyze the LEAP and iLEAP score differences in English Language Arts and Mathematics on a selection of fourth- and eighth-grade students from a large urban district in Louisiana to determine if there was a significant difference between the score differences of students taught by NBCTs versus Non-NBCTs. Analysis of the data revealed in fourth and eighth grade English Language Arts students taught by NBCTs score differences were statistically significantly higher than those of students taught by Non-NBCTs. Score differences of fourth grade Mathematics students taught by NBCTs were not statistically significantly higher than those of students taught by Non-NBCTs. There were no eighth grade teachers NBC in Mathematics; therefore, no analysis of data could be performed.

Upon completion of the ANOVA data analysis for each research question, an ANCOVA was run using SPSS 18.0 for each set of data to determine if there was a possible relationship between student demographics and teacher certification. In reviewing the results of the ANCOVA for each data set, the researcher determined student demographics did not have a statistically significant impact in relation to teacher certification.

CHAPTER V

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

Summary

Continually on the minds of researchers, educators, and policy makers is education reform. Researchers persevere in their search for teacher characteristics which will have an impact on student achievement. Included in the review of the literature for this research were the following: the ratings of a teachers' undergraduate institution, teachers' test scores, teachers' verbal skills, teachers' degrees and coursework, and teachers' certification status. Some of the results revealed a statistically significant difference while others showed no difference at all. Teachers choose NBC in order to become identified as highly accomplished educators. While NBC may be the answer, there is still some concern as to how much NBC influences student achievement.

The purpose of this study was to examine the relationship between NBCTs and student achievement as measured by the LEAP. Achievement score differences of fourth and eighth grade students of NBCTs were examined to determine if there was a statistically significant difference. The research examined the achievement scores differences in the subject areas of English Language Arts and Mathematics compared to a matching group of Non-NBCTs. The student and teacher data were obtained from the Louisiana Department of Education and were from a large urban district. Students of NBCTs, which met the NBC criteria for inclusion in this study, were matched to

students of Non-NBCTs. Student and teacher data were coded and entered in SPSS 18.0 for analysis using ANOVA. Analysis of the data determined there was a statistically significant difference between gains in scores of students in fourth grade English Language Arts and eighth grade English taught by NBCTs. Those fourth and eighth grade English Language Arts students taught by NBCTs scored statistically significantly higher than those students taught by Non-NBCTs. There was not a statistical difference in LEAP scores of fourth grade Mathematics students taught by NBCTs.

Discussion of the Results

The following research questions were addressed in this study:

1. Do fourth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs? The results of the analysis indicated that there was a statistically significant difference between the score differences of students taught by NBCTs when compared to those taught by Non-NBCTs. Fourth grade students taught by NBCTs score differences were statistically higher in English Language Arts than those of students taught by Non-NBCTs. The results of a study conducted by Holland (2006) found “students taught by NBCTs were more likely to have higher MCT scores in reading and language arts.” (p.49)

2. Do fourth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs? The results of the analysis indicated that there was not a statistically significant difference between the score differences of students taught by NBCTs when compared to those taught by Non-NBCTs. Fourth grade students taught by Non-NBCTs score differences were higher in Math than those of

students taught by NBCTs. Holland (2006) also reported, “Math MCT scores were very similar among students who are taught by NBCTs and those who taught by non-NBCTs” (p. 49).

3. Do eighth grade students of NBCTs score higher on the LEAP test in English Language Arts than students of Non-NBCTs? The results of the analysis indicated that there was a statistically significant difference between the score differences of students taught by NBCTs when compared to those taught by Non-NBCTs. Eighth grade students taught by NBCTs score differences were higher in English Language Arts than those of students taught by Non-NBCTs. Holland’s 2006 study only involved students in grades three through five.

4. Do eighth grade students of NBCTs score higher on the LEAP test in Mathematics than students of Non-NBCTs? There were no teachers in the eighth grade Mathematics group of students that met the NBC criteria in Mathematics. Therefore, no analysis could be conducted on the data. Due to the nature of the researcher’s employment with the LDE, site visits with districts around the state of Louisiana have shown a shortage of Mathematics teachers within the state and it is also a trend across the nation in general. If college graduates are particularly gifted in Mathematics they are enticed by the high salaries offered by industry and not by a salary in the profession of education. No literature was found to compare eighth grade Mathematics students and no data could be analyzed for eighth grade students due to no Non-NBCTs in the sample group. It would be of interest to see future studies conducted to determine whether there is a lack of NBCTs at the eighth grade level specifically and in the middle grades in general. It would also be of interest to conduct research to determine why there seems to

be no impact on student achievement in math. Since there were no results that included eighth grade students, it would be of interest to study NBCTs at the middle school level to determine if NBCTs have an impact on student achievement. Is there a possible shortage of certified Mathematics teachers in general?

Upon completion of the data analysis for each research question, an ANCOVA was run using SPSS 18.0 for each set of data to determine if there was a possible relationship between student demographics and teacher certification. In reviewing the results of the ANCOVA for each data set, the researcher determined student demographics did not have a statistically significant impact in relation to teacher certification.

The results of this research bear findings similar to Holland's (2006). English Language Arts students taught by NBCTs had higher score differences while there was no statistical difference in score differences among Mathematics students taught by NBCTs versus Non-NBCTs.

English Language Arts students in fourth and eighth grade had statistically higher score differences while those in Mathematics did not. Also, there were no teachers in the eighth grade sample population NBC certified in Mathematics. The results of this research raise questions for further consideration. Based on the data in this research, the number of NBC teachers was lower in the upper elementary grades than the lower elementary grades. The issue of what is happening in Mathematics is of great interest Also of interest was all teachers in the sample population were white and female. One wonders were other ethnicities and genders in the NBC process. In reviewing the analysis of the data, it appears more research in the area of Mathematics is needed.

Recommendations

The following are recommendations for future research for the LDE based on the findings of this study:

- The LDE should utilize their extensive database to determine the factors that contribute to the increases and decreases in student achievement.
- The LDE should conduct a study to analyze student gains, or lack thereof, by conducting a longitudinal study of NBCTs.
- The LDE should study teacher certification programs especially in the area of Mathematics to determine the status of teachers becoming certified in Mathematics.
- This study only focused on LEAP scores for fourth and eighth grade students in one district. Studies that review all high-stakes testing within the state of Louisiana should be conducted.

The following are recommendations for future research based on the findings of this study:

- Even though the sample size for eighth grade was almost half the size of the fourth grade, the data in this study revealed more NBCTs in elementary grades than in middle school grades. Future studies could focus on why there appears to be more NBCTs in elementary grades than upper grades.
- This study was limited to one large urban district in the state of Louisiana. Future studies could focus on more than one district within the state of Louisiana or other states to determine if the results are similar to this study or show different results.

- Even though the data in this study were from a single district, future research should be conducted to determine why only white, female teachers pursue National Board Certified.
- Research should also focus on the area of Mathematics. Questions to be addressed include the scores of students in Mathematics, the preparation of teachers to teach Mathematics, and the lack of NBC Mathematics teachers.

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APPENDIX A

MSU IRB APPROVAL

Mississippi State University

January 9, 2009

Barbara Ann Foster
940 Branftord Drive
Port Allen, LA 70767

RE: IRB Study #08-329: National Board Certification and Student Achievement: Do They Relate in Louisiana?

Dear Ms. Foster:

The above referenced project was reviewed and approved via expedited review for a period of 1/8/2009 through 12/15/2009 in accordance with 45 CFR 46.110 #7. Please note the expiration date for approval of this project is 12/15/2009. If additional time is needed to complete the project, you will need to submit a Continuing Review Request form 30 days prior to the date of expiration. Any modifications made to this project must be submitted for approval prior to implementation. Forms for both Continuing Review and Modifications are located on our website at http://www.orc.msstate.edu.

Any failure to adhere to the approved protocol could result in suspension or termination of your project. Please note that the IRB reserves the right, at anytime, to observe you and any associated researchers as they conduct the project and audit research records associated with this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. These changes will be posted online at http://www.orc.msstate.edu/human/aahrpp.php.

Please refer to your docket number (#08-329) when contacting our office regarding this project.

We wish you the very best of luck in your research and look forward to working with you again. If you have questions or concerns, please contact MSU IRB at jmiller@research.msstate.edu or call 325-2238.

Sincerely,

Jonathan Miller
IRB Officer

cc: Jerry Mathews

Office for Regulatory Compliance
P. O. Box 6223 • 70 Morgan Avenue • Mailstop 9563 • Mississippi State, MS 39762 • (662) 325-3294 • FAX (662) 325-8776

APPENDIX B

LDE APPROVAL

STATE OF LOUISIANA
DEPARTMENT OF EDUCATION
POST OFFICE BOX 94064, BATON ROUGE, LOUISIANA 70804-9064
Toll Free #: 1-877-453-2721
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TO: Jonathan E. Miller, CIP
IRB Officer and Assistant Director
Office of Regulatory Compliance
Mississippi State University

FROM: Paul G. Pastorek
State Superintendent of Education

DATE: January 8, 2009

RE: Approval of Data Use for Study by Barbara Ann Foster

The purpose of this memo is to grant approval for Barbara Ann Foster to use pre-coded electronic data from the Louisiana Department of Education in order to complete her proposed study entitled *National Board Certification and Student Achievement: Do They Relate in Louisiana?* This approval is for records of participants – teachers or students – that will not be individually identifiable. I look forward to hearing the results of this study once Ms. Foster has completed her dissertation.

Approval:

_____
Paul G. Pastorek
State Superintendent of Education