

NATIONAL BOARD CERTIFICATION: AN ANALYSIS
OF MULTIPLE VARIABLES ON PASS RATES

By

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To the Faculty of Washington State University:

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**NATIONAL BOARD CERTIFICATION: AN ANALYSIS
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Abstract

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National Board certification is generally accepted as the hallmark of accomplished teaching. As a result, many states offer a financial incentive to those who achieve this title. Several studies have been conducted on the National Board assessment in an attempt to decipher what is behind the moniker of National Board Certified Teacher.

In Washington State, teachers are granted a Residency certificate upon completion of an approved teacher preparation program. At three years of teaching, teachers must work toward an advanced certificate to renew licensure. The Professional certificate follows the Residency certificate on the teacher development continuum followed by the National Board certificate. However, at three years of teaching teachers in the state of Washington have the option to pursue a National Board certificate or the Professional certificate.

Washington State compensates teachers who are National Board Certified with an annual bonus of \$5,000 for ten years (the life of the National Board certificate) or \$10,000 per year if employed in a high-needs school. No monetary incentive is attached to earning a Professional certificate. As a result, teachers are faced with a major decision when choosing advanced certification.

In relation to this study, the three-year eligibility requirement to apply for National Board certification is examined. It appears the National Board arbitrarily choose three years completed teaching as an eligibility requirement to apply. Little, if any research has been conducted that has explored whether the three-year cut-off point is enough experience to successfully pursue the National Board certificate. In addition, variables related to the teaching context, such as National Board certificate area (includes content and student level), school size, or gender have not been examined against National Board pass rates.

An analysis of the findings revealed that there were no differences in National Board pass rates based on prior years of teaching experience at 3-5 years, 6-9 years and 10 + years. The implication for teachers in Washington State is significant. The evidence suggests that teachers could successfully pursue National Board certification at three years of teaching and bypass the Professional certificate to earn advanced certification.

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Dedication

To my sweet sister Donna, your courage and grace through life's unimaginable circumstances will be with me forever. I am so very grateful for your kindness, generosity, and helping me "get it right". How thankful I am to have you as my sister.

I miss you every day.

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I love you mother dear.

To my son Gian, you are an inspiration. You conquered one of life's greatest challenges.

I am so very proud of you.

To John, for everything you have brought into my life and for enduring the "bad" days.

I cannot imagine my life without you.

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Parting is such sweet sorrow that I shall say goodnight till it be morrow.

William Shakespeare

CHAPTER ONE

Introduction

Teacher evaluation methods are at the forefront of education reform across America. Virtually everyone in the field of education believes that the teacher evaluation system is not working (Papay, 2012). There needs to be a better system for evaluating teachers. Educators, policy makers, and administrators are in general agreement that the single most important factor attributed to increased student learning, is the teacher (CFEE, 1986; Darling-Hammond, 2013; Harris & Sass, 2007; Institute for Public Policy & Economic Development, 2013; NBPTS, 2015; Smith, Gordon, Colby, & Wang, 2005; Papay, 2012). States and districts are searching for an evaluation method that works.

Up until recently, teacher evaluations have been referred to as “drive by” observations (Papay, 2012). Principals visited classrooms once maybe twice a year if at all, observed the teacher and rated him or her using a checklist, which resulted in a “satisfactory” or “unsatisfactory” rating (Vandevoort, Amrein-Beardsley, & Berliner, 2004; Papay, 2012). For the most part, feedback has never been part of the process. The evaluations did not benefit the teacher or the principal. Teachers wanted a comprehensive evaluation system that would inform their practice and make them better teachers, and in turn increase student achievement (Accomplished California Teachers, n.d.).

Race to the Top contributed to the focus on the evaluation process. To receive federal funding and/or flexibility waivers under No Child Left Behind (NCLB) states and districts were required to examine the current cursory evaluation methods that were in place and develop a more comprehensive measurement process. As a result, two key evaluation methods for

measuring teacher performance came to the forefront, the valued-added model and the standards-based model (Darling-Hammond, 2013).

The Value Added Model (VAM) uses student test scores and student background information as a predictor of future achievement. Using a statistical model that controlled for student background variables, changes in student test scores at multiple points in time could predict how much of the change in student achievement was linked to the teacher (Harris, Ingle, & Rutledge 2014). This method is inexpensive and relatively quick to provide results. Policymakers prefer quantitative data results in a short period of time. The VAM does just that.

The standards-based approach is grounded in research (Darling-Hammond 2013). Evaluation is conducted using multiple measures of teacher practices and student learning. It is a more comprehensive approach (Darling-Hammond, 2013; Race to the Top 2009). In addition to observations, teachers provide evidence that demonstrates the ability to meet professional standards (Darling-Hammond, 2013; Institute for Public Policy & Economic Development, 2013; Papay, 2012).

The terms highly-qualified, effective, and accomplished teaching are adjectives applied when describing teacher performance. The terms are used interchangeably among the public and policy makers with no clear distinction between them. In this study, these terms are defined to provide a common understanding:

Highly-qualified, defined in the NCLB Act 2001, requires that a teacher hold at least a bachelor's degree from a four-year institution, is fully certified or licensed by the state, and demonstrates competence the core subject area taught (NCLB, 2001).

Accomplished teaching, a term applied by the National Board for Professional Teaching Standards to mean a teacher who has met the highest national standards of the teaching profession as established by the National Board (NBPTS, 2015).

Effective teaching is dependent on what is being measured. It may have a narrow focus or it can be used in a much broader scope (Goe, Bell, & Little, 2008). It may reflect outcomes that can be measured by student test scores from standardized tests (Goe et al. 2008). The classroom may become the focus if interactions/student learning between teacher and students are being measured (Goe, et al., 2008). When teacher quality becomes the focus, performance on content knowledge or teacher exams/portfolios for certification may be the measure used to determine effective teaching. For this study effective teaching is defined as changes in *student test scores on standardized tests over a specific period of time*. Each definition leads to different policy outcomes (Goe et al., 2008).

A Nation at Risk: The Imperative for Educational Reform

The standards-based model for measuring teacher performance was not new to education. It was an outcome of *A Nation at Risk*. In the early 1980s, education professionals, researchers, and policy makers argued that to strengthen schools we needed to strengthen teaching (National Commission on Excellence in Education, 1983; Carnegie Forum on Education and the Economy 1986; Vandevort, Amrein-Beardsley, & Berliner, 2004).

In 1981, then Secretary of Education, T. H. Bell created the National Commission on Excellence in Education (NCEE) to address the “widespread public perception that something is seriously remiss in our educational system” (NCEE, 1983, para 2). Bell charged the Commission with examining the quality of education in the United States and to report the findings to Bell

and the Nation within 18 months (NCEE, 1983). The Commission was to focus on six clearly defined areas:

- Evaluate the quality of teaching and learning in our schools, colleges, and universities.
- Compare our schools and colleges to those of other industrialized nations.
- Examine the relationship between college admissions requirements and high school achievement.
- Identify programs that resulted in college success.
- Evaluate the social and educational changes over the last 25 years in relation to the impact on student achievement and,
- Define the problems which must be overcome to provide excellence in education (NCEE, 1983).

The NCEE published the findings in 1983 in the historic report *A Nation at Risk: the Imperative for Educational Reform*. Key findings indicated current policies, practices, and standards were in need of an extensive overhaul to improve the quality of education in the United States (NCEE, 1983). The report described the indicators and risks the United States faced if future students were not prepared to compete in the global economy (NCEE, 1983). The report provided recommendations that addressed content, expectations, time and teaching. The Commission recommended that “persons preparing to teach should be required to meet high educational standards, to demonstrate an aptitude for teaching, and to demonstrate competence in an academic discipline...” (NCEE, 1983, Recommendation D: Teaching section, para 2)”. This study will focus on the recommendations for teaching and teaching standards.

In response to the Commission's recommendations, the Carnegie Corporation of New York funded a \$1 million grant to examine teaching as a profession (National Board for Professional Teaching Standards, 2015). As a result of this effort, the Trustees of the Carnegie Corporation of New York established the Carnegie Forum on Education and the Economy (CFEE) in 1985.

A Nation Prepared: Teachers for the 21st Century

In 1986, after studying the recommendations suggested in *A Nation at Risk*, the CFEE published their findings in: *A Nation Prepared: Teachers for the 21st Century*. A response to *A Nation at Risk*, the report outlined some concerns and offered recommendations for addressing the current challenges in education. One recommendation for on teaching suggested the creation of national standards for what teachers should know and be able to do (CFEE, 1986). Following up on this recommendation in 1987, the Forum established the *National Board for Professional Teaching Standards* (CFEE, 1986). Darling-Hammond (2013) noted that “established professions such as medicine, nursing and law have long had state tests for licensure that are designed by members of the profession...not unlike the portfolio required by the National Board for Professional Teaching Standards.”

By the 1990s, the Forum's recommendations had influenced the U.S. Department of Education policies through the “excellence” reform movement (Tozer, Violas, & Senese, 2002). As such, these recommendations were filtered down to state departments of education and were implemented to varying degrees (Chingos & Peterson, 2010 as cited in Ferguson & Ladd, 1996; Hanushek, 1971). At this time, state departments of education thus began developing testing criteria to assess teacher quality (Chingos & Peterson, 2010). From this movement came tests

such as the Praxis, West B, and West E that were designed to measure the knowledge and skills of future teachers (Educational Testing Service, 2015). One objective was to implement greater accountability by colleges of education in teacher preparation and state departments of education in terms of identifying and certifying qualified teacher educators (Chingos & Peterson, 2010).

In 1990, George H. W. Bush announced his major education goals for the U. S., one of which stated "...and we are going to make sure our schools' diplomas mean something. In critical subjects--at the 4th, 8th, and 12th grades--we must assess our students' performance" (Bush, 1990). In 2000, President George W. Bush reauthorized the *Elementary and Secondary Education Act of 1965 (ESEA)*. The restructured ESEA law, No Child Left Behind (NCLB) Act of 2001 focused predominately on quantitative outcomes: test data and school improvement data.

Yet, while there has been considerable argument for using test scores as a means for identifying effective teachers, the research is unclear as to whether test scores are truly a good measure (Goe, Bell, & Little, 2008).

In contrast to the culture of using test scores to evaluate teachers, the state of Washington examined the existing evaluation systems in Florida, North Carolina, and Ohio; the states with the largest number of National Board Certified Teachers. As a result, the state recognized that the National Board assessment was identifying more accomplished teachers. Thus, in the state of Washington, a movement to increase the number of National Board Certified Teachers was underway by 2000.

The Washington State Teacher Development Continuum

Basic eligibility requirements for a teaching certificate in Washington State include: holding a bachelor's degree from a regionally accredited college/university,

completed a state-approved teacher preparation program, passing the basic skills test, and an endorsement test (Office of Superintendent of Public Instruction, 2016). Washington State is unique in its approach to identifying qualified teachers. While many states have varying levels of teaching certificates, the National Board certificate is integrated into Washington State's certification continuum.

The teaching continuum in Washington State begins with the education Teacher Preparation Assessment (edTPA). It is part of an evaluation system that measures teaching skills against professional standards. In Washington State, teachers are measured against the same teaching standards throughout their career. The standards become more rigorous as the teacher moves up the teaching continuum. Upon graduating from a college/university teacher preparation program, teachers move up the continuum and are issued the first of two Residency certificates.

After meeting the state requirements for the first of two Residency certificates (2 years of teaching with at least a 1.5 Full-Time Equivalency, FTE) teachers then move up to the second Residency certificate that has a three-year expiration date from date of issue. During these timeframe teachers must earn an advanced teaching certificate. The Professional certificate is the next certificate on the Washington State teaching continuum. However, at this point teachers become eligible to pursue either a Professional certificate or a National Board certificate.

The Professional certificate does not have any financial incentives or pay increases attached to it. The cost of pursuing the Professional certificate starts with a \$495 application fee. The fees can increase if the teacher joins a state support program. If the teacher fails on the first attempt, he/she has two years to resubmit components to achieve certification with additional retake fees attached. The Professional certificate has a five-year expiration date.

However, teachers in Washington State receive a large financial bonus upon earning National Board certification. The fee for application to the National Board is \$2565. Additional fees can apply if the teacher joins a state support program. If the teacher fails to achieve National Board certification on the first attempt, there are two additional consecutive years to resubmit (once per year) with additional fees depending on what is resubmitted.

Upon National Board certification teachers receive an annual financial bonus that can range from \$5,000 to \$10,000 per year for ten years (the life of the National Board certificate). Teachers in high-needs schools are eligible for the \$10,000 annual bonus. High-needs qualifier is determined by the Free and Reduced Lunch Rate (FRLR) at the school the teacher works. The FRLR cut-off percentage for elementary school is 70%, middle school is 60%, and high school is 50%. At the end of the ten-year National Board certificate, teachers may renew the National Board certificate and continue the bonus for an additional ten years. As a result of the financial bonus attached to the National Board ten-year certificate some teachers are opting to bypass the five-year Professional Certificate and move on to the National Board certificate. Teachers who opt for the National Board certificate and bypass the Professional certificate who never pass the National Boards must then start over and earn the Professional certificate, another consideration when deciding between the Professional and National Board certificate.

The National Board certificate supersedes a Professional certificate in Washington State. In addition, a teacher moving into Washington State who is National Board Certified has no additional requirements to meet before being issued a teaching certificate.

The Professional Certification

In the early 2000s, the Washington State Professional Educational Standards Board (PESB) invested a significant amount of money and resources to develop an assessment for the advanced Professional teaching certificate. The Professional certificate then became part of the state Teacher Development Continuum positioned between the Residency certificate and the National Board certificate. The Professional certification process was modeled on the National Board assessment using similar standards. The Professional certificate requires teachers to submit a portfolio of evidence that demonstrates the ability to meet the state requirements for the Professional certificate: effective teaching, professional development, and professional contributions (Professional Educator Standards Board, 2015).

In general, the Washington State Professional certificate does not meet the requirements for a teaching certificate in most other states. The National Board certificate however, is transferrable to approximately forty other states.

The National Board Certificate

Eligibility for National Board certification requires teachers to meet three requirements; possess a bachelor's degree from an accredited institution, employment must have occurred within the United States, and must have completed three years of teaching prior to application (National Board for Professional Teaching Standards, 2015). I spoke with Sue Hovey, a founding member of the National Board for Professional Teaching Standards (NBPTS) about the decision to choose three years of prior teaching as the cut-off point for eligibility. She stated that the National Board just picked a number (personal communication, July 2007). The decision was not based on any research, evidence, or data. The three-year benchmark appeared to be an arbitrary

number. It is not known whether the three-year benchmark is a valid cut off point for identifying an accomplished teacher or if teachers can be successful at earning National Board certification.

There appears to be a link between National Board certification, effective teaching, and student achievement (Bond, Smith, Baker, & Hattie, 2000; Cantrell, Fullerton, Kate, & Staiger, 2008; Cavalluzzo, 2004; Cavalluzzo, Barrow, Henderson, Mokher, Geraghty, & Sartain, 2014; Chingos & Peterson, 2010; Clotfelter, Ladd, & Vigor, 2007; Cowan & Goldhaber, 2015; Goldhaber & Anthony, 2004; Goldhaber & Anthony, 2007; Harris & Sass, 2007; Sander, Ashton, & Wright, 2005; Smith, Gordon, Colby, & Wang, 2005; Vandevort, Amrein-Beardsley, & Berliner, 2004). How much of that may be the result prior teaching experience is unknown.

A Board Member's Perspective

A trend started to develop in Washington State when teachers realized they had an option for advanced certification. Many teachers were opting for the National Board certificate and circumventing the Professional certificate because of the financial bonus. As a Washington State Professional Certification board-member from 2004-2011 it became apparent to the Board that the trend was not what the Board had intended when developing the Professional certificate. The state had invested a considerable amount of money and resources to develop the Professional certificate assessment. As a solution, the Board considered having the Professional certificate assessment a requirement for all Washington State teachers. Therefore, if a teacher became National Board Certified before earning the Professional certificate, the teacher would then have to go back and earn a Professional certificate as well. This is akin to graduating high school before middle school then requiring the high-school graduate to go back and complete middle before receiving a high school diploma

The suggestion may have been a response to the amount of resources the state had invested in the Professional certificate assessment. Originally, the state's policy was to have teachers earn the Professional certificate before moving onto the National Board certificate. The Professional certificate was envisioned to be stepping stone to National Board certification.

At this point in time, I was receiving numerous phone calls and emails from teachers across the state wanting to know if they should pursue a National Board certificate in lieu of the Professional certificate. Data to support one over the other was non-existent. My suggestion was to research the requirements for completing each certificate before making a decision. This study attempts to provide information that may help when making the decision.

National Board Research Studies

Numerous research studies on the National Board assessment have measured the link between teaching and student learning in reading and math (See Table 1 for a list of research studies). In my experience working with PK-12 teachers, it is a common criticism that outside of reading and math, National Board research is non-existent. In addition, few if any studies to-date have examined the pass rates in relation to each of the 25 National Board certificate areas as listed in Table 2. This study will examine whether certificate area, prior years of teaching experience, school size (rural, suburban, and urban) or gender have any impact on pass rates.

As director of the Washington State University (WSU) National Board Support Program for 15 years, I have made some observations related to pass rates. For example, according to the National Board writing skills have no impact on the score for the written entries of the portfolio. However, in my experience it appears that the English Language Arts teachers may be certifying at higher rates than other certificate areas. In addition, two certificate areas appear to have much

lower pass rates; Early Childhood-Young Adult, Exceptional Needs Specialist, and Early Childhood Generalist.

The majority of research examining the link between National Board certification and student learning relied on student test scores as the measure (Cavalluzzo, 2004; Chingos & Peterson, 2011; Clotfelter, Ladd & Vigdor, 2007; Goldhaber & Anthony, 2007; Goldhaber & Anthony, 2004; Goldhaber & Cowan, 2015; Harris & Sass, 2007; National Research Council, 2008; Salvador & Baxter, 2010; Smith, Gordon, Colby, & Wang, 2005; Strategic Data Project 2012, 2012a; Vandevoort, Amrein-Beardsley & Berliner, 2004).

Two studies examined *attributes of exemplary teaching* as the measure (Bond, Smith, Hattie & Baker, 2000;

The majority of the research suggests that students of National Board Certified Teachers outperform students of non-board certified teachers (Bond et al., 2000; Cantrell, Fullerton, Kane, & Staiger, 2008; Cavalluzzo, 2004; Chingos & Peterson, 2010; Clotfelter, Ladd, & Vigor, 2007; Golhaber & Anthony, 2004; Smith, Gordon, Colby, & Wang, 2005; Vandevoort, Amrein-Beardsley, & Berliner, 2004).

Mixed results were found in some studies (Harris & Sass, 2007; McColskey, Strong, Ward, Tucker, Howard, Lewis, & Hindman, 2005; O'Sullivan, Hudson, Orsini, Arter, Stiggins, & Iovacchini, 2005; Sanders, Ashton, & Wright, 2005). Stone (2002) found a negative impact.

Statement of the Purpose

Few, if any researchers have examined the myriad of variables associated with teaching i.e., years of prior teaching experience, certificate area, school size, and gender relative to exemplary teaching attributes and National Board Certification pass rates. One of the three

eligibility requirements for application to The National Board is a minimum of three years of teaching experience.

It is unknown if three years prior teaching is a valid cut-off point to be successful in passing the National Boards. Because the State of Washington allows teachers to opt for the National Board certificate or the state Professional certificate at three years of teaching it becomes important to examine prior years teaching experience in meaningful certification time periods. For this study the following periods were chosen,

- 3-5 years, the three-year eligibility requirement for application to the National Board assessment and the timeframe to earn an advanced certificate.
- 6-9 years, the timeframe to earn an advanced certificate with two possible extensions for the Professional certificate (2 two-year renewals). Teachers are eligible for the renewals only if an attempt has been made toward the Professional certificate, and
- 10 + years after which a teacher loses certification for 5 years if no attempt has been made for either advanced certificate.

It was also unclear the extent to which school size, gender, or certificate areas influence pass rates.

This study examined one method used to evaluate and identify accomplished teachers. This descriptive study focused on the National Board Certification assessment of teachers using 14 years of data (1,008 PK-12 teachers who taught in the state of Washington between the years of 2001-2015), who were concurrently enrolled in the Washington State University National Board Support Program.

Specific Purpose of the Study

The purpose of this descriptive study was to examine the extent to which prior years of teaching experience, certificate area, school size, and gender impacted NBPTS pass rates.

Research Questions

- How do the findings help inform teachers about choosing between a National Board certificate and a Professional certificate?
- What do the data indicate about writing ability in reference to passing?
- To what extent does the National Board identify accomplished teachers?

Statistical Hypotheses

- No relationship exists between pass rates and years of prior teaching experience at the 3-5, 6-9, and 10+ year intervals.
- No relationship exists between pass rates and certificate area, school size or gender.

Assumptions

- The NBPTS assessment is a valid measure of accomplished teaching.
- Teachers dedicate themselves to the process.
- Teachers complete all of the work to the best of their ability to become board-certified.
- Teachers have chosen the correct certificate area in which 51% of their students fall within the age-range and content area of the certificate.

Delimitations

The study is delimited to:

- NBPTS candidates who were concurrently enrolled in the WSU NBPTS support program.
- Teachers employed in the State of Washington at the time of their application, and
- Teachers who have self-selected to participate in the NBPTS assessment-

Limitations

The National Board application fee was \$2565 at the time of this study. This is an out-of-pocket expense for the teacher. In addition to the application fee, teachers in Washington State had several options for a support program with varying costs (\$500 or \$1,000). The WSU NBPTS Support Program fee was the highest in the state at \$1,000 and offered the greatest amount of facilitation-candidate time at 90 hours in an academic year. The fee for other National Board support programs in Washington State was \$500 and offered 40 hours of facilitation-candidate time over the course of an academic year.

The total investment became \$3,565 for teachers enrolled in the National Board assessment concurrently with the WSU NBPTS Support Program. The differentiation in fees and hours with a facilitator may impact who enrolls in the WSU support program. Additionally, teachers are self-selected when applying for National Board Certification.

Terms

To reach a common understanding, multiple terms used in this dissertation are defined below.

Accomplished Teacher: A teacher who has met the high and rigorous national teaching standards established by the National Board.

Clock Hours: Credit for professional development for approved classes/courses that may be used to renew a teaching certificate. Clock hours are 1:1 ratio. For each hour of professional development completed, the teacher earns one clock hour. Ten clock hours is the equivalent of one quarter credit. Fifteen clock hours is the equivalent of one semester credit.

Conditional Loan: A non-interest loan of \$1425 awarded to teachers by the state of Washington to apply toward their National Board assessment fees.

edTPA: Educational Teacher Performance Assessment is a classroom-based assessment completed while student teaching. Teachers submit a portfolio of evidence for assessment. The edTPA is a requirement for graduates from Washington state teacher preparation programs.

Effective Teaching: changes in student test scores on standardized tests over a specified period of time.

Free and Reduced Lunch Rate (FRLR): The percentage of students in a district who qualify for free or reduced lunch rate.

Full-Time Equivalency FTE: The number of days that need to be completed in an academic year to be considered full-time.

High-needs school: Schools with free and reduced lunch rates of 70% at the elementary level, 60% at the middle school level, and 50% at the high school level.

National Board for Professional Teaching Standards (NBPTS): an independent, nonprofit, nonpartisan organization rooted in the belief that the single most important action this country can take to improve schools and student learning is to strengthen teaching. Their mission is to advance the quality of teaching and learning by maintaining high and rigorous standards for what effective teachers should know and be able to do.

Office of the Superintendent of Public Instruction (OSPI): The state agency responsible for overseeing K-12 public education in Washington State. Washington has 295 school districts that are led by the state school superintendent.

Significance of the Study

In Washington State, certification requirements allow teachers with three years of prior teaching experience the choice of earning a Professional certificate or a National Board certificate. Washington State offers incentives to teachers who pursue National Board certification with a financial bonus upon certification. There is no pay increase or bonus given to a teacher who earns the Professional certificate.

The question then becomes, what are the implications to teachers who circumvent the Professional certificate to pursue a National Board certificate? If prior years of teaching experience, certificate area (content and student level), school size, and gender have any impact on certification pass rates, the findings will provide information to teachers about whether to pursue the Professional certificate before the National Board certificate. In addition, teachers could make a more informed decision about if and when to start the journey to National Board Certification. As a result, the state and public school PK-12 teachers could invest their resources more effectively.

A noteworthy distinction of the WSU database is that it encompasses all of the second (out of three) models of assessment the National Board has developed. The first version was implemented from 1992-2000 and included six written entries for the portfolio and four content knowledge-based exercises. The timeframe for the second version ran from 2001-2014 with four written entries for the portfolio and six content knowledge-based exercises. In 2014, the National

Board released the third version of the assessment. The third and current version consists of four components related to teacher impact on student learning, much as the previous two versions. The third version can be completed by applying for each component separately. Payment for each component is due upon application, thereby breaking down the previous *whole* fee (\$2,565) due at once into more manageable pieces. The intention of the National Board was to allow teachers a more affordable way to pursue National Board Certification.

The data in this study encompasses the entire second model from beginning (2001) to end (2014) exclusively. It may provide professionals with data that is relevant when analyzing and potentially modifying the current third National Board assessment model. In addition, the results of this study may also allow the National Board to examine the identification of accomplished teachers across all three models.

CHAPTER TWO

Review of the Literature

In response to *A Nation at Risk*, the educational structure in the United States began a critical reform movement. The aim was to move from a process-based system to an outcome-based system. The Carnegie Corporation provided a \$1 million grant to support the effort. As a result, national standards for what teachers should know and be able to do were developed. In 1987, the National Board for Professional Teaching Standards was created.

Multiple studies have been conducted on the relationship between board-certification and student achievement since. Many studies have found that the National Board was, for the most part, accurately identifying accomplished teachers. The variables measured in almost all the studies reflected student achievement in reading and math. This study will focus on the variables of prior years of teaching experience, certificate area, school size, and gender; variables that have normally not been measured in the research. The impact of these variables on pass rates for National Board Certification is unknown.

The Movement to Professionalize the Field of Education

The beginnings of professionalizing the teaching profession were grounded in the efforts to professionalize the fields of medicine and law (Flexner, 1910; Hughes et al., 1973). The transformation of the educational field shared common issues with the transformation in medicine and law: the conflict between theory and practice, and between the models of university-based training and field-based training (Hughes et al., 1973).

The Carnegie Corporation provided a \$1 million grant to examine the existing educational structure and offer recommendations much as it did for the medical and legal fields. One of the recommendations was to professionalize the field of teaching.

National Commission of Excellence and the Economy

The National Commission on Excellence in Education was created in 1981 to address current educational concerns in the United States. Common public perception at the time suggested that our teachers, students, and schools were not equipped to meet the economic and educational challenges of the 21st century. The Commission examined the current conditions of the educational system. The National Commission on Excellence published their findings in the scathing report, *A Nation at Risk: The Imperative for Educational Reform*.

The report suggested our standing in the world economy had deteriorated, standards for students and teachers had fallen and student test scores were abysmal. The report went into critical detail about the quality of education and the associated problems in the United States. It highlighted the current risks, “History is not kind to idlers. The time is long past when American’s destiny was assured simply by an abundance of natural resources and inexhaustible human enthusiasm, and by our relative isolations from the malignant problems of older civilizations.” (National Commission on Excellence in Education, 1983). The public needed to understand the relationship between education and success. Those who are not prepared for the “information age” will be effectively disenfranchised from the material rewards associated with skills, literacy and training.

Several risks were outlined that focused on comparisons between the United States and the international world; 23 million Americans were functionally illiterate, and that tests scores in

multiple arenas have dropped. The report went on to enumerate the findings of the Commission on content, expectations, time and teaching. This study is concerned with the recommendations for teaching.

The Commission offered seven recommendations for teaching:

- Persons preparing to teach should be required to meet high educational standards, to demonstrate an aptitude for teaching, and to demonstrate competence in an academic discipline. Colleges and universities offering teacher preparation programs should be judged by how well their graduates meet these criteria.
- Salaries...should be increased and performance based. Salary, promotion, and retention should be tied to effective evaluation.
- School boards should adopt an 11-month contract for teachers...
- School boards, administrators, and teachers should work together to develop a system that would distinguish between beginning, experienced, and master teacher.
- The severe shortage of math and science teachers needs to be examined for short-term and long-term solutions.
- Incentives should be offered to attract the brightest students to the teaching profession.
- Master teachers should be involved in designing teacher preparation programs and in supervising beginning teachers.

Carnegie Forum on Education and the Economy

In January 1985, the Carnegie Corporation of New York provided a \$1 million grant to examine the teaching profession. This in turn led to the creation of the Carnegie Forum on Education and the Economy. The Carnegie Forum was created 'in recognition of the central role

teachers play in the quality of education (Carnegie Forum on Education and the Economy [CFEE], 1986, p. 6). The Forum wanted to “...draw America’s attention to the link between economic growth and the skills and abilities of the people who contribute to that growth, and to help develop education policies to meet the economic challenges ahead.” (Carnegie Forum on Education and the Economy, 1986, p. iii).

David Hamburg was President of the Carnegie Corporation and Chairman of its Advisory Council. As Chairman, Hamburg guided the activities of the Forum and provided the core membership of its task forces (Carnegie Forum on Education and the Economy. 1986, p. iii).

The Advisory Council was made up of 19 members, some of which included Lewis M. Branscomb, Chief Scientist & Vice President of IBM Corporation, Fred Hechinger, President, The New York Times Company Foundation, Donald Kennedy, President Stanford University, Shirley M. McBay, Dean for Student Affairs, Massachusetts Institute of Technology, and James B. Hunt, Attorney Pyner & Spruill, Raleigh North Carolina who later went on to become Governor of North Carolina and was a crucial supporter of National Board for Professional Teaching Standards. The Council recommended the immediate creation of a Task Force to examine teaching as a profession.

Task Force on Teaching as a Profession

The 14-member Task Force called for sweeping changes in education policy. One of which was to create “a National Board for Professional Teaching Standards...to establish high standards for what teachers need to know and be able to do, and certify teachers who meet that standard” (Carnegie Forum on Education and Economy, 1986). The Forum released their findings and recommendations in *A Nation Prepared: Teachers for the 21st Century*. The

National Board for Professional Teaching Standards was established in 1987 as a result of the Forum's recommendations.

National Board Certification: Five Core Propositions

The National Board for Professional Teaching Standards is based on five core propositions:

1. Teachers are committed to students and their learning.

Accomplished teachers are dedicated to making knowledge accessible to all students.

They act on the belief that all students can learn. They treat students equitably, recognizing the individual differences that distinguish one student from another and taking account of these differences in their practice. They adjust their practice based on observation and knowledge of their students' interests, abilities, skills, knowledge, family circumstances and peer relationships.

Accomplished teachers understand how students develop and learn. They incorporate the prevailing theories of cognition and intelligence in their practice. They are aware of the influence of context and culture on behavior. They develop students' cognitive capacity and their respect for learning. Equally important, they foster students' self-esteem, motivation, character, civic responsibility and their respect for individual, cultural, religious and racial differences.

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

Accomplished teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created, organized, linked to other disciplines and applied to real-world settings. While faithfully representing the collective wisdom of our culture

and upholding the value of disciplinary knowledge, they also develop the critical and analytical capacities of their students.

Accomplished teachers command specialized knowledge of how to convey and reveal subject matter to students. They are aware of the preconceptions and background knowledge that students typically bring to each subject and of strategies and instructional materials that can be of assistance. They understand where difficulties are likely to arise and modify their practice accordingly. Their instructional repertoire allows them to create multiple paths to the subjects they teach, and they are adept at teaching students how to pose and solve their own problems.

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

Accomplished teachers create, enrich, maintain and alter instructional settings to capture and sustain the interest of their students and to make the most effective use of time. They also are adept at engaging students and adults to assist their teaching and at enlisting their colleagues' knowledge and expertise to complement their own. Accomplished teachers command a range of generic instructional techniques, know when each is appropriate and can implement them as needed. They are as aware of ineffectual or damaging practice as they are devoted to elegant practice.

They know how to engage groups of students to ensure a disciplined learning environment, and how to organize instruction to allow the schools' goals for students to be met. They are adept at setting norms for social interaction among students and between students and teachers. They understand how to motivate students to learn and how to maintain their interest even in the face of temporary failure.

Accomplished teachers can assess the progress of individual students as well as that of the class as a whole. They employ multiple methods for measuring student growth and understanding and can clearly explain student performance to parents.

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

Accomplished teachers are models of educated persons, exemplifying the virtues they seek to inspire in students -- curiosity, tolerance, honesty, fairness, respect for diversity and appreciation of cultural differences -- and the capacities that are prerequisites for intellectual growth: the ability to reason and take multiple perspectives to be creative and take risks, and to adopt an experimental and problem-solving orientation.

Accomplished teachers draw on their knowledge of human development, subject matter and instruction, and their understanding of their students to make principled judgments about sound practice. Their decisions are not only grounded in the literature, but also in their experience. They engage in lifelong learning which they seek to encourage in their students.

Striving to strengthen their teaching, accomplished teachers critically examine their practice, seek to expand their repertoire, deepen their knowledge, sharpen their judgment and adapt their teaching to new findings, ideas and theories.

5. Teachers are members of learning communities.

Accomplished teachers contribute to the effectiveness of the school by working collaboratively with other professionals on instructional policy, curriculum development and staff development. They can evaluate school progress and the allocation of school resources in light of their understanding of state and local educational objectives. They are knowledgeable about specialized school and community resources that can be engaged for their students' benefit,

and are skilled at employing such resources as needed. Accomplished teachers find ways to work collaboratively and creatively with parents, engaging them productively in the work of the school.

National Board Certification – The Research

Often overlooked in the context of educational research are variables that may impact student achievement and school improvement such as prior teaching experience, content areas, gender, parent involvement, family home environment and class size among others. Research conducted on National Board Certification has typically focused on whether or not National Board Certification is an accurate signal of an effective teacher. A majority of the research has focused on teachers and students in reading and math. This is most likely because that is what gets tested and therefore, the only data available.

Many studies have been conducted in an attempt to identify the impact of National Board Certification. Study results have been mixed; many suggesting a positive relationship between student achievement and National Board certification (Bond et al., 2000; Cavalluzzo, 2004; Chingos & Peterson, 2010; Goldhaber & Anthony, 2004; Smith, et al., 2005; Strategic Data Project, 2012, 2012a; Vandervoort et al., 2004). Other studies have found mixed results (Harris & Sass; McCloskey, Stronge, Ward, Tucker, Howard, Lewis, & Hindman, 2005; O’Sullivan, Hudson, Orsini, Arter, Stiggins, & Iovacchini, 2005; Salvador & Baxter, 2010; Sanders, Ashton, & Wright, 2005) or a negative relationship (Stone, 2002) between National Board Certification and student learning.

Data should be collected on additional variables such as content area, school size (rural, suburban, and urban), gender, and student level in an attempt to determine if these variables have

any impact student learning. National Board Certified Teachers in areas outside of math and reading are good teachers as well. We just do not have any data to support this claim. This study is an attempt to examine variables that have not yet been examined for any relationships that may exist between teachers and students' learning.

Teacher Effectiveness Measured by Teacher Attributes

A majority of the research has utilized two different measures in conducting the studies on effective teaching. Researchers have relied on either generally accepted exemplary teacher traits (Bond et al, 2000; Cavalluzzo, 2004) or student test scores (Chingos & Peterson, 2010; Clotfelter, Ladd, & Vigdor, 2007; Goldhaber & Anthony, 2004; Goldhaber & Cowan, 2015; Harris & Sass, 2007; Salvador & Baxter, 2010; Vandevort et al., 2004).

Bond, Smith, Baker, & Hattie (2000) conducted the first research study on the validity of the National Board Certification assessment using 13 recognized exemplary teaching attributes of effective teaching: use of knowledge, deep representations, problem solving, improvisation, classroom climate, multi-dimensional perception, sensitive to context, monitoring learning and providing feedback, test hypotheses, passion for teaching and learning, respect for students, challenge, and deep understanding. The study measured 65 board-certified and non-board certified teachers from North Carolina, Ohio, and the Washington DC metro area. The participants were certified in either Early Adolescence-English Language Arts (ages 11-15), or Middle-Childhood Generalist (ages 7-12).

After establishing the criteria for exemplary attributes, a research team made up of 28 experienced educators developed a model that would evaluate teachers in the study fairly and

objectively. The researchers were trained for inter-rater reliability. Teachers were observed in their classrooms. The researchers assembled a repository of all the materials collected.

The results indicated that board-certified teachers scored higher on all 13 attributes of exemplary teaching, with a statistically significant difference on 11 of the 13 attributes compared to the non-board-certified teachers. Based on the data, Bond et al. (2000) concluded that the National Board was thorough in the assessment and the findings supported the argument that the National Board for Professional Teaching Standards was effectively identifying accomplished teachers.

Cavalluzzo (2004) followed Bond et al., (2002), in measuring teacher effectiveness by teacher traits. The study measured effectiveness on multiple indicators of teacher qualities: if the teacher was new or experienced, had a regular state certification in high-school or middle school math, held a teaching position in math or had another primary job assignment, had an advanced degree, which undergraduate school he/she attended, and had National Board Certification, a pending application, or failed or withdrew from the assessment. In addition, the researchers controlled for several student demographics which may have had an impact on student gains in end-of-year testing in mathematics. The study examined ninth and tenth grade math students in the Miami-Dade school district.

There was a positive relationship between the teachers and each of the teacher quality indicators. The results showed that students made larger gains if the teacher was board-certified and smaller gains if the teacher had tried but failed to earn National Board Certification or withdrew from the process (Cavalluzzo, 2004). Results indicated there was statistically significant evidence of teacher influence on student achievement and that National Board Certified Teachers

have a larger impact on students who are eligible for free/reduced lunch, but not for minority students (Cavalluzzo, 2004). In addition, that National Board Certification was an effective signal of teacher quality and a valid judgement of teacher quality among applicants.

Clotfelter, Ladd & Vigdor (2007) used teacher credentials as a predictor of National Board certification and student achievement. More importantly, they were concerned with credentials affected by policy decisions either by incentives, by changing licensing requirements, or by formal/informal evaluations on the distribution of teachers (high-quality and low-quality) among schools. Ultimately, the researchers wanted to understand which teacher policies were most likely to raise student achievement.

The results indicated that teachers with higher credentials tended to teach in schools with higher achieving and more affluent students. They found a statistically significant impact on student achievement. Overall, the researchers found that National Board Certification assessment appears to identify effective teachers.

Teacher Effectiveness Measured by Student Test Scores

Vandevoort, Amrein-Beardsley, and Berliner (2004) found that the National Board was successful in identifying effective teachers. The study compared the academic performance of elementary students in the classrooms of 35 National Board Certified Teachers who were certified as Early Childhood Generalist (ages 3-8) or Middle Childhood Generalist (ages 7-12) and their non-board-certified peers. Performance was measured using scores on the Stanford Achievement Test-9th Edition (SAT-9) in 14 Arizona school districts. Forty-eight comparisons were made; four grades (3-6), four years (1999-2003) of data, and three measures of academic performance (SAT-9, teacher survey and principal survey) in reading, math, and language.

Results for the 1999-2000 academic year indicated that the students of board-certified teachers made greater gains than students of non-board certified teachers in 9 out of 12 (75%) total comparisons. Gains were significant at $p < .05$ in 3 out of 9 (33.3%) of these comparisons. Results for the 2000-2001 academic year were the same as 1999-2000. In 75% of the comparisons, students in the classrooms of board-certified teachers made greater gains than students of non-board certified teachers. Gains were significant at $p < .05$ in 3 out of 9 comparisons. The 2001-2002 academic year revealed that students of board-certified teachers outperformed students of non-board certified teachers in 7 out of 12 (58.3%) comparisons. None of these gains were significant at $p < .05$. Results for the final year, 2002-2003 showed that students of board-certified teachers made greater gains than students of the non-board certified teachers in 10 out of 12 (83.3%) of the comparisons. Gains were significant at the $p < .05$ in half of the comparisons.

In one study, Smith, Gordon, Colby, & Wang (2005), examined 64 teachers; 35 NBCTs and 29 who attempted, but did not certify. The teachers were certificated in Middle Childhood Generalist (ages 7-12), Early Adolescence-English Language Arts (Ages 11-15), Adolescence-Young Adult Science (Ages 14-18+), or Adolescence-Young Adult Social Studies-History (Ages 14-18+). The purpose was to examine the impact of National Board certification on student achievement on two dimensions: comparative teaching practices (students who produce deeper responses) and comparative teaching outcomes (develop lessons that promote deeper student responses).

The results indicated there was a high correlation between student learning and teacher certification status and that there was a statistically significant difference between board-certified

and non-board certified teachers (those who attempted but did not certify). NBCTs scored higher on the comparative teaching practice dimension and the comparative teaching outcomes dimension. In every comparison between NBCTs and non-NBCTs, NBCTs had higher mean scores.

Goldhaber, Perry, & Anthony (2003) examined who applied for National Board Certification and traits associated with success. Teachers were selected from districts in North Carolina. The study examined characteristics linked to teachers who apply for certification and characteristics associated with successful certification. Teacher characteristics included educational background, demographics, salary, licensure data and test scores. The teachers, depending on when they started teaching had test scores from different tests such as Praxis II, NTE, and GRE. To make a valid comparison, the test scores were converted to Z scores.

The study results indicated that a National Board applicant was more likely to be female (91%) than male and is significantly more likely to hold a master's degree; 43 percent of applicants compared to 28 percent of non-applicants (Goldhaber et al., 2003). Teachers who did apply were more likely to have continuous licenses, meaning the teacher completed the required coursework and tests for their area during the five-year cycle of that particular license than those who did not apply (Goldhaber et al.).

The study also found that there were significant differences in teacher Z-scores between applicants and non-applicants, half a standard deviation. This would suggest that characteristics generally associated with high student performance were being acknowledged by the National Board Certification assessment (Goldhaber et al., 2003).

Differences between application status and school and district characteristics were minimal, with one major exception. A comparison was made between districts in North Carolina who offered a financial incentive and districts that provided no incentive. The data indicated that NBPTS applicants were more likely to teach in districts that offered at least one type of incentive (Goldhaber et al., 2003). For the most part, the research has found a positive relationship between National Board Certified Teachers and student learning (Goldhaber et al., 2003).

Goldhaber and Anthony (2004) conducted a study evaluating the relationship between teacher board-certification status and student achievement at the elementary level (third, fourth and fifth grades) in reading & math. Board certification status included three levels: board-certified, applied but did not certify, and teachers who never applied for board-certification. Results were measured using pre- to end-of-year testing. Data was collected from North Carolina's Department of Public Instruction for three consecutive academic years, 1996-97 through 1997-98.

Results of the data analysis indicated that students in the classrooms with a National Board Certified Teacher showed growth in both reading and math (6.18 points and 10.21 points) respectively at slightly higher rates than students of both unsuccessful applicants in reading (5.83 points) and math (9.14 points) and non-applicants in reading (5.69 points) and math (9.75 points). Differences were significant at the 1 percent level. Goldhaber and Anthony found that the National Board Certified Teachers appeared to be more effective than their non-board-certified peers. However, the statistical significance and magnitude of the "NBPTS effect" differs significantly by grade level and student type.

National Board Certification an Effective Measure - Mixed Results

Harris & Sass (2007) investigated whether or not the current state's systems of gauging teacher quality through the traditional paper-and pencil test was an accurate measure to determine between high and low-quality teachers. Harris & Sass (2007) suggested "There is growing evidence that teacher quality plays a central role in determining student achievement (Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004). Harris & Sass (2007) examined the relationship between certification status and student achievement. The study sought to determine whether or not National Board Certification status was, in effect identifying quality teaching. To-date it did not appear that state requirements for a teaching certificate had any impact in determining whether or not a teacher was effective.

The study examined student data in reading and math who were in self-contained classrooms using the criterion based Florida Comprehensive Achievement Test, "the Sunshine State Standards" (FCAT-SSS). The research spanned a four-year period. The results were mixed. Harris & Sass (2007) found that NBPTS was a valid indicator of teacher effectiveness, but the capacity of the NBPTS to identify high quality teachers varied across subjects and grades. It appears that the impact of board- certified teachers is larger for black students and low-income families. The researchers concluded that board-certification was a positive indicator of teacher productivity in some cases.

Cantrell, Fullerton, Kane, & Staiger (2008) conducted a random assignment experiment examining National Board Certification and Teacher Effectiveness. The purpose was to evaluate the ability of the National Board to identify teachers who had the greatest impact on student achievement. The study included board-certified teachers, non-board-certified teachers (teachers

who completed the National Board assessment, but did not certify), and non-applicant comparison teachers in the Los Angeles Unified School District.

The study compared the performance of elementary students who were randomly assigned to classrooms of National Board applicants and to comparison teachers. Information on each applicant's NBPTS scaled score was used to test whether the score was related to teacher impact. The study also examined the predictive value of each of the 10 sub-scores that make up the scaled score. The study found that students assigned to highly-rated applicants outperformed those in the comparison classrooms (Cantrell et al., 2008).

In relation to teacher variables, Chingos and Peterson (2010) examined whether or not a prior college degree in education or a master's degree had any impact on student achievement. Similar to the findings of Harris and Sass (2007) in relation to teacher performance, Chingos and Peterson (2001) found that neither an education degree nor a master's was a predictor of teacher effectiveness at the elementary or middle school level. The researchers found no correlation between state tests for teaching licensure and teacher effectiveness. These results contradicted earlier studies. However, after examining Florida's students' performance in grades fourth through eighth in math and reading, Chingos and Peterson (2010) did conclude that NBCTs in math and reading were more effective than the non-certified teachers. Overall, the results

Stone (2002) was the only researcher to find no relationship between National Board certification and student achievement. The study examined the "effect scores" for 16 NBCTs in Tennessee using a value-added model. Stone used the annual achievement growth of students as the "critical indicator of teacher effectiveness". Stone argued that this "critical indicator" was the only true measure of student achievement. Up until this point no one else had measured

student achievement using his model and therefore the other studies were flawed. Stone found that out of 123 teacher-by-subject-by-year teacher-effect scores, only 15% were rated as exemplary teachers and 11% were rated as deficient. He recommended that all states providing additional money to the NBCTs should stop doing so as the NBPTS has never shown that NBCTs are more effective than their non-board certified peers.

Stone received a lot of push-back from several highly rated evaluators such as the Harvard Education Letter, the Center for Education Reform, and Education Week. All found fault with Stone's methodology and recommended that states continue to provide financial rewards to NBCTs.

Strategic Data Project (2012) is based on the concepts that:

Teachers play a critical role in student learning and achievement. Research has shown that teacher's effectiveness has more impact on student achievement than any other factor controlled by school systems, including class size or the school a student attends. Only recently, however, has the data become available to measure teacher effectiveness in ways that can inform education policy and practice.

One study conducted in the Gwinnett County Public Schools measure the teacher effects as measured by 2-8 student test performance for the prior year in math, reading, and English Language Arts. It was analyzed only from teachers who could be linked to a classroom roster of students.

The results indicated that the variation in effectiveness among reading was considerably less than in math and English Language Arts. The researchers found that National Board certified teachers outperformed other teachers with the same levels of experience. Another study

conducted by the Strategic Data Project in the Los Angeles Unified School District found similar results. The researchers were examining the “teacher effect” impact. The study examined board and non-board certified teachers. The results indicated that overall NBCTs outperformed the non-board certified teachers with the same level of experience in elementary math and English Language Arts at .07 and .03 respectively. This is equivalent to one to two months of additional instruction.

Goldhaber & Cowen (2015) examined 903 elementary teachers and 379 middle school National Board Certified Teachers (NBCTs) to examine if NBCTs in Washington State who became board-certified were more effective than their peers at the elementary and middle school levels with a focus reading and math. These certificates included Middle Childhood Generalist (MC/Gen, ages 7-12), Early/Middle Childhood: Literacy, Reading and Language Arts (EMC/LRLA, ages 3-12), Early Adolescence/English Language Arts (EA/ELA, ages 11-15), and Early Adolescence Math (EA/Math, ages 1-15). The remaining elementary and middle school certificate areas were combined into one group. Teachers at the high school level were not included in the study. The study examined if any relationship existed between number of attempts to become board-certified and student achievement. They did not find any evidence that teachers who earned National Board Certification on their first attempt or subsequent retakes were more effective than their non-NBCT peers.

Portfolios as a Measure of Effective Teaching

Multiple measures/instruments have been used to identify effective teachers. Portfolios have been broadly used in teacher education programs and for advanced teaching certificates. In Washington State, beginning teachers applying for the advanced Professional certificate must

submit an evidence-based portfolio. The portfolio requires that teachers submit evidence of meeting three standards: effective teaching, professional development, and professional contributions (Waprotech.org, 2015).

The portfolio allows assessors to evaluate constructs not easily observable in the classroom. As such, portfolios are comprehensive and can be used throughout the profession of teaching. Reflection is a significant component in most portfolios. This aspect allows teachers the opportunity to reflect on and improve their practice (Goe, Bell, & Little, 2008).

There is continuing research on the validity and reliability of portfolios as a measure of effective teaching. There are also concerns about reliability in the scoring. How are the scorers/assessors trained to ensure reliability? Currently, there is a lack of research that makes any correlation between the portfolio model and student achievement. Although there have been studies that link the National Board portfolio to student achievement (Goe et al., 2008).

In the state of Washington, portfolios are a common method used to evaluate teachers' effectiveness in the classroom. Preservice candidates must complete a portfolio during their student teaching. The portfolio, which focuses on core teaching skills, includes written documents, video clips, samples of student work and written reflections.

National Board Certification

Completing National Board and/or Professional certification is an individual investment of money and time. Moreover, it has been reported that generally teachers spend on average 200-400 hours (Harris & Sass 2007) outside the classroom preparing their National Board portfolio. As such, teachers in the WSU National Board Support Program have reported

spending 250-300 hours outside the classroom preparing their National Board portfolio (Pastore, unpublished data, 2015).

National Board Certified Teachers (NBCTs) have been tapped to mentor new/beginning teachers in many school districts. In most cases, NBCTs lead district support groups for teachers who apply for certification. Board-certified teachers have become leaders in their schools in countless ways (NBPTS.org, 2015). According to an ongoing census of NBCTs, more than half (54%) of the NBCT respondents are working as team leaders in their schools. Thirty-six percent are department chairs. NBCTs are serving as principals, superintendents, state government officials, state departments of education staff and college faculty (NBPTS.org, 2015).

The National Board, along with ASCD, and the Department of Education have assembled Teach to Lead. The goal being to identify, highlight and support innovative ideas for teacher leadership from concept through execution. Thousands of teachers have attended regional summits and local leadership conferences connecting stakeholders focused on improving education for all students through teacher leadership (NBPTS.org, 2015).

The National Board is working with the National Education Association and the Center for Teaching Quality on the Teacher Leadership Initiative. Together they are launching a comprehensive program to develop a new generation of leaders who are prepared to advance teaching as a 21st-century profession (NBPTS, 2015).

CHAPTER THREE

Methodology

The purpose of this descriptive study was to examine the extent to which teacher variables: certificate area; prior years of teaching experience, gender, and school size as measured by sport classification (4A, 3A, 2A, 1A, 2B, and 1B) impacted National Board pass rates. In particular, this study examined the National Board three-year eligibility requirement in relation to pass rates.

The variable of prior years teaching experience was chosen because it appeared to be an arbitrary number according a founding member of National Board. Additionally, it was chosen because in the State of Washington teachers generally apply for the professional certificate at the beginning of the third year of teaching and for an advanced certificate at six years. The variable of gender was chosen because it had not been examined in relation to National Board pass rates. Size of school became important as a variable because teachers from all school sizes (urban, suburban, and rural) in the state of Washington applied to the National Board program. Size of school had not been examined and it was of interest to see whether schools with different resources had higher pass rates compared to smaller schools. To date, little if any research had examined different school sizes relative to pass rates.

Database

An archived database of 1,028 Washington State PK-12 teachers was used for analysis in this study. After data screening the final data set included 1008 cases (98%). The database was comprised of teachers who had applied for National Board Certification and were enrolled in the Washington State University National Board Certification Support Program concurrently.

The National Board offers certification in 25 different areas based on content and student age range (See Table 2 for description). Each of the 25 certificates was represented in this study. The data consisted of 1,008 teachers in 16 content areas and 3 different teaching levels (See Table 3 for content areas and teaching levels). One-hundred and twelve of the 295 Washington State public school districts were included in the database.

Because the number of individuals in the 3 specialty areas (physical education, art, music) were small ($n=49$) compared to the general ($N=959$) content areas, the specialty areas were removed from the main data set and analyzed separately. These areas were also analyzed separately in accordance with research by Darling-Hammond (2013). This separation of specialty and general content areas allowed for a more complete analysis in these areas. In the case of the specialty areas, the separation allowed for analyses that took into account the smaller sample sizes which may have been masked if kept as part of the main data set.

There were 429 teachers at the elementary level, 278 teachers at the middle school level, 263 teachers at the high school level, and 38 unknown (See Table 3 for description). Ten of the 25 certificate areas covered multiple school levels. In these cases, the levels were coded based on the level in which a teacher taught. For example, the Early Childhood Young Adult covers all three levels; elementary, middle school, and high school. In these cases, the teacher was coded by the school level in which they taught.

Coding of Data

Data was coded using nominal classifications. Prior teaching experience was coded (3-5 years = 1; 6-9 years = 2; 10 + years = 3). Gender was coded male (1) and female (2). School size

was based on Washington State Department athletic classifications: (4A [1], 3A [2], 2A [3], 1A [4], 2B [5], 1B [6]). The 25 certificate areas were coded with numbers ranging from 1-25, based on level in which they taught as well as the content. Teachers who passed were coded with the number (1) and teachers who did not pass were coded with the number (2).

Design and Data Analysis

Data was analyzed using correlational and regression analyses. Alpha was set at $p = < .05$. The predictor variables were: prior years teaching experience, certificate area (student level and content), gender, and school size as measured by sport classification (4A, 3A, 2A, 1A, 2B, 1B). The DV was pass rates (pass, not pass).

Data was screened initially using the following steps:

- ▶ Data was screened to identify missing data and outliers and to fulfill test assumptions.
- ▶ Outliers were identified by calculating Mahalanobis distance in preliminary regression.
- ▶ Exploration was conducted on the newly generated Mahalanobis variable to determine which cases exceeded the chi square criteria.
- ▶ Cases that exceeded the critical value were deleted.

Once the data had been screened, multiple regression techniques were employed using the enter method. Model summary, ANOVA, tolerance levels, and coefficients were examined. Regression examined how accurately the IV's (prior years of teaching experience, certificate area, school size, and gender) predicted NBPTS pass rates.

Overall regression was summarized by identifying the variables in the model R^2 , R^2_{adj} , R^2 change and level of significance. B weight, beta weight, bivariate correlation coefficients, and partial correlation coefficients of the predictors with the DV were examined and interpreted.

CHAPTER FOUR

Results

Database Descriptive Information

The purpose of this descriptive study was to examine the extent to which years of experience, certificate area, school size, and gender impacted NBPTS pass rates. Quantitative analyses (descriptive as well as statistical analyses) are reported in *Chapter Four: Results*. The *Research Questions* are addressed within the *Discussion/Implications Chapter Five*. The Washington State University NBPTS database used for this study was from the years 2001-2015. The database originally had 1,028 cases. After data screening, 1,008 cases were retained for analysis (98% retention). Data was screened to identify missing data and outliers and to fulfill test assumptions. Multivariate normality and homoscedasticity were assumed because the residual plots were a little scattered but not extreme. Descriptive analyses were run on all data with independent and dependent variables. Regression was then conducted using the enter method.

Cases reflected 216 males and 792 females. While there were 3 times as many females (792) as males (216), 160 males (74% pass rate) certified compared to 643 females (81%) who certified (see Table 4 for comparisons).

Data was categorized into six different school size categories based on the Washington State school sport classifications (See Table 5 for classification break down). The greatest number of teachers applying to National Boards were in the three largest school sizes (4A, 3A, 2A = 814). Only 140 teachers applied from the smaller school sizes (1A, 2B, 1B). Teachers in the 1A and 2B school sizes certified at a lower rate compared to other school size classifications.

Specifically, only 64% of 1A and 75% of 2B certified compared to 4A-81%, 3A-79%, 2A 81% and, 1B -82%. (See table 6 for pass rates by school size).

Years of experienced was coded into 3 categories (3-5; 6-9; 10+) based on time periods where teachers in the state of Washington can pursue advanced certification (see Table 7 for detailed list). Teachers certified similarly across all years of experience. Those in the 3-5 years range certified at 79%, 6-9 year experience at 77%, and 10+ experience at 80% (see Table 15).

Data was categorized into 25 certificate areas (see Table 2 for certificate areas). Nine of the certificate areas had lower pass rates compared to the remaining areas. The specialty areas of music (*Early-Adolescence/Young-Adult* and *Early-Middle Childhood*) certified lower than all other areas. *Early-Adolescence Young-Adult* certified at 56% while *Early-Middle Childhood* certified at 50%. *Early-Middle Childhood: English as a New Language* certified at 52%, *Early Childhood Generalist* certified at 68%, *Early-Middle Childhood: Physical Education* certified at 71% while *Early-Adolescence/Young-Adult: Physical Education* certified at 50%. *Early Adolescence: Social Studies History* certified at 72%, *Early-Childhood/Young-Adult: Library Media* certified at 75% and *Early-Adolescence/Young-Adult: Career and Technical Education* certified at 75% (see Table 9 for complete breakdown).

Data was analyzed descriptively relative to total NBPTS pass rates (see Table 7). Of the teachers who applied to the assessment, 804 passed while 204 did not pass (80% pass rate).

Specialty Area Results

Because case sample sizes for specialty certificate areas of art, music, and physical education were small compared all other certificate areas, the cases for these specialty areas were removed and analyzed separately (see Table 10 for number in each certificate area).

Pass rates for the specialty areas of art, music, and physical education are 65% (see Table 9 certificate areas by pass rates). The data for pass rates for specialty areas by gender can be found in Table 11. Overall in this data for specialty areas, males had a 43% pass rate (9 pass; 12 not pass) while females had an 84% pass rate (21 pass; 4 not pass) (See Table 11 for complete breakdown).

In particular music certified at the lowest rate with combined 53% pass rate. When analyzed relative to gender, 3 males passed while 5 did not pass (38%). With females 6 passed while 3 did not pass (67%) (See Tables 9 & 11 for specific detail).

With physical education, 10 passed and 7 did not pass (59%). In this data, 5 male physical educators passed while 7 did not pass (42%). With females in physical education 5 passed and 0 did not pass for (100%).

Art teachers certified at the highest rate of specialty teachers with 11 out of 12 teachers certifying (92%). In this data, 11 of the teachers were female (10 passed) and only one male (1 passed) (see Table 11).

Statistical Hypotheses for General Content Areas

1. No relationship exists between pass rates and years of teaching experience (3-5, 6-9, and 10+ year intervals) in general content areas.

The model summary and the ANOVA summary indicate that the overall model of the one IV (teaching experience) does not significantly predict NBPTS pass rates, $R^2_{adj} = -.001$, $F(1,643) = .08$, $p = .77$ (see Table 9).

2. No relationship exists between pass rates and content specialization, school size, or gender in the specialty content areas.

The model summary and the ANOVA summary indicate that the overall model of the three IVs does not significantly predict NBPTS pass rates, $R^2_{adj} = .003$, $F(3, 916) = 2.06$, $p = .104$ (See Table 10 for Coefficients for Three IVs Relative to NBPTS Pass Rates).

Statistical Hypotheses for Specialty Content Areas

1. No relationship exists between pass rates and years of teaching experience (3-5, 6-9, and 10+ year intervals) in the specialty content areas.

The model summary and the ANOVA summary indicate that the overall model of the one IV (teaching experience) does not significantly predict NBPTS pass rates, $R^2_{adj} = .001$, $F(1,33) = .09$, $p = .75$ (see Table 14 for Coefficients for Prior Years of Teaching Experience Relative to NBPTS Pass Rates for Specialty Certificate Areas).

2. No relationship exists between pass rates and content specialization, school sport classification or gender.

The model summary and the ANOVA summary indicate that gender is the only variable that significantly predicts NBPTS pass rates $R^2_{adj} = .13$, $F(3,41) = 3.21$, $p = .03$ (See Table 12). Females certify at a significantly higher rate in specialty areas compared to males $t(47) = 2.53$, $p = .01$

CHAPTER FIVE

Discussion and Implications

The purpose of this descriptive study was to examine the extent to which years of experience, certificate area, school size, and gender impacted NBPTS pass rates. This study examined four quantitative variables (prior years teaching experience, certificate areas, school size, and gender) relative to National Board pass rates. These variables were examined using the following statistical hypotheses:

1. No relationship exists between pass rates and prior years of teaching experience at the 3-5, 6-9, and 10+ year intervals.
2. No relationship exists between pass rates and certificate area, school size, or gender.

In addition, the study was guided by three general research questions:

1. How do the findings help inform teachers about choosing between a National Board certificate and a Professional certificate?
2. What do the data indicate about writing ability in reference to passing?
3. To what extent does the National Board identify effective teachers?

This discussion chapter addresses each of the research questions statistical hypotheses individually and then as a collective whole.

Research conducted to-date has not addressed these particular variables (prior years teaching experience, certificate areas, school size, and gender) relative to National Board pass rates or whether the NBPTS process adequately identifies exemplary teachers (Bond et al, 2000; Cantrell et al, 2008; Cavalluzo, 2004; Chingos & Peterson, 2011; Clotfelter et al., 2007; Goldhaber & Anthony, 2004; Goldhaber & Anthony, 2007; Goldhaber & Cowan, 2015; Harris &

Sass, 2007; McCloskey et al., 2005; National Research Council, 2008; O’Sullivan et al., 2005; Salvador & Baxter, 2010; Sanders et al., 2005; Smith et al., 2005; Strategic Data Project, 2012; Strategic Data Project, 2002a; Vandevort et al., 2004). These particular variables were chosen for a variety of reasons. First, Sue Hovey, founding member of National Boards stated that the choosing of three years was rather arbitrary as a starting point to enroll in the process (personal communication, July 2007). Research, however supports that it takes teachers approximately 5-8 years before they are able to more clearly come into their own as teachers and demonstrate exemplary teaching skills and strategies (Strong et al., 2008). Given the research the hypothesis assumed that years of experience would have an impact on pass rates. Naturally, more experience should suggest more depth of knowledge to draw upon when preparing a portfolio, thus providing a potentially greater chance of success.

Second, at three years of completed teaching, teachers in Washington State have an option between the Professional Certificate and a National Board certificate for advanced certification. There are no financial incentives or bonuses tied to earning the Professional certificate. The National Board certificate however has significant financial incentives (\$1425 interest-free loan applied to NBPTS application fees) and bonuses (\$5,000 or \$10,000 annually based on FRLR for ten years) attached to it. The financial bonus can reach \$100,000 over the life of the National Board certificate, a substantial monetary benefit.

Statistical Hypotheses Discussion

Hypothesis 1: No relationship exists between pass rates and prior years of teaching experience at the 3-5, 6-9, and 10+ year intervals.

In this study, the variable prior years of teaching experience was not a predictor of success whether measuring general or specialty certificate areas. Teachers in the 3-5 years range certified at the same rates as teachers in the 6-9 year range and 10+ years; generally about 77-80% overall ($p < .77$).

Washington State provides a monetary incentive to teachers because the research has indicated that NBCTs are more effective in the classroom than non-board certified teachers; both in exemplary teacher attributes (Bond et al., 2000; Cavalluzo, 2004) and by student test scores (Chingos & Peterson, 2010; Clotfelter et al., 2007; Smith, et al., 2005; Strategic Data Project, 2000, 200a; Vandevort et al., 2004). Washington State chose to offer a higher annual bonus (\$10,000) as an incentive to move accomplished teachers into the high-needs schools in Washington State. To some extent it seems to have been an effective policy in regards to getting teachers into these schools as teachers have moved from high to lower performing schools. However, the research is unclear whether this movement has had any impact on student learning in the high-needs schools (Cowan & Goldhaber, 2015).

Prior years of teaching experience did not predict pass rates for either general or specialty certificate areas (Art, Music, and Physical Education). While Stronge et al. (2008) argues that teachers need between 5-8 years to become a master teacher or show exemplary teaching skills, in this study over 14 years it did not hold true. In this case it did not matter how long a teacher had taught beyond three years as they all certified at the same rate.

Perhaps the current teacher education programs are positively impacting newer teacher's success rates at National Boards. In particular, teacher education programs today typically use a portfolio assessment in practicums and student teaching. In the state of Washington, the edTPA

is an assessment completed during the teacher education program, and is directly aligned with the National Board assessment. The first teaching certificate, upon completing a teacher education program is the Residency teaching certificate followed by the Professional certificate. Both certificates are aligned with the National Board assessments. Thus, it appears that teachers at the newer levels are able to navigate the National Board process in a more linear and direct manner.

Hypothesis 2: No relationship exists between pass rates and certificate area, school size or gender.

Certificate Areas

Over the years it has appeared that certain areas such as *Early Childhood Generalist* were certifying at a lower rate compared to other certificate areas. While not a significant prediction in this study, the *EC Generalist* teachers a certified lower rate (68%) compared to the other generalist certificate area *Middle Childhood Generalist* which certified at 82%. Perhaps this lower rate may be due to the difficulties in being able to demonstrate and explain “true inquiry” in entry 3 (math & science) at the kindergarten and 1st grade level. Teachers state that it is a real challenge to show such inquiry at these young ages.

In this study there were 216 males and 792 females. The hypothesis was that gender would predict pass rates, the only area in which the hypothesis held was with the specialty certificate areas of art, music and physical education. Yet, overall while there were 3 times as many females (792) as males (216), males only certified at a 74% rate compared to females who certified at an 81% rate. Art had a 92% pass rate with only male applying and certifying.

Interestingly, music and physical education were areas where males certified at a significantly lower level compared to females.

Perhaps the reason that males certified at an overall lower rate may be reflective of differences in how males and females approach teaching of these content areas. Men have a tendency to teach physical education from a very command style of teaching. Those males who choose physical education may have spent less time writing and reflecting over their years of training and education compared to other general content areas. Perhaps they require more assistance in how to teach more reflectively and/or write and reflect on their teaching practices. To date few if any researchers have examined the impact of gender on pass rates. Perhaps, given that males overall in this database certified at a lower rate, the assessment may be more biased towards how females teach and reflect compared to males. Females may have a tendency to talk and reflect more. Females, on the other hand, certified at 100% in physical education compared to males at 58%.

School Size

School size was not a significant predictor of pass rates. Yet 2B (75%) and 1A (64%) certified at lower rates compared to the other school size classifications which ranged from 79% to 82% as outline in Table 6. These schools are more rural and much smaller compared to the 4A, 3A, and 2A. Perhaps the smaller, more rural schools do not have the resources compared to the larger schools. These resources might include access to a *whole-classroom* microphone needed to capture the audio in videotaped lessons. National Board scorers need to be able to hear at least 50% of the conversation between teacher and students. If they cannot, this significantly impacts the overall score. Microphones were purchased by WSU and lent out when it was

recognized that many teachers in these schools did not have access to this needed device. They also did not have access to video cameras to the same extent as teachers from larger schools. Teachers needed an additional person to videotape lessons as part of the assessment. This became a challenge in the smaller schools. Lower numbers of available personnel impacted the ability to videotape lessons. The assessment is designed for teachers to choose which lessons will best demonstrate the ability to meet standard. However, teachers in the smaller schools are at the mercy of personnel availability to videotape. If no one is available at the specific time of a chosen lesson, the teachers are left with having to videotape a different lesson. For some teachers this removes the option to videotape a chosen lesson because the teacher is reliant on available personnel. Some schools had limited access to online capabilities which may have impacted their research on teaching.

In smaller schools, there are fewer teachers per grade and per school. Many of the teachers have multiple roles beyond teaching that impact their time on task relative to National Board assessments. These teachers may be coaches, after school club advisors, and dual administrative/teaching. All of these kinds of activities in addition to having family responsibilities could impact the amount of time spent on assessment activities as well as the amount of time it takes to reflect and grow from teaching practice.

In these smaller schools many teachers were the only ones in their school and sometimes even in their district to go through the process. Not having colleagues to talk with about teaching and reflecting on these practices could have significantly impacted their ability to grow professionally through this process in an efficient and effective manner.

In this study, no single variable was a predictor of pass rates for the *general content* areas. Specifically, prior years of experience, certificate areas, and school size did not significantly predict whether or not a teacher certified through the National Board process.

Gender and Specialty Areas

Gender only predicted pass rates in the specialty areas (*Art, Music, and Physical Education*). Only 46 of the 1008 teachers chose to apply (less than 1%) and attempt certification in these three areas over the 14 years of the database. Of the 46 teachers, 21 were males and 25 females. Overall in the specialty certificates, women's pass rates were significantly higher ($p < .01$) than men's pass rates. Females certified 100% in 3 of the 4 areas while males certified 100% in one area (Art where only one individual applied and passed the National Board assessments), with the rest certifying between 38-66%.

While *Art* was a piece of the specialty area equation, teachers in the *Art* area ($n=12$) certified at 92%, only 1 male attempted and certified and only 1 female teacher did not certify. Thus, the contributors to the significant gender prediction came from *Physical Education* and *Music*. Males certified at 38% at the *Early Adolescence and Young Adult Physical Education* specialty area while women certified at 100%. Male teachers at the *Early Middle Childhood Physical Education* specialty area certified at 50% while females certified at 100%.

Male teachers in *Early Adolescence and Young Adult Music* certified at 20% while female teachers certified at 100%. Male teachers in the *Early Middle Childhood Music* area certified at 66% while female teachers certified at 40%.

It is rather clear that males struggled in certifying in the specialty areas of physical education and music. While females certified at 100% across 3 of the four certificate areas, they

certified at only 40% in *Early Middle Childhood Music* area. There may be a number of reasons that could explain why the pass rates were so low for males in these two areas as well as females in the *Early Middle Childhood music* area.

First, teachers in physical education typically coach, oftentimes multiple teams throughout the year. Coaching requires a consider amount of time with individuals often at school early in the morning and late into the evening daily. Depending on the sport activity and the season, games are scheduled throughout the week. Teams travel and in the cases of rural schools, they may travel great distances on a weekly basis. These time constraints make it extremely difficult for teacher/coaches to take the time to write and reflect on their practice as required by the National Board assessments.

Moreover, teachers apply to the National Board process typically in August and are required to turn in all their materials by May, 10 months later. Given that two-a-days for football and cross-country and volleyball often start in August, with the seasons running into November, teacher/coaches have little time or probably motivation to spend time on the assessments. By the middle of October basketball is gearing up and by the spring track and field, tennis, softball, and baseball start their seasons.

One might ask why then do females certify at 100% for both the *Early Adolescence and Young Adult Physical Education* and the *Early Middle Childhood Physical Education* while males certify so low? Are these females not also teacher/coaches? Interestingly, since women became a part of the National Collegiate Athletic Association in the early 1980s, fewer women have chosen or been chosen to coach female teams (Acosta & Carpenter, 2014; Acosta & Carpenter, 2008; Jimenez, 1998). In 1972, over 90% of women coached female teams, however

by 2014 less than 43% of females were coached by women at the intercollegiate level (Acosta & Carpenter, 2014) with the numbers similar (42%) in the high school ranks (Acosta & Carpenter, 2008). There is a good chance that the females in this study were not involved in coaching or had very limited coaching duties.

In addition to the after school coaching responsibilities many of these specialty teachers, especially in the smaller schools and districts, teach across K-12. They travel between schools and have a significant number of preparations per week. Again, time becomes an issue in being able to adequately prepare for the National Board Assessments. During the time frame of this study, it was noted that some of the specialty teachers (Physical Education and Music) were given the option to attend online with the hope of improving the mentoring given other teachers who could attend in person. In this study it appears that even teachers who attended online did not significantly improve their pass rates.

Relative to music, many of the time constraint issues may also exist. For example, music teachers have marching band, pep bands, jazz bands, and so forth that extend after school. Additionally, they often prep for K-12 and they travel between schools. Future studies should focus more fully on understanding more about these time and other constraints as they impact National Board pass rates.

In the case of this study, the significant predictor of gender may not really be an issue directly as gender but rather a place holder for other issues that underlie the particular specialty positions. While females do certify for the most part significantly higher in these specialty areas, there is a good chance that it has more to do with the teacher responsibilities both within and outside the classroom that are probably less impactful across the general content areas. While

males still certify as a lower rate compared to females overall, this should be examined more fully in future studies to better determine if it is truly a gender issue or something underlying the particular areas of teaching/coaching/administrative type duties.

Research Question 1: *How do the findings help inform teachers about choosing between a National Board certificate and a Professional certificate?*

The study results indicated that teachers with 3-5 years of prior teaching experience pass National Board certification at the same rates as teachers with 6-9 years, and 10 + years. As a result, teachers now have research-based evidence to assist in the decision between pursuing a National Board certificate or a Professional certificate.

Research Question 2: *What do the data indicate about writing ability in reference to passing?*

The study results indicated that teachers in the Language Arts certificate areas are certifying at the same rates as all other certificates. Therefore the assumption is that writing has no impact on scores for National Board certification.

Research Question 3: *To what extent does the National Board identify effective teachers?*

Current data in database does not provide enough information to determine quantitatively the extent that National Boards clearly identifies accomplished teachers or if it is better than other measures in the state of Washington. The WSU NBPTS support program has a high level of success (80% pass rate) compared to other NBPTS programs around the state and in the nation. The National Board certificate is recognized in all 50 states and is directly transferable to

approximately 40 states. Board-certified teachers moving into the state of Washington have no additional requirements to meet to receive a teaching certificate. State Departments recognize NBPTS as effective in identifying accomplished teaching. Additionally, the State of Washington supports NBPTS as an alternative approach to professional certification.

There is some research that examines the impact of National Board Certified Teachers (NBCTs) on schools with large minority populations which is associated with higher levels of Free and Reduced Price Lunch. Surprisingly, in some studies (Harris & Sass (2007); Humphrey, Koppich, and Hough (2005) found that NBCTs had a higher impact on student learning with minority students on some subjects in some grades. According to Humphrey, Koppich, and Hough (2005) in the six states with the highest number of NBCTs, (California, Florida, Mississippi, North Carolina, Ohio, and South Carolina) researchers found that students in lower performing schools, a minority, or economically disadvantaged had a much lower chance of having an NBCT than students in high-performing schools in five of the six states. California was the exception. Humphrey et al., argue that the lack of financial incentives is one of the reasons for this unequal distribution. Humphrey et al., (2005) suggested that financial incentives may work to increase the number of NBCTs overall, but few states have developed a strategy to get these teachers into lower performing schools. Washington State however, has implemented a monetary incentive to board-certified teachers in high-needs schools. Current research on Washington State NBCTs suggests that the monetary incentive is, in fact moving teachers from higher performing schools into lower performing schools (Cowan & Goldhaber, 2015). Cowan & Goldhaber, 2015, found no evidence that increasing the number of NBCTs in lower performing schools leads to improved student achievement.

Goldhaber et al., (2004) found that NBCTs are less likely to be working in schools that have a large population of poor, minority, and/or low-performing students. Goldhaber et al, (2004) suggested that teachers tend to transfer to schools that serve a more affluent population. Perhaps a financial incentive would alleviate the NBCT disparity among schools. Harris & Sass (2007) found similar results. The research indicated that the signaling effect (a teacher who is board-certified by the National Board) is larger for black students. While not examined in this particular study, researchers should examine the extent to which NBCTs impact student achievement.

Conclusion

Overall none of the variables (other than gender in the specialty certificate areas) significantly predicted pass rates for National Boards in the Washington State University Support Program from the years 2001-2015. The state of Washington does not report pass rates for any support program offered in the state, thus it is impossible to provide comparative data relative to their certifying process. This database (n=1008) provided strong evidence that the hypothesized variables did not significantly predict pass rates (except in gender by specialty certificate areas).

Of great interest is that years of prior teaching experience did not significantly predict pass rates. These results provide strong evidence ($p=.77$) that teachers at the 3-5-year level certify at the same rates as 6-9 and 10+ years. The state of Washington Office of Superintendent of Public Instruction has spent a considerable amount of money and time developing the current professional certification process. Results from this study provide evidence that teachers may want to consider the National Board assessment over the Washington State professional

certification assessment because of the long-term monetary bonuses paid to NBCTs in the state of Washington.

An online option was provided to teachers in the specialty certificate areas who could not attend in-person meetings. However, the results found no significant impact on pass rates. The WSU NBPTS online support program is no longer an option and other avenues need to be explored. Finally, while teachers may consider the National Board assessments, staff of the Washington State program may want to examine more fully the specialty areas, especially physical education and music to see if modifications to timelines might make success rates higher.

This is the first study to examine an entire National Board database over a 14-year period. Strong evidence exists that this particular program is successful in helping an overall 80% of teachers become Nationally Board certified. Evidence also exists that some areas should be examined more fully to provide a more complete picture of what is happening relative to pass rates and how the assessments can better help teachers in certain specialty certificate areas.

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APPENDIX A

Tables

Table 1: National Board Research Studies & Content Areas

Study	ELA	GEN	LRLA	MATH	OTHER
Bond et al., (2000)	X	X			
Cantrell et al., (2008)	X	X		X	
Cavalluzzo, (2004)				X	
Chingos & Peterson, (2011)			X	X	
Clotfelter et al., (2007)			X	X	
Goldhaber & Anthony, (2007)	X			X	
Goldhaber & Anthony, (2004)	X			X	
Goldhaber & Cowan, (2015)	X	X	X	X	
Harris & Sass, (2007)			X	X	
McCloskey et al., (2005)			X	X	
National Research Council, (2008)					
Salvador & Baxter, (2010)	X			X	X
Sanders et al., (2005)	X		X	X	
Smith et al., (2005)	X	X			X
Strategic Data Project/Harvard, (Nov 2012)	X			X	
Strategic Data Project/Harvard, (May 2012)	X			X	
Vandevoort et al., (2004)	X		X	X	

Note. ELA = English Language Arts; Gen = Generalist; LRLA = Literacy: Reading Language Arts

Table 2: *National Board Certificate Area*

Content	AYA 14-18+	EA 11-15	EAYA 11-18+	EC 3-8	EMC 3-12	ECYA 3-18+	MC 7-17
Art			X		X		
Career & Technical			X				
English as a New Language			X		X		
English Language Arts	X	X					
Exceptional Needs Specialist						X	
Generalist				X			X
Health Education			X		X		
Library Media							
Literacy: Reading Lang Arts					X		
Mathematics	X	X					
Music			X		X		
Physical Education			X		X		
School Counseling						X	
Science	X	X					
Social Studies-History	X	X					
World Languages			X				

Note. AYA = Adolescence-Young Adult; EA = Early Adolescence; EAYA = Early Adolescence-Young Adult; EC = Early Childhood; EMC = Early-Middle Childhood; ECYA = Early Childhood-Young Adult; MC = Middle Childhood

Table 3: *Number of Teachers by Certificate Area*

Content Area	Elementary	Middle School	High School	Unknown Level	Total
Art		5	7		12
Career & Technical			19		19
English Language Arts		68	66		134
English as a New Language	20				20
Exceptional Needs Specialist	18	21	16	16	71
Generalist	274				74
Library Media	12	4			16
Literacy: Reading Language Arts	87	18	0	6	111
Math		74	36	0	110
Music	7	7	1	2	17
Physical Education	3	6	5	3	17
School Counseling	8	11	23	7	49
Science		40	42		82
Social Studies/History		18	39		57
World Languages other than English		6	9	4	19
Total	429	278	263	38	1008

Table 4: *Pass Rates for General & Specialty Content Areas for Washington State University*

Status	Frequency	Percent	Valid Percent	Cumulative
Pass	804	79.8	79.8	79.8
Not Pass	204	20.2	20.2	100.0
Total	1008	100.0	100.0	

Note. NBPTS pass rates for Washington State University were 80% across all specialty and general content areas.

Table 5: *Teacher Numbers Based on Washington State School Sport Classification*

Classification	Frequency	Percent	Valid Percent	Cumulative
4A	349	34.6	36.1	59.2
3A	210	20.8	21.7	85.5
2A	255	25.3	26.4	92.1
1A	64	6.3	6.6	96.7
2B	44	4.4	4.6	100.0
1B	32	3.2	3.3	
Total	967	95.8	100.0	
Missing	41	4.1		
Total	1008	100.0		

Note 1. Thirteen (13) cases could not be identified with a particular school size because these are specialty schools with no sport.

Note 2. Forty-two (42) cases could not be linked to a particular school because the name of the school was not listed by the teacher.

Table 6: *Pass Rates by School Size (Based on Washington State Sport Classification)*

Classification	Pass	Not Pass	Percentage
4A	283	65	81%
3A	167	44	79%
2A	206	49	81%
1A	41	23	64%
2B	33	11	75%
1B	26	6	82%
Total	756	198	79%
Missing	54		
Total	1008		

Note. Data relative to school size was not available for 54 cases. Teachers in the 1A and 2B school sizes certified overall lower than other classifications.

Table 7: *Years of Teaching Experience Prior to Applying for National Board Certification*

Years	Frequency	Percent	Valid Percent	Cumulative Percent
3-5	194	19.2	28.6	28.9
6-9	166	16.5	24.4	53.3
10+	317	31.4	46.7	100.0
Missing	331	32.9		
Total	1008	100.0		

Note. Years of experience prior to applying for certification was tracked starting 2004-2005, leaving 331 cases that could not be linked to years

Table 8: *Pass/Not Pass Numbers by Years of Teaching Experience Prior to Application for National Board Certification*

Years	Pass	Not Pass	Percentage
3-5	153	41	79%
6-9	128	38	77%
10+	254	63	80%
*Total	535	142	

Note. *Years of experience prior to applying for certification was tracked starting 2004-2005, leaving 331 cases that could not be linked to years

Table 9: *Pass Rates by Certificate Areas*

Certificate Area	Pass	Not Pass	Percentage
AYAELA	57	9	86%
AYAMATH	29	7	81%
AYA SCI	34	8	81%
AYA SSH	36	3	92%
EAELA	57	8	88%
EA MATH	58	16	78%
EA SCI	36	4	90%
EASSH	13	5	72%
EAYA ART	11	1	92%
EAYACTE	15	5	75%
EAYA MUSIC	5	4	56%
EAYA PE	5	5	50%
EAYA WLOE	16	3	84%
EC GEN	65	30	68%
ECYA ENS	57	13	81%
ECYA LM	15	5	75%
ECYA SC	35	9	80%
EMC ENL	12	11	52%
EMC LRLA	92	19	83%
MC MUSIC	4	4	50%
EMC PE	5	2	71%
MC GEN	144	32	82%
**Total	801	203	

Note. Specialty areas of Physical Education and Music certify at lower rates than the general content areas. Early Childhood Generalists and Early Middle Childhood English as a New Language certify at lower rates compared to other general certificate areas. **Missing classification = 4.

Table 10: *Certificate Areas by Teacher Numbers*

Certificate Area	Frequency	Percent	Valid Percent	Cumulative Percent
AYAELA	66	6.5	6.6	6.6
AYAMATH	36	3.6	3.6	10.1
AYA SCI	42	4.2	4.2	14.3
AYA SSH	39	3.9	3.9	18.2
EAELA	66	6.5	6.6	24.8
EA MATH	74	7.3	7.4	32.1
EA SCI	40	4.0	4.0	36.1
EASSH	18	1.8	1.8	37.9
EAYA ART*	12	1.2	1.2	39.1
EAYACTE	20	2.0	2.0	41.1
EAYA MUSIC*	9	.9	.9	42.0
EAYA PE*	10	1.0	1.0	43.0
EAYA WLOE	19	1.9	1.9	44.9
EC GEN	95	9.4	9.5	54.3
ECYA ENS	70	6.9	7.0	61.3
ECYA LM	20	2.0	2.0	63.3
ECYA SC	44	4.4	4.4	67.7
EMC ENL	23	2.3	2.3	70.0
EMC LRLA	111	11.0	11.0	81.0
EMC MUSIC*	8	.8	.8	81.8
EMC PE*	7	.7	.7	82.5
MC GEN	176	17.4	17.5	100.0
Total	1005	99.6	100.0	
Missing	3	.3		
Total	1008	100.0		

Note. Content areas with an asterisk (*) denote specialty areas which were analyzed separately from the general content areas due to sample size discrepancies.

Table 11: *NBPTS Pass Rates by Gender for Specialty Content Areas for Washington State University*

Content Area	Gender	Pass	Not Pass
EAYA Art	Male	1	0
	Female	10	1
EAYA Music	Male	1	4
	Female	4	0
EAYA Physical Education	Male	3	5
	Female	2	0
EMC Music	Male	2	1
	Female	2	3
EMC Physical Education	Male	2	2
	Female	3	0
Total		30	16

Note. Female specialty area teachers certify at higher rates compared to male teachers.

Table 12: *Coefficients Table for Prior Years Teaching Experience Relative to NBPTS Pass Rates for General Content Areas*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Std. Error	Beta		
1 (Constant)	1.216	.043		28.161	.000
Prior Years	.005	.019	.011	-.283	.777

Note 1. Dependent Variable: certified rates

Note 2. Sample size reflects years prior teaching experience collected starting 2004- 2005 academic year.

Table 13: *Coefficients Table for Three IVs Relative to NBPTS Pass Rates*

Variable	Unstandardized Coefficients		Standardized Coefficients		Significance
	Beta	Std. Error	Beta	t	
Constant	1.199	.067	-.042	17.903	.000
Gender	-.042	.034	.065	-1.230	.219
Cert Area	.003	.002		1.896	.058
School Size	.014	.010	.046	1.388	.165

Note. Dependent Variable: Certified Rates

Table 14: *Coefficients for Prior Years Teaching Experience Relative to NBPTS Pass Rates for Specialty Certificate Areas*

Model	<u>Unstandardized Coefficients</u>		<u>Standardized</u>	t	Significance
	B	Std. Error	Beta		
1 (Constant)	1.391	.257		2.413	.000
Prior Years	-.032	.100	-.055	-.315	.77

Note. Dependent Variable: Certified Rates

Table 15: *Coefficients for Three IVs Relative to NBPTS Pass Rates for Specialty Areas*

Variable	<u>Unstandardized Coefficients</u>		<u>Standardized Coefficients</u>		Significance
	B	Std. Error	Beta	t	
1 (Constant)	1.772	.341		5.199	.000
Gender	-.387	.137	-.403	-2.826	.007
Cert Area	.007	.012	.088	.621	.538
School Size	.021	.045	.066	.466	.643

Note. Dependent Variable: Certified Rate