THE EFFECTS OF HIGH STAKES TESTING ON THE TEACHING PRACTICES OF NATIONAL BOARD CERTIFIED TEACHERS

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ABSTRACT

This study was conducted to determine if the state mandated multiple-choice end-of-course assessments for North Carolina affect the teaching practices of National Board certified teachers. In addition, discrepancies between the teaching methods utilized by National Board certified teachers in their EOC and non-EOC courses were explored. Four National Board Certified teachers who taught high school classes with and without North Carolina End-of-Course tests (EOCs) participated in this study. Information was collected from participants using pre-interview questionnaires, face-to-face interviews, and written follow-up reflection questions, revealing six themes. The dichotomy present between the standards supported by the National Board for Professional Teaching Standards and the teaching practices used to teach test-taking strategies and increase standardized test scores was not only apparent in the literature, but also in the data collected for this study. This study revealed that mandated standardized assessments do affect the teaching practices of National Board Certified teachers. Implications for these findings are discussed.

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DEDICATION

I would like to dedicate this thesis to my grandparents, Sara Keel Fort and the late William Smith Fort. I am in the field of education today because their assistance enabled me to return to school and obtain my Bachelor of Science degree in Science Education at North Carolina State University. My grandmother's encouragement and support inspired me to complete this thesis and obtain my Master of Education degree in Curriculum, Instruction and Supervision. The love and support my grandmother has always given me means more to me than words can express and will never be forgotten.

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CHAPTER 1

Introduction

Background

In an effort to raise the quality of teaching and learning in America, National Board Certification and the No Child Left Behind Act of 2001 have been implemented. National Board Certification for teachers was established in 1987 by The National Board for Professional Teaching Standards (NBPTS). The NBPTS (2006) mission statement dedicates the organization to "maintaining high and rigorous standards for what accomplished teachers should know and be able to do, providing a national voluntary system certifying teachers who meet these standards, and advocating for education-related reforms to integrate National Board Certification in American education" (NBPTS Mission Statement). Additionally, the standards established by NBPTS are being incorporated into pre-professional teacher education programs, school-university partnerships, graduate education programs, and in-service learning opportunities for teachers (Pershey, 2001). National Board Certification now plays a prominent role in the efforts to raise the quality of the teaching work force (Ballou, 2003). In fact, the National Education Association finds that many state governors and legislators are major supporters of National Board Certification as a way to raise education standards (Needam, 1994).

In January of 2002, the No Child Left Behind Act of 2001 (NCLB) was signed into law by President George W. Bush. The law was designed to hold schools and school systems accountable for student performance in an effort to increase academic standards, close the achievement gap that exists between the disadvantaged and their peers, and to bring every child up to grade level in the classes in which he or she is enrolled. As NCLB is currently written,

funding for school systems may be altered and parents may be empowered with educational choices for their children if schools do not meet certain goals and academic growth requirements.

The No Child Left Behind Act was a reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA), which was established to provide guidance and funding to K-12 schools. This reauthorization took place because a disproportionate number of underprivileged children were being "left behind" in reading and mathematics in public schools. Many were unable to perform at basic levels on national tests. In order to close achievement gaps, No Child Left Behind requires that the reading programs implemented in early education be scientifically researched based. It also requires that highly qualified teachers are teaching in the disciplines for which they are certified. The No Child Left Behind Act cites the National Board Certification credential as a prime example of how teachers can meet the "highly qualified" requirement (Goldhaber & Anthony, 2004).

Due to legislative mandates like No Child Left Behind, North Carolina and other states are placing ever-increasing importance on high stakes standardized testing and increased pressure on public school practitioners to raise test scores (Gulek, 2003). The No Child Left Behind Act requires that states hold schools accountable for student performance on standardized tests (Goldhaber & Anthony, 2003). Good scores on standardized tests validate a school's curriculum and teaching, even though many educators object to using a single set of tests to determine school success or failure (Gray, 1999).

In 1997, North Carolina implemented an accountability model called the ABC's of Public Education, which has since been modified to accommodate the requirements of NCLB. This state accountability model is based on student performance on state mandated tests in reading and math in grades 3-8 and in ten separate subjects in high school (Biology, Chemistry, Physics,

Physical Science, Algebra I, Geometry, Algebra II, Civics and Economics, US History, and English I). Accordingly, performance data from the aforementioned assessments and other measures are used to assign status labels, recognitions, and award bonus money to schools. Students, teachers, and schools are increasingly held accountable for student performance on mandated standardized tests due to No Child Left Behind. Beginning in the 2006-2007 school year, North Carolina high school freshmen must score within one standard error of proficiency on the end-of-course tests in Biology, Algebra I, Civics and Economics, United States History, and English I in order to graduate and receive a high school diploma.

The effects of the high-stakes testing required by No Child Left Behind and the North Carolina ABC's of Public Education seem to be in opposition to the individualized, authentic assessment and instructional practices supported by NBPTS and encouraged in North Carolina through incentive programs and teacher recognition. According to the NBPTS website, North Carolina pays the cost of the application fee for first-time candidates. If a candidate does not meet the qualifications for National Board Certification with the first submission of the portfolio, North Carolina will pay for the candidate to retake one portfolio entry or assessment center exercise.

In addition, candidates in North Carolina are given three paid professional leave days to work on portfolio entries and upon completion of the portfolio, candidates are given a complete teaching cycle of renewal credits. In North Carolina, National Board Certified teachers receive a 12% salary differential for the life of the certification and out-of state teachers holding NBPTS certification receive a North Carolina teaching license (NBPTS, 2006). Some of the research-based curricula specified by NCLB deprive teachers of the professional autonomy the National Board for Professional Teaching Standards recognizes as accomplished practice. The National

Board for Professional Teaching Standards cites journals, portfolios, demonstrations, exhibitions, oral presentations, and videotapes as appropriate assessment methods but does not mention more conventional assessments like papers on an assigned theme or standardized tests (Ballou, 2003).

According to Firestone, Mayrowetz, and Fairman (1998), educators are likely to ignore assessments that model forms of teaching and conceptions of learning with which they disagree or that they do not understand unless some pressure is applied to take them seriously. The pressure usually comes from the consequences of "high-stakes" testing. The "stakes" can target students or educators and can take many different forms. School districts and district personnel use test scores to determine the effectiveness of the schools within the district. The proportion of students achieving a certain proficiency level can result in consequences for educators ranging from merit pay to state takeover. Test scores can also affect educators and schools indirectly when test scores are published in newspapers and compared among other schools and districts. In fact, test scores are used by real estate agents to rank neighborhoods in terms of school quality, often prompting parents to move their children to other schools based on the school's overall performance on the high-stakes tests (Firestone, Mayrowetz, & Fairman, 1998; Haladyna, Nolen, & Hass, 1991).

Through standardized testing, policy makers communicate standards, focus instruction, and provide feedback on curriculum strengths and weaknesses. When coupled with rewards and sanctions, the goal is to motivate educators and students to improve their performance (Herman, Abedi & Golan, 1994). Due to the fact that standardized tests are increasingly used to evaluate the quality of schools, administrators and teachers feel pressured to engage in activities that are intended to increase student scores (Mehrens & Kaminski, 1989). Such practices include teaching students how to narrow their choices on multiple-choice items, how to monitor time,

when to skip items, and when it is important to check one's answers. Having students practice released tests and review test items does little to develop an understanding of concepts or to show relationships between concepts but the practice is suggested to improve standardized test taking skills (Bowker & Irish, 2003; Hammerman, 2005).

Hammerman (2005) suggests that practicing test questions does not facilitate effective learning in the ways that rich instructional units with opportunities for inquiry provide firsthand experience. Hammerman also believes that practicing test questions does not facilitate student research, the practice of observation, development of critical-thinking skills, thought formulation, building concept understanding, or making connections. Teaching should be viewed as a complex process of making decisions and engaging students in worthwhile experiences that address specific standards. According to Hammerman, teachers choose specific instructional approaches based on beliefs and assumptions about the teaching/learning process, belief in his or her ability, comfort with the content and processes of the subject area, clear vision of standards and goals, and a supportive environment with materials and resources. Creative assessments give students opportunities to conduct investigations, design and present projects and show understandings of concepts, the relationships between concepts, and/or the application of concepts through models, research, and performances.

If teachers believe that standardized tests represent what students should know and be able to do, then a focus on test preparation and test content would likely be an outcome. However, if teachers believe that standardized tests do not place enough focus on routine skills and neglect the knowledge and skills that students need for future success, then there will be concern for equity between what students need to know to be successful on the test and the skills and performance abilities they need to be successful later in life (Herman, Abedi & Golan,

1994). How often and to what level teachers work with students to develop their test taking skills depends on teacher knowledge of test-taking tactics and beliefs in the value of test taking skills (Paris, Lawton, Turner & Roth, 1991). According to Perrone (1991), developing a responsive, developmental classroom risks lower scores on standardized tests.

Purpose of Study

As noted by this introduction, and as suggested by Rotberg (1998), discrepancies exist between the National Board standards and the high-stakes testing being implemented by states to hold schools and school systems accountable. Therefore this study was conducted to determine how this discrepancy is addressed in the classrooms of North Carolina teachers who are National Board Certified and held accountable for teaching courses in which students take high stakes end-of-course standardized tests mandated by North Carolina.

The National Board for Professional Teaching Standards espouses a vision of effective teaching that is based on teacher autonomy (Ballou, 2003). According to Ballou, many school systems have adopted curricula that significantly curtail autonomy. This calls into question whether the criteria used to assess teaching by the National Board for Professional Teaching Standards places appropriate weight on the practices that matter most to officials responsible for curricular decisions (Ballou, 2003). Not only is the well-established school tradition of standardized testing used to make curricular decisions, but it is also a multimillion-dollar business that serves public, industrial, and political interests (Birrell & Ross, 1996). When multiple-choice testing leads to multiple-choice teaching, the methods that teachers have acquired through their own experience become reduced and teaching work is deskilled (Smith, 1991).

There have been a limited number of studies that have addressed how National Board Certification affects high stakes test scores. After extensive review, there were no studies found that addressed how National Board Certified teachers dealt with the demands of testing. Goldhaber and Anthony (2004) were surprised to find that teachers preparing for their NBPTS certification are more effective before they are recognized by NBPTS. One reason given for this surprising outcome was that the teachers who were working to achieve National Board Certification spent a great deal of time completing the portfolio as opposed to teaching. An alternative explanation could be that as teachers were completing National Board Certification and learning the national standards in their subject area, they were motivated to teach in a more progressive style as opposed to traditional styles using paper pencil written tests and drilling of information.

According to Gray (1999), principals and teachers must find ways to integrate improved instruction into standardized test preparation. If the teaching methodologies of National Board Certified teachers are influenced by state mandated testing, this study may also identify ways in which quality instruction can be integrated into test training, thereby benefiting teachers and students facing high stakes tests.

Summary of Thesis

This introduction provided background information about NCLB, National Board Certification, and the North Carolina ABC's of Public Education. The dichotomy that exists between mandated standardized testing programs, such as NCLB and the North Carolina ABC's of Public Education program, and the mission of the National Board for Professional Standards was introduced. This study was done to further explore this discontinuity and determine if the practices of National Board certified teachers differ between their classes that have state

mandated assessments and those classes that do not. Chapter 2 provides an extensive review of the literature related to National Board adolescent and young adulthood science standards, high-stakes standardized testing, and instructional practices and teacher characteristics related to high teacher quality. In Chapter 3, an explanation of the research methodology used to conduct this study is explained. Findings are presented in Chapter 4. Finally, conclusions are drawn, recommendations are given, and the implications of the study are discussed in Chapter 5.

CHAPTER 2

Literature Review

Introduction

Teacher quality will be described first in this literature review. After general characteristics of teacher quality are explained, teacher qualities identified by the National Board for Professional Standards (NBPTS) will be addressed in the form of core propositions. Research representing the dichotomy occurring between the standards established by the NBPTS and standardized testing programs will be summarized. In order to better understand the effects of standardized testing on the educational system, the phrase "teaching to the test" will be investigated and the test-taking strategies teachers use to prepare students for standardized tests will be presented. Lastly, a representative sample of the studies available on National Board Certification and standardized testing will be summarized to provide the frame for this study.

Characteristics of Effective Teaching

Based on the evidence that has emerged from classroom research, Brophy (2000) highlights twelve principles of effective teaching. The first is that cohesive and caring learning communities help students learn best. Student learning is fostered by a sense of caring that governs teacher/student and student/student interactions. Caring relations are not influenced by gender, race, ethnicity, culture, socio-economic status, handicapping conditions or other individual differences. Expectations of students are high, as they are expected to participate thoughtfully in learning activities, supporting each other academically and socially. The classroom community is strengthened by emphasizing what students will learn from activities and using mistakes to aid in the learning process. The prior knowledge and experiences and home cultures of the students are brought into the classroom as teachers tie these important

characteristics to meaningful lessons. In order to extend student learning into the home, collaborative relationships are fostered when teachers encourage parents to become actively involved in their child's learning.

The second characteristic of effective teaching outlined by Brophy (2000) places an emphasis on student time on task. When time, resources, and behavior management are focused on maintaining student engagement in meaningful activities, student learning is increased. Student time on task is limited by the time allotted to the school day and school year. It is important that the time available for students to learn is spent focused on stimulating activities designed to fulfill instructional goals. Effective teachers spend more time on interactive learning and discussion rather than seatwork in isolation or lecture presentations.

The third characteristic of effective teaching focuses on the importance of aligning the curriculum to form a cohesive program designed to accomplish instructional purposes and goals. Teacher concentration on content rather than teaching methods and the vast coverage of content in textbooks are given as two reasons that teachers may not keep the curriculum aligned and focused on powerful ideas connected to important goals.

Effective teachers expect students to internalize content and form connections with prior knowledge so that the students are able to explain concepts in their own words. Students are encouraged to develop an appreciation of the meaningful and useful content they are learning (Brophy, 2000).

The fourth characteristic recognizes that effective teachers clearly state intended outcomes and learning strategies before lessons to prepare the students for learning. Students are informed what they will learn and why it is important for them to learn it. By using advance organizers or previews teachers are able to facilitate student learning by communicating the

nature and purpose of the activity, connecting it to prior knowledge, and cueing the kinds of student responses that the activity requires (Brophy, 2000).

The fifth characteristic of effective teachers is the ability to facilitate meaningful learning and retention. A clear explanation and development of the content emphasizes the structure of the content and its connections with powerful ideas and prior knowledge.
Students are able to explain material in depth in their own words and apply or extend the knowledge to new contexts. Teachers may use outlines and graphic organizers, study guides, or task organizers to help students follow the structure and flow of the content. Teachers assess student knowledge with authentic assessment designed to demonstrate student learning (Brophy, 2000).

The sixth characteristic of effective teachers is their ability to design questions that engage students in active discourse centered on powerful ideas. Open-ended questions utilizing higher order thinking skills such as application, analysis, synthesis and evaluation (see Bloom, 1956 for more information on these taxonomies) are necessary to accomplish important instructional goals. Teachers pose questions to be answered several different ways and to stir up debate or discussion. The end result is student learning facilitated by questions and answers that encourage participation from all students, either in the form of questions or statements (Brophy, 2000).

The seventh characteristic of effective teachers is that teachers provide students with sufficient opportunities to practice and apply what they have learned and to receive important feedback structured around student learning and improvement. The main ways in which teachers help their students learn are by presenting information through the explanation of concepts, modeling of skills, and questioning to encourage further discourse and engaging students in

activities or assignments that allow them to practice or apply the concepts they are learning. Effective teachers follow initial teaching with occasional review activities and with opportunities for students to use what they are learning in a variety of application contexts. Teachers design their feedback to help students assess their progress and to understand and correct errors and misconceptions (Brophy, 2000).

The eighth characteristic states that effective teachers provide needed assistance to students to enable them to productively engage in learning activities. The learning activities must be varied and interesting. Students may need explanation, modeling, or coaching in order to be successful. As student expertise is developed, the amount of reliance on instruction should decrease. The number of students who can productively engage in learning activities increases when teachers prepare students for activities in advance, provide guidance and feedback during the activity, and lead the class in post-activity reflection (Brophy, 2000).

As stated by the ninth characteristic, effective teachers model and instruct students in learning and self-monitoring strategies. Teachers model cognitive thinking aloud for students to enable them to understand the thought processes that guide learning strategies. Students are taught general study skills and strategies such as rehearsal, elaboration, organization, and comprehension monitoring to direct their focus to the task and to decrease their fear of failure (Brophy, 2000).

The tenth characteristic of effective teachers recognizes collaborative learning activities that place students in pairs or small groups as effective means of instruction. Effective teachers model and explain how students should listen, share ideas and thoughts, and handle disagreements. Cooperative learning groups provide students with opportunities to construct understandings and to help one another master skills. Small groupings that replace individual

seat work time enable students to complete activities ranging from drill and practice to discussion and problem solving while working together (Brophy, 2000).

The eleventh characteristic of effective teachers is the ability to use a variety of formal and informal assessment methods to monitor student progress. Good assessment data comes from sources other than paper and pencil tests. The assessments should be ongoing, integral parts of instructional units that require students to use knowledge and higher order thinking skills. Assessment results should be used to identify learner needs, misunderstandings, or misconceptions, to suggest potential adjustment in curriculum goals, instructional materials or teaching plans and to detect weaknesses in the assessment practices themselves (Brophy, 2000).

The last characteristic of effective teaching cited by Brophy (2000) is the ability of effective teachers to establish and maintain appropriate expectations for learning outcomes. Effective teachers hold positive, realistic expectations for their students and believe that all students are capable of learning. The teachers take responsibility for successfully teaching students. They find and develop their own curriculum materials to facilitate student learning. If students do not learn something the first time, they teach it again and adapt their instruction to meet the needs of their students.

Recognizing Teacher Quality

Three educational organizations, the Interstate New Teacher Assessment and Support Consortium (INTASC), the National Board for Professional Teaching Standards (NBPTS) and the National Council for the Accreditation of Teacher Education (NCATE) all recognize several standards as indicators of teacher quality. A brief summary of the standards is provided. First, teachers should understand the learning and developmental processes of children and be committed to advancing student learning. Second, teachers should possess substantial

knowledge of the subject they teach and should possess the ability to engage students in inquiry learning to convey this knowledge. Third, the teacher should be a reflective practitioner, managing and monitoring student learning and adjusting instruction as necessary to keep all students actively involved in the learning process. Fourth, relationships should be established with members of the educational community to foster student learning. While the basic tenets of these standards are widely accepted, the manner in which teachers can achieve and demonstrate mastery of these characteristics is controversial (Goldhaber & Anthony, 2003).

According to the federal definition of teacher quality, No Child Left Behind (NCLB) classifies teachers as highly qualified if they hold a teaching license and certification in the subjects they teach (Tuerk, 2005). Due to the fact that funding is tied to teacher quality in this sense, certification and licensure have become one of the most important measures of teacher quality for school administrators and policymakers. According to Tuerk, the subject area in which teachers are certified and have received subject-specific training is one of the most important factors for student learning.

Goldhaber and Anthony (2003) suggest that teacher quality is the most important educational input in predicting student achievement. Whereas earlier schools of thought emphasized curriculum rather than teacher quality, Goldhaber and Anthony found that among all education factors and school resources, it is teacher quality that has the largest impact on student achievement. The authors reviewed the research that attempts to correlate teachers' advanced degrees, their pedagogical and content knowledge, types of certification, years of experience, and academic proficiency with student academic growth and found a great deal of variation in the quality of research assessing the relationship between teacher characteristics and student outcomes. Goldhaber and Anthony concluded that advanced degrees are a poor predictor of

teacher quality and that there is little evidence of teacher experience predicting teacher effectiveness beyond the first five or so years of teaching. Although teacher academic proficiency is less commonly used to predict teacher effectiveness, the authors believe that the existing research indicates that academic proficiency is the best predictor of teacher quality.

Gunter, Reffel, Rice, Peterson, and Venn (2005) cite National Board Certified teachers as a group of teachers who possess expertise in curricular accommodations for students who find it difficult to master the general education curriculum. The authors suggest that accomplished teachers possess skills that are essential to providing high quality instruction to students such as the ability to evaluate student needs for modifications and to determine the correct modifications for students. According to Gunter et al., accomplished teachers are able to evaluate their lessons for effectiveness, implement changes to improve lessons, construct future plans for lessons, describe their instructional approaches and rationalize the methods chosen, analyze the goals established for the students, and treat all students fairly.

Qualities of National Board Certified Teachers

The National Board for Professional Teaching Standards (NBPTS) was established in 1987 and has received support from governors, teacher union and school board leaders, school administrators, college and university officials, business executives, foundations, and concerned citizens. This independent, nonprofit, nonpartisan, nongovernmental organization seeks to delineate outstanding teaching practice and recognize those who achieve it (NBPTS, 2006). The National Board for Professional Standards (2006) seeks to, “advance the quality of teaching and learning by maintaining high and rigorous standards for what accomplished teachers should know and be able to do, provide a national voluntary system certifying teachers who meet these standards, and advocate related education reforms to integrate National Board Certification in

American education in order to capitalize on the expertise of National Board Certified teachers" (NBPTS Mission Statement). NBPTS requires that teachers submit a portfolio consisting of videotapes, student work, teaching artifacts, and an analysis of their practice as evidence of effective teaching practices. Teachers must also complete a subject specific assessment to demonstrate their content knowledge.

NBPTS identifies five core propositions that are demonstrated by accomplished teachers in order to facilitate student learning. The first core proposition states that teachers are committed to students and their learning. Accomplished teachers believe that all students can learn and understand how students do so. Accomplished teachers treat all students with respect, taking individual, cultural, religious, and racial differences into consideration. They use their knowledge of student interests, abilities, and skills coupled with their classroom observations to guide their instruction, altering and refining lessons as necessary.

The second core proposition of NBPTS is that teachers know the subjects they teach and how to teach those subjects to students. Accomplished teachers have a deep understanding of their subject and its application to other disciplines and real world situations. They are adept at conveying their knowledge to students in a synchronized understandable fashion that develops critical and analytical thinking skills. Accomplished teachers are aware of the prior knowledge their students bring with them and are able to identify student misconceptions and challenges and deal with these in effective ways (NBPTS, 2006).

The third core proposition of NBPTS is that teachers are responsible for managing and monitoring student learning. As managers of student learning, accomplished teachers provide students with instruction that is engaging and interesting. Accomplished teachers use their instructional time effectively and tap into all available resources to improve the quality of

teaching and learning in the classroom. Instruction is organized to effectively engage collaborative groups and to meet the goals set forth by the school for the students. In order to assess student growth and understanding both individually and collectively, accomplished teachers utilize multiple methods. Accomplished teachers are able to explain student performance to students, parents, and administrators (NBPTS, 2006).

The fourth core proposition of NBPTS is that teachers think systematically about their practice and learn from experience. Accomplished teachers are able to demonstrate their ability to reason and solve problems, take multiple perspectives, be creative, and experiment, all characteristics necessary for intellectual growth. The design of their lessons is based on experience and relevant literature. Accomplished teachers are life-long learners, continually seeking to improve their teaching and expand their knowledge, and they seek to instill this desire to learn in their students (NBPTS, 2006).

The fifth core proposition of NBPTS is that teachers are members of learning communities. Accomplished teachers take an active role in working collaboratively to facilitate instructional policy, curriculum development, and staff development. They are adept at acquisitioning available school and community resources to facilitate student learning. The NBPTS builds on these five core propositions to provide subject specific certification in nearly 30 fields (NBPTS, 2006).

NBPTS and Standardized Testing

According to Cunningham and Stone (2005) it seems that "NBPTS's favored teaching style is not well suited to the realization of the public's primary policy objective: improvement in objectively measured student achievement" (p. 13). The authors point out that the discrepancy between National Board Certification standards and state mandated testing seems to be ignored

by states as they continue to expand incentives to teachers to become National Board Certified. Cunningham and Stone note that some states are investing millions in a program that is centered around a philosophy that is in opposition to the methods the state uses to measure academic progress and that schools of education use the principles favored by NCATE, INTASC, and NBPTS to educate future teachers who will be held accountable for student test performance. Poplin and Rivera (2005) support the idea that teacher candidates should possess skills to construct and use rubrics, to lead students in data collection and utilization of data, and to help students develop the ability to self-analyze their own work. However, Poplin and Rivera also point out that in addition to daily work, teacher candidates should be taught how to interpret state criterion-referenced assessment data to assess their own teaching.

Ballou (2003) reinforces the dichotomy highlighted by Cunningham and Stone (2005) stating, "Common agreement on what constitutes effective teaching practice does not exist, as shown by the long-standing debate between proponents of constructivist, 'child-centered' pedagogy and the more traditional methods of instruction" (p. 204). NBPTS favors progressive teaching methods such as portfolios, oral presentations, journals, cooperative learning, and peer review. More traditional methods of instruction such as the standardized tests mandated by many states and the No Child Left Behind legislation are not encouraged by NBPTS. Ballou also suggests a scenario in which a teacher wishing to become National Board Certified could have a problem demonstrating his or her ability to design engaging, interesting lessons that facilitate student learning if school policies were in place that required the use of a highly scripted direct instructional program.

Stepanek and Jarrett (1997) support the performance-based learning favored by NBPTS. By selecting and using appropriate assessment tools, teachers can gain important information to

guide their instructional strategies and improve the learning of their students. Whereas traditional assessment techniques are able to measure specific outcomes, performance-based assessment enables teachers to understand how students arrived at conclusions, solved problems, and used critical thinking skills. When student thinking and reasoning is understood on a deeper level, teachers are better informed to make decisions regarding student misconceptions and errors and to identify weaknesses in the instructional process.

In 1989, Mehrens and Kaminiski noted that standardized testing was increasingly being used to determine the quality of schools. This trend has only increased with the implementation of North Carolina's ABC's of Public Education program and No Child Left Behind. Most state legislatures, the President of the United States, governors, boards of education and the leadership of the American Federation of Teachers support standardized testing as a means to promote more rigorous standards (Ross, 1999). According to Herman, Abedi, and Golan (1994), policymakers use standardized testing to "communicate standards, focus instruction, provide feedback on curriculum strengths and weaknesses, and motivate educators and students to improve their performance" (pp. 471-472).

In addition, state and federal programs use standardized test scores to determine the quality of schools. Test scores are highly publicized and can affect student enrollment (McCown & Runnebaum, 2001). Student performance on standardized tests may determine district funding, school rewards or sanctions, and teacher promotion (Paris, Lawton, Turner, & Roth, 1991). Student access to learning opportunities, grade promotion or retention, and the receipt of a diploma may also be influenced by test scores (Ross, 1999).

The increasing importance of these high stakes assessments influences instruction and puts pressure on administrators and teachers to increase student test score performance (Mehrens

& Kaminiski, 1989). Standardized tests require more standardization of the curriculum and remove power from teachers, as leaders outside the classroom exert more control over what goes on in the classroom (Ross, 1999). As teachers spend more time preparing students for mandated assessments, less time will be available for valuable instruction. Mehrens and Kaminiski (1989) suggest that the increasingly high stakes being placed on state mandated assessments, such as using assessment results to measure school and teacher quality, encourages teachers to "teach to the test".

Test-Taking Skills and Strategies

In order to "teach to the test" teachers may narrow and realign the curriculum and introduce test-taking strategies and skills (Paris, Lawton, Turner, & Roth, 1991). Test taking strategies may include narrowing answer choices, monitoring time, and checking answers (Paris et al., 1991). Teachers and administrators may positively promote the test to challenge and motivate students and reduce text anxiety. Students may be trained to properly bubble and erase marks on answer sheets that will be computer scanned, to break unknown words down into smaller parts, to use correct posture and stretches, to track their answers to make sure that they are online with the test, to mark answers in the test booklet before transposing answers to the answer sheet, to highlight key words in the questions and answers, to determine what different questions are asking, and to follow test directions. Teachers may use commercially available test generator programs and question banks to provide students with items similar to what will be on the test. Some may present students with the actual test items prior to officially taking the test (Bowker & Irish, 2003; Calkins, Montgomery, & Santman, 1999; Gulek, 2003; Haladyna, Nolen, Haas, 1991; McCown & Runnebaum, 2001).

National Board Certification, Standardized Testing, and Teaching

Representative studies provide a significant amount of qualitative information gathered from teachers regarding high stakes assessment. Darling-Hammond and Wise (1985) found that 60% of the teachers have changed their own instruction and 95% indicated that other teachers' behaviors have changed due to emphasis on standardized testing. Analysis of the interview responses obtained in Darling-Hammond and Wise's study revealed five categories into which responses could be grouped. The five categories noted by the authors were changing the emphasis of the curriculum, implementing instruction of test taking skills, specific content/skill preparation for the test, reduction in teaching time, and an increase in pressure. Darling-Hammond and Wise found that the majority of respondents reported that standardized tests used to measure teaching effectiveness or student achievement and the incentives associated with the tests reward teaching and learning precise content rather than the knowledge and skills underlying the concepts. Darling-Hammond and Wise stated that, "When standardization constrains teachers' efforts to meet the needs of their clients or when accountability tools take time away from real instruction, their frustrations surface in requests for autonomy that seem to beg the question of accountability" (p. 325).

According to Smith (1991), interview data indicate that teachers have negative feelings about the publication of test score data and chose to do what was needed to increase test scores. Classroom observations revealed that testing programs designed to improve student performance on standardized tests reduced the amount of time spent on instruction. In addition, curricular offerings and instructional methodologies are narrowed, potentially preventing teachers from teaching content or using methods or materials that are not supported by standardized testing formats. Teachers in Smith's study expressed standardized testing as a source of anxiety for

them, citing the lack of control over what their students do when they are taking tests and the lack of control teachers have over the characteristics of the students who are placed in their classes. The author suggests when multiple-choice testing leads to multiple-choice teaching, the number of curriculum materials in a teacher's repertoire become reduced. Furthermore, as curricula are narrowed to focus on standardized testing, subjects such as science and civics in addition to critical thinking skills may be removed from the curriculum because they are not tested. Smith states, "If exploration, discovery, integration methods fall out of use because they do not conform to the format of the mandated test, teachers will lose their capacities to teach these topics and subjects, use these methods, or even imagine them as possibilities" (p. 11).

Firestone, Mayrowetz, and Fairman (1998), described the changes mathematics teachers in Maryland and Maine made in their teaching to accommodate the state testing program. The mathematics teachers in Maine made a collective decision to emphasize the specific curriculum areas on the test and reported changes in the sequencing of subjects and reinforcement of concepts. Some teachers gave examples of proceduralizing mathematical operations so that students would get the correct answers efficiently when taking the test. This method removed the critical thinking skills and reasoning that could have been used to derive the answer. One difference between the Maryland and Maine teachers with respect to standardized testing was the type of professional development teachers were offered. Contrary to the Maine teachers, the Maryland teachers said that their professional development opportunities were always centered on increasing test scores and they were denied opportunities to attend professional development out of their district.

New York City elementary school teachers provided information for the study conducted by Perrone (1991). When responding to a new city-wide science test they argued that the test

was inappropriate because it covered too much information superficially and did not tap into the hands-on observational experiences through which the students had learned science. Teachers stated that the test did not measure what the children knew or understood and that multiple-choice questions with only one correct response were inappropriate for science education, which had been taught through inquiry processes requiring students to generate answers and to support thinking and reasoning with evidence. They described the test as taking away from class time when serious scientific inquiry was becoming well established.

In a construct and validity study of the certification system of NBPTS, Bond, Smith, Baker, and Hattie (2000) found that when compared to teachers who were not National Board Certified, National Board Certified teachers demonstrated advanced levels of the attributes of expert teaching that have emerged from research on teaching and learning. The National Board Certified teachers were better able to flexibly and innovatively use their pedagogical content knowledge in the classroom. Student successes and failures on academic tasks were more deeply understood and students were more deeply engaged in challenging learning tasks that were developmentally appropriate. National Board Certified teachers were better able to prepare for the difficulties students encountered with new concepts and they were able to foster a deeper, more meaningful level of understanding about the relationships between concepts. National Board Certification as an indicator of teacher quality was also supported by mathematics assessment data analyzed by Cavalluzzo (2004).

The findings of Goldhaber and Anthony (2004) also suggested that National Board Certification provides information about teacher quality that is above and beyond the scope of teacher licensure tests. The authors were surprised to find that their study results indicated that teachers pursuing National Board Certification appeared more effective before they received

their certification and were recognized by NBPTS. Goldhaber and Anthony suggested that the amount of time required to complete the National Board Certification process may take away from teaching practices thereby contributing to the slight decline in effectiveness during the year in which teachers apply. Another plausible explanation for this is that the process of becoming National Board Certified required the teachers to implement more progressive teaching styles. This change in teaching style could have taken time away from normal test preparation activities used to prepare students for state mandated high stakes assessments. Mayer (1997) found that the more class discussion and small group work, both methods supported by the National Board for Professional Teaching Standards, the less students gained on their National Assessment of Educational Progress exam over one year. The author also noted that teacher and student background characteristics did not account for this negative association.

According to Perrone (1991), a responsive educational environment focuses on student learning, placing student interests at the focal point of learning. Teachers should be committed to providing students with successful learning experiences and time does not determine when learning activities begin and end. Creative expression, interaction with peers, and communication are encouraged. However, Perrone (1991) also suggests that "to actually develop a responsive, developmental classroom environment is to risk lower scores on standardized tests" (p. 137).

According to Firestone, Mayrowetz and Fairman (1998), teachers teach based on personal beliefs coupled with their knowledge of pedagogy and content. "Educators are likely to ignore assessments that model forms of teaching and conceptions of learning with which they disagree or that they do not understand unless some pressure is applied to take them seriously" (p. 98). The authors found that observations indicate that the motivational effects of high-stakes

assessment to encourage teachers to change their practice are limited and high stakes testing does not provide opportunities for teachers to change their practice. However, the experience of applying for National Board Certification requires that teachers be very reflective and analyze their teaching in a way that promotes professional development and student growth.

Author Perspective and Purpose

As a National Board Certified teacher, I can attest that the National Board Certification program is both challenging and rewarding in terms of the personal introspection and professional growth. It changed the way that I teach and think about teaching, especially in terms of inquiry based instruction and student learning. As a teacher of state mandated End-of-Course assessments, I can also attest that these high stakes assessments influence my instruction as well. My personal experience obtaining National Board Certification and teaching subjects that require state mandated tests in North Carolina for the past thirteen years provided the motivation and interest for this study. In order to more formally address this dichotomy and the extent to which teachers are influenced by the standards developed by the National Board for Professional Teaching Standards and the high stakes attached to mandated assessments, the remaining chapters present the methodology and findings of a study conducted to determine the effect of state mandated assessment on the practices of National Board Certified teachers.

CHAPTER 3

Methodology

Based on the information given in the literature review regarding the ramifications of high stakes testing and the recognitions and rewards associated with National Board Certification, this study was conducted to determine if and how North Carolina End-of-Course (EOC) testing influences the teaching methods of National Board Certified teachers. The research methodology chosen for this study was a qualitative methods approach. According to Trochim (2005), a qualitative research approach should be chosen "for achieving a deeper understanding of the phenomenon" (p. 120). The author also suggests that qualitative research allows for the gathering of rich, complex data that does more than summarize a few key positions in regard to the phenomenon. The personal human interaction that occurred during the structured teacher interviews provided informative data relating to the teaching experiences of the participants in classes with and without mandated standardized testing.

The population of interest was National Board Certified teachers who taught state mandated standardized tests in North Carolina high schools. The teachers selected for the study have demonstrated best teaching practices as defined and recognized by NBPTS and identified in the review of the literature. The participants were chosen because their teaching methodologies reflect the standards established by NBPTS as evidenced by their recognition as National Board Certified teachers. The participants are also affected by student performance on standardized tests as teachers, schools, and school systems are held accountable for these results. Personally experiencing the dichotomous concepts of NBPTS and standardized testing in their classroom made these teachers ideal subjects to answer the questions posed by this research study.

Research Design

To yield the most rich and detailed information possible, a structured interview was designed to engage participants in a comparative analysis of the teaching strategies they used in classes with mandated standardized assessment and classes without mandated standardized assessment. The standardized open-ended interview was selected to focus the interview on the teaching strategies and issues related to testing and student-centered learning found in the representative literature. The structured interview allowed the researcher to gather needed data in an efficient manner, minimizing the time required of participants for interviews. To increase the credibility of the study, interview questions were carefully selected in advance and each participant was asked the same questions during the interview (Patton, 1990).

Selection of Participants

The participants selected for the study were teachers who had received National Board Certification and taught North Carolina End-of-Course tests. It was necessary to choose teachers who had completed NBPTS certification because these teachers had satisfactorily demonstrated the principles and standards of the NBPTS in their classroom teaching. In order to assess the effects of high stakes testing on National Board Certified teachers, only National Board Certified teachers who taught courses that have a North Carolina End-of-Course test were selected for the study.

After obtaining permission from the appropriate administrators to use the school sites to conduct my research, a convenience sample of five National Board Certified teachers who taught high school classes with and without a North Carolina End-of-Course tests were contacted via email with the details of the study and asked to participate. One of the five teachers was unable to participate in the study due to the time required to schedule and conduct an interview. The

four teachers who expressed interest and decided to participate in the study were provided with the proper consent forms according to the University of North Carolina Wilmington Institutional Review Board protocol and an interview time was scheduled.

In order to maintain the anonymity of the four study participants the pseudonyms Ann, Beth, Carol, and Dora will be used. They are all white females who teach in mid-sized rural high schools in Southeastern North Carolina. Ann, a white female, has been teaching science for nine years and received her National Board Certification in 2006. Her teaching focus in on chemistry, but she also teaches Earth Science and Physical Science. Chemistry and Physical Science have state mandated end-of-course (EOC) assessments. Earth Science does not. This year provided a unique opportunity for Ann because her Chemistry and Physical Science classes were not required by the state to take the EOC due to the implementation of new science curricula.

Beth and Carol both teach Algebra I, a state tested math class, at the same school. Beth has been teaching for 19 years and received her National Board Certification in 2003. In addition to Algebra I, she also teaches Advanced Functions and Modeling which has no EOC. Carol has been teaching 31 years and received her National Board Certification in 2004. She teaches the non-EOC class Pre-Calculus in addition to Algebra I.

Dora has been teaching English for 30 years and received her National Board Certification in 2002. She teaches English I for ninth graders and Advanced Placement (AP) English. English I has a mandated EOC that counts toward the rewards and recognitions the school and teachers receive. Students in the AP class are given an opportunity to take an exam at the end of the year to qualify for college credits in English courses. Both Dora and Ann received National Board Certification on the first submission of their portfolio. It took Beth two years and Carol three years to complete the National Board Certification process successfully.

Procedures

After a thorough review of the literature, the best teaching practices cited by Brophy (2000) and NBPTS were reviewed along with specific strategies suggested in the literature to improve student achievement on standardized tests. The teaching methodologies found in the literature were used to frame the pre-interview questions, the interview questions, and the reflection questions. A few days prior to the interview, teachers received a pre-interview questionnaire (see Appendix A). The questionnaire contained a table listing the assessment strategies found in the literature. Teachers were asked to identify the most common assessment practices used in their EOC classes and non-EOC classes by ranking the practices in order from most used to least used. Study participants were then asked to rationalize their ranking of assessment frequency with respect to classes that had an end-of-course test and classes that did not.

The second component of the pre-interview questionnaire was compiled from test preparation activities suggested in the literature. The test preparation activities were listed in table form and teachers were asked to check appropriate boxes to indicate which strategies were used in North Carolina End-of-Course tested classes and which strategies were used in classes that did not have an end-of-course assessment. The last part of the pre-interview questionnaire asked the teachers to compare the amount of time spent teaching test taking strategies and skills in their EOC classes with their non-EOC classes. Participants were asked to provide a written opinion about the importance of teaching test taking skills.

During the literature review, teaching strategies, methodologies, and assessment practices described in the literature were noted. These notes along with the purpose of the study were used to develop possible interview questions. The interview questions were then reviewed by the

researcher and those most related to the purpose of the study were selected for the interview to ensure that the interviews remained focused on the purpose of the study and were completed in a timely manner (see Appendix B). Reflection questions were then developed to solicit an overview of general teaching practices in relation to classes with and without end-of-course assessments (see Appendix C).

The interviews with the participants were conducted and digitally video recorded after the pre-interview questionnaire had been completed and returned. At the completion of the interview, the participants were given three reflective questions to answer and return at a later time. By asking participants to complete different forms of data collection instruments such as ranking of assessment strategies, test taking strategy check-lists, free response rationales, face-to-face interview discussion, and reflection on specific teaching practices, triangulation of methods yielded a complete, descriptive set of information though which patterns and themes could be identified.

Once completed, the interviews were transcribed verbatim from the digital recordings. Due to technical difficulty with the video taping device, two of the interviews were only partially recorded. The information that was available from the partially recorded video was transcribed verbatim. All available information transcribed from the interviews as well as notes taken during the interviews were used in conjunction with the data collected before and after the interviews to identify patterns and themes related to the effects of mandated standardized testing on the teaching practices of National Board Certified teachers.

Data Analysis

Analysis of the qualitative data was done to identify patterns and themes so that the effects of mandated standardized testing on the classroom practices of National Board Certified

teachers could be better understood. The transcribed interviews were repeatedly and intensively read. As suggested by Schmidt (2004), in addition to the information gleaned from reading and highlighting similarities and differences in the interview responses, consideration was given to the participants interpretation of the terms used in the interview as well as supplementary information given in addition to what was requested by the researcher. The patterns and themes that emerged from the detailed reading and analysis of the data were identified. The interview data was again reviewed and a coding technique was applied.

Schmidt states that, "Coding means relating particular passages in the text of an interview to one category" (p. 255). Short abbreviations used to indicate patterns and themes were written in the interview transcriptions. The interview data as well as the data obtained from interview notes, the pre-interview questionnaire and the reflection questions were then reorganized into labeled categories representative of the patterns and themes found in the data. Further analysis was done within the categories to search for additional patterns and themes and to ensure that the data was representative of the pattern and theme category in which it was placed. Tables were used to clearly present the data obtained from the interviews and descriptions and summaries were given to highlight each table.

In addition to the interview, information was gathered from participants in the form of ranking charts, check-lists and open-ended questions before the interview. Free response reflection questions followed the interview. The information obtained from the check-list and ranking chart was compiled and presented in data tables. Participant responses to the open-ended pre-interview questions and reflection questions were carefully reviewed to identify patterns in the data which were then coded as previously described. The data obtained from the

pre-interview questionnaire, interview and reflections are presented in Chapter 4. Conclusions and recommendations are presented in the final chapter.

CHAPTER 4

Results

After the identification of patterns and themes and sorting of supporting data, information was organized and presented. The patterns and themes that emerged during the interview were curriculum material selection and development, teacher goals, test-taking skills, instructional role of teacher, pacing and time management, and gathering and using assessment data. Once the themes were identified, the supporting data was reviewed and presented in tables representing each theme. Two tables were used for each theme, one for the data collection that was done based on classes that have North Carolina End-of-Course tests (EOCs) and another for classes without EOCs. The only exception to this was the gathering and using assessment data category because the information obtained for classes with and without an EOC was very similar.

A coding scheme was used after participant responses to indicate the source of the data. Written responses from the pre-interview questionnaires provided rationales for ranking assessment strategies for EOC and non-EOC classes and were coded “E-AS”. The “E” indicates an explanation and “AS” denotes assessment strategies. Additional written responses from the pre-interview questionnaire provided rationales for teaching test-taking strategies in EOC and non-EOC classes and were coded “E-TP”. This code was used to indicate the information that was given as an explanation of utilizing test preparation activities. Participant responses to the 23 interview questions were coded first with an “I” to indicate the interview was the source of the information followed by the interview question number. For example, the code “I-1” would indicate that the information originated during the interview as the participant answered question number 1. Data originating from reflections done after the interviews were coded with an “R” and the question number from the reflection.

Each of the themes previously identified were discussed at different points throughout the interview. Tables were used to present information that was obtained from the participants. The individual themes that emerged from the study are listed in the title of each table. The title also indicates whether the information presented in the table refers to classes with or without state mandated assessments. The source information is located in parenthesis at the end of the quote.

The qualitative data relevant to the selection of curriculum materials in EOC classes found in Table 1 reveal that the most important consideration for selection of curriculum materials is relevance to the end-of-course test. Multiple-choice questions were identified as the most important format for assessment. All teachers stated that multiple-choice questions were selected due to their similarity to the questions on the EOC. Ann commented, "The ultimate goal is what is similar to that EOC" in response to the most important consideration when selecting curriculum materials. Teacher consideration was also given to the effect the multiple-choice questions may have on EOC scores. Beth stated that her most important concern was, "How it will affect their scores on the EOC." In response to the importance of multiple-choice item banks in the EOC class Carol replied, "They are the end all be all!"

Table 1

Selection of Curriculum Materials in Courses with an EOC

Teacher	Data Relevant to the Selection of Curriculum Materials in Courses with an EOC
Ann	"Are the questions and the way I am asking the questions similar to what they are going to see on that final exam? I try to pick things that will help them learn and think and figure things out but the ultimate goal is what is similar to that EOC." (I-3) The importance of using commercial test materials or item banks for assessment is, "Very Important. Because I feel like we have found some that are in line with the kinds of questions that the kids need to be able to answer, with some tricky wording and some things like that." (I-19) "I use groups when we do labs, when we are playing review games or doing some sort of review activity. I find that I very seldom put them in groups to discover anything or learn any new activity because it goes back to me wanting to be in control." (I-8)
Beth	"I use the multiple-choice format a lot since that is the way the state assesses them. I use student dry erase boards and collaborative grouping often to assess comprehension between tests. I utilize peer tutoring through the dry erase boards and the collaborative grouping to ensure my students understand the concepts. If the class is an honors class, I use short answers instead of the multiple-choice format that I use in a regular classroom to assess comprehension." (E-AS)

	As curriculum materials are developed, the most important consideration is, "How it will affect their scores on the EOC." (I-3) "I use peer tutors and I use working in groups more than just giving them a topic and letting them discover. I don't do as much of that." (I-8)
Carol	"Because the EOC is a multiple-choice assessment, I feel that the majority of my assessments need to be geared in that direction." (E-AS) "As a result of the EOC, I give more multiple-choice tests and find myself less able to address questions that while they are math related are not part of the tested curriculum." (R-1) Response to importance of item banks on EOC, "They are the end all be all!" (I-19) "I do group work especially for review activities, with honors, I do it sometimes introducing a new topic. I will give them something to work on before we actually start talking about it." (I-8)
Dora	"I use multiple-choice for all unit tests and testlets." (E-AS) "I had drifted away from group activities and project assignments. Now I am back, after completing National Board Certification." (R-2)

When responding to the selection of curriculum materials for classes that did not have an EOC, all participants indicated that they selected assignments based on discovery, enhancement, or rigor, as shown in Table 2. Ann stated, "I believe students learn so much more from group work, discussion, and problem solving, and that is why I choose these methods in non-EOC classes." Ann commented that the materials she chooses to use in her non-EOC classes are, "more open-ended instead of right or wrong." She cited the decrease in pressure she feels as a result of creating her own final assessment in the non-EOC class as the reason she was able to use these teaching techniques in the non-EOC class but not the EOC classes.

Hands-on discovery experiences were utilized by Beth in her non-EOC classes. She remarked, "I do more discovery in there. I have them go shoot off the rockets and discover what the y-intercept means and what the max means." She remarked that students will comment, "Oh, I knew how to apply that but I just didn't understand." Rather than using technology, like graphing calculators, to plug in numbers to arrive at an answer, Carol selects problems that can be supported with technology. She stated, "I want them to use technology but the technology does not give them the answer." Dora found that she was able to individualize her instruction and selection of curriculum materials for students in non-EOC classes.

Table 2

Selection of Curriculum Materials in Courses without an EOC

Teacher	Data Relevant to the Selection of Curriculum Materials in Courses without an EOC
Ann	The most important consideration for selection of curriculum materials in a non-EOC class is, "Whether they are going to force my kids to step it up a little bit. If you add a new activity it has to be something that makes them think a little beyond the old activity you used to use. Things that are more open-ended instead of right or wrong." (I-14) "The last lab we did, they didn't turn a written lab report in. We did an oral, almost a debriefing. We all sat around in chairs today in class and talked about it. I never would have done that. And for them it is meeting that goal of learning how to communicate orally but you know you can't communicate orally on an end-of-course test, so, it is all about writing." (I-17) "Since I am in control of the ultimate (final) assessment in these classes, the pressure is decreased. I believe students learn so much more from group work, discussion, and problem solving, and that is why I choose these methods in non-EOC classes." (E-AS) "They knew that it was my exam but we had done things all along we had done activities that were not let's listen to a lecture and then do some multiple-choice drill and practice. They almost had more of an interest in it. You could hear them saying you remember when we did that lab with

Ann	the dirt or when we built the volcano, that's what we learned then. And I don't hear that in Physical Science or EOC tested classes. It's them sitting there working out problems. It's just not the same attitude and atmosphere in those classes." (I-22) "I have actually put them in, and plan to do more of it, put them in groups to figure things out before I teach it. Here are some materials, see what sense you can make out of this. Which you know takes a long time, but you let them do it." (I-18)
Beth	"I love being able to incorporate a fun activity to enhance learning." (R-3) "I do more discovery in there. I have them go shoot off the rockets and discover what the y-intercept means and what the max means. They will sometimes say oh, I knew how to apply that but I just didn't understand it." (I-18) "Some of the activities are graded. If we talk about a pattern in class, they get graded if they can figure out the math behind it." (I-19)
Carol	"What I am wanting to do is find problems that technology will support. I want the technology to enhance it. I don't want it to be something that they are just plugging in. I want them to use the technology but the technology does not give them the answer." (I-14) Response to importance of item banks, "Not that much." (I-19)
Dora	"In the non-EOC class I can, up to a point, individualize for those kids, particularly if it is not a class that is a prerequisite." (I-23)

Table 3 shows that when asked about the goals for their end-of-course tested classes, all teachers expressed that they wanted their students to perform well on EOC. After stating that she wanted her students to be proficient on the EOC, Ann commented, “It is unfortunate to have to say that but when it is tested, that is what you want at the end of the class.” Dora responded, “It is important to me that they do well on the test.” In relation to student performance Dora commented, “The EOC is the lowest denominator.” All teachers mentioned that they felt pressured that their students perform well on the EOC. Personal goals, reputation for good scores, reputation of the principal and school, and course credit were the causes of the pressure felt by the teachers.

Table 3

Teacher Goals in Courses with an EOC

Teacher	Data Relevant to Teacher Goals in Courses with an EOC
Ann	"To be proficient on the EOC test. It is unfortunate to have to say that but when it is tested, that is what you want at the end of the class." (I-1) "Student performance on the EOC is probably the most important thing when I have EOC's; I wish I could tell you why. Part of it is that you have this reputation for having good scores so you want to keep that up. You want the principal and the school to look good. It is a very personal thing to me. When my kids don't make proficient, if they don't make a three or four on that test, I take it personally, like what did I do wrong?" (I-4)
Beth	"I would like them to be proficient on the end-of-course test." (I-1) "If they are not proficient, they will have to take the class again. It reflects on the school and the principal. But I do it for me to, I do it for them. I want them to do it well for their grades. And then I want for my own goals that I set. And then there is pressure of course out there for that. But I put enough pressure on myself." (I-4)
Carol	"My focus in the EOC classes is definitely test driven." (E-TS)
Dora	"It is important to me that they do well on the test. The EOC is the lowest denominator." (notes from I-4)

As Table 4 illustrates, the goals the teachers had for their students in the non-EOC classes were much deeper and focused more on problem solving, rather than producing the correct answer. Ann wanted her students to become "independent, scientific thinkers" able to "think a problem through and figure things out." Beth wanted her students to master concepts that were taught and "concepts that they were taught before that they did not have time to master." Carol wanted students to "understand how everything connects, not just surface skills. They are supposed to know the skills." She also stated, "I believe that students must be able to apply knowledge to a problem based setting and draw general conclusions based on their results." Dora wanted her students to, "read and see things other than the obvious."

Table 4

Teacher Goals in Courses without an EOC

Teacher	Data Relevant to Teacher Goals in Courses without an EOC
Ann	"See there is no test to worry about them passing. I really want them to be independent, scientific thinkers. To be able to take a question and see it as not necessarily having one right answer and to be able to think a problem through and figure things out." (I-12) "You know you want the kids to be able to function in a group cohesively because that's how life is, you never know who you are going to end up working with. You have to do that. Individually, I want the kids to get some understanding but maybe to work more toward their individual learning style. Probably more individual goals and I do take that into account when I put them into groups." (I-18)
Beth	"I would like for them to master the concepts that are taught, rather than just skimming over. And master some concepts that they were taught before that they did not have time to master." (I-12)
Carol	"I believe that the students must be able to apply knowledge to a problem-based setting and draw general conclusions based on their results." (E-AS) "I want them be able to look at a problem, attack the problem using their problem solving strategies, choose the method that is there and solve the problem, even if it is a something that they have never seen." (I-12) "I want them to understand how everything connects, not just surface skills. They are supposed to know the skills." (I-16)

Dora	"I want students to read and see things other than the obvious. They should be able to communicate with intelligence….but really I want them to do well on the test!" (notes from I-1)

When discussing teaching test-taking strategies in EOC classes, all teachers felt that this was a must, as indicated by the data in Table 5. "I find that the focus of my testing strategies in EOC classes is more on making sure the answer sheet is error-free and less about analyzing information and deciding on the best answer," remarked Ann. Beth commented, "Teaching them how to take the test has become important in order to achieve the levels needed to be proficient on the EOC's." Carol spent her time, "reminding students about guess and check strategies, zapping answers that can immediately be eliminated, highlighting or identifying formulas in word problems." She also stated, "For my EOC classes, some of them, it is just over their heads. Their best hope is guess and check, and yes, I teach the guess letter." Dora worked on test-taking strategies "prior to each test."

Table 5

Teaching Test-Taking Strategies in Courses with an EOC

Teacher	Data Relevant to Teaching Test-Taking Strategies in Courses with an EOC
Ann	"In EOC classes I think these strategies are more to play the game. So often, students miss proficiency by one or two questions. I find that the focus of my testing strategies in EOC classes is more on making sure the answer sheet is error-free and less about analyzing information and deciding on the best answer." (E-TP)
Beth	"The students and the teachers are judged on how the students perform on the EOC's. Teaching them how to take the test has become important in order to achieve the levels needed to be proficient on the EOC's." (E-TP) "I practice the test-taking skills all year with regular classes and the last couple of weeks with honors." (E-TP)
Carol	"I do spend time reminding students about guess and check strategies, zapping answers that can immediately be eliminated, highlighting or identifying formulas in word problems." (E-TP) "For my EOC classes, some of them, it is just over their heads. Their best hope is guess and check, and yes I teach the guess letter." (I-23)
Dora	"I work on strategies prior to each test." (E-TP)

The importance of developing test-taking strategies was minimized by all four teachers in classes that did not have an EOC (see Table 6). Ann responded, "In non-EOC classes, I believe students need to learn broader strategies like selecting important information from questions and pacing themselves. These strategies are important because they help students show what they truly know on tests. The strategies can help so my students overcome test anxiety as well." Beth greatly reduced the amount of time spent teaching test-taking strategies by practicing the strategies for only one day during part of the class period. She also tried to show her non-EOC classes test-taking strategies before they took the Scholastic Aptitude Test (SAT). Carol commented, "I believe that some degree of teaching test-taking strategies is necessary."

Table 6

Teaching Test-Taking Strategies in Courses without an EOC

Teacher	Data Relevant to Teaching Test-Taking Strategies in Courses without an EOC
Ann	"In non-EOC classes, I believe students need to learn broader strategies like selecting important information from questions and pacing themselves. These strategies are important because they help students show what they truly know on tests. The strategies can help some students overcome test anxiety as well." (E-TP)
Beth	"I practice part of one class for my non-EOC classes." (E-TP) "I try to show my class test-taking strategies before they take the SAT." (E-TP)
Carol	"I believe that some degree of teaching test-taking strategies is necessary." (E-TP)

All participants felt that their role as a teacher in the EOC class was very different than their role in the non-EOC class as evidenced in Table 7 and Table 8. The role of the teacher in the EOC class was described as “dictator”, “boss”, “drill sergeant”, and “more of an instructor than a facilitator”. Some descriptions given in reference to the role of the teacher in the non-EOC class were “facilitator rather than totalitarian government of the EOC class” and “almost like a coach.” Beth commented that she is more group driven in the non-EOC class. Carol remarked, “I am a little more student driven and I am flexible.” She expressed that she has freedom to go off on a “math tangent” if there was something in which her students were truly interested. Dora stated that she missed “going with the teachable moment.”

Table 7

Role of Teacher in Courses with an EOC

Teacher	Data Relevant to the Role of Teacher in Courses with an EOC
Ann	"I am running everything even when they are doing a lab, I have a very, very specific small learning goal that I want them to get out of that lab. Let's do it, let's get it over, so I probably see myself as the dictator. But I have to be in control of everything and I have to have my finger on everything and I don't like to let go of that when there is a state test." (I-2) "In an EOC class, I feel that I have to spend most of my class time training students to answer the types of questions what will be featured on the EOC test. This leaves little room for collaborative groups and more open-ended exploration." (E-AS)
Beth	"More of an instructor than a facilitator." (I-2)
Carol	"I am the boss. It is not a democracy." (I-2)
Dora	"Depends on class. In regular, with the EOC I am a drill sergeant. In the honors I am more of a coach." (I-2)

Table 8

Role of Teacher in Courses without an EOC

Teacher	Data Relevant to the Role of Teacher in Courses without an EOC
Ann	"Well, I am definitely much more relaxed. Probably fall more into the role of facilitator than totalitarian government of the EOC class, no longer the dictator. I allow my students more freedom to take a discussion further. Instead of being there telling them so much what to do, I more or less will give them goals. The honors group I have now, I have yet to give them instructions on anything. It has been very open-ended and let's see if you can figure out how to do this and it goes to that goal of wanting them to be able to figure things out." (I-13)
Beth	"It is probably still instructor driven or lecture driven but it also is more group driven. I do some more activities in there that help them discover or have an ah-ha moment on how that relates to the real world. Like I do the rockets so they can see the quadratics." (I-13)
Carol	"Almost like a coach. I am a little more student driven and I am flexible. If there is something that they really are having trouble with and I don't think that they are just trying to waste time, then you can really go in and pull extra material. If there is something that they are really interested in, I can get off on a math tangent. But feel like, OH! okay, well this is a perfect place to talk about this, let's do this, even if, Heaven forbid if it is not in the curriculum." (I-13)
Dora	"I miss going with the teachable moment." (R-1)

Although pacing and time management were not explicitly questioned about in the interview, all teachers commented on the importance of time management in their EOC classes (see Table 9). Ann commented, “You have to touch on things so quickly to get them where they need to be to pass that test and you don’t have time for depth.” Beth felt that, “the time limit is so hard that you feel more pressure to go, go, go.” She also remarked that she does not go to math conferences and workshops if she will have to be out of the classroom for more than one day, and the workshop has to relate to the EOC for her to even consider going. She has a hard time rationalizing doing activities in the EOC classroom because they will not be tested. Beth said, “I do not stay on one topic until everyone masters the topic.” Feeling rushed to get through the material to allow for time at the end for test prep practice and review was mentioned by Carol. Dora commented, “I think EOC tests have required me to focus more and to be more aware of time. It has made me learn to keep a pacing guide.”

Table 9

Pacing and Time Management in Courses with an EOC

Teacher	Data Relevant to Pacing and Time Management in Courses with an EOC
Ann	"In EOC classes, I find myself spending a great deal of time on the mechanics of the test - bubbling, erasing, etc." (E-TS) "It is such an intense curriculum. There is so much we are supposed to cover. You have to touch on things so quickly to get them where they need to be to pass that test and you don't have time for depth." (I-6)
Beth	"Because time is such, it is so hard for the time, the time limit is so hard that you feel more pressure to go, go, go." (I-2) "I do not go to the math conferences and other workshops that will take me out of the classroom more than one day. It has to be something pertaining to my EOC classes for me to miss even one day of teaching time." (R-1) "I also spend class time teaching test-taking skills that I feel should be utilized for students to master the concepts, not learn how to take the test even if they do not know the concepts behind the questions." (R-1) "Since the activities are not tested it is hard to rationalize taking class time to incorporate activities." (R-1) "I do not stay on one topic until everyone masters the topic." (R-1)
Carol	"In the EOC classes I feel rushed because I know that I have to have time at the end for test-prep practice and review." (R-3)
Dora	"I think EOC tests have required me to focus more and to be more aware of time. It has made me learn to keep a pacing guide." (R-1)

As shown in Table 10, in the non-EOC class, pacing and time management were determined by student mastery of concepts rather than coverage of the entire curriculum. Ann stated,. “I can go into more depth in a non-EOC class because you see what their interests are and if it is something the class is interested in as a whole, then you have more time to spend on that. If I spend another week on that, in the end it doesn’t matter because I am not keeping them from seeing anything that will be on that state test.” “When the EOC is not an issue I feel more comfortable to devote the time it takes to employ more open-ended questions,” commented Ann. Beth also used short answer questions rather than multiple-choice to ensure mastery of concepts. She stated, “I feel comfortable taking another day for students to master a concept rather than feeling pressured to move on.” Carol commented that she felt that she could spend more time on projects and activities in non-EOC classes.

Table 10

Pacing and Time Management in Courses without an EOC

Teacher	Data Relevant to Pacing and Time Management in Courses without an EOC
Ann	"When the EOC is not an issue, I feel more able to devote the time it takes to employ more open-ended assessments." (E-AS) "I do not spend much time at all on multiple-choice strategies in non-EOC classes. Instead, I focus more on interpreting and understanding questions." (E-TP) "I can go into more depth in a non-EOC class because you see what their interests are and if it is something the class is interested in as a whole, then you have more time to spend on that. Instead of just saying this is a single replacement reaction, and being able to do something on paper, let them understand. Let them have time to work more with the reactions and you know if I spend another week on that, in the end it doesn't matter because I am not keeping them from seeing anything that will be on that state test." (I-16)

Beth	"Since these students do not have a state multiple-choice test to prepare for their assessments are short answers. I feel I have more time to use projects and products to ensure mastering of concepts than when I am trying to prepare the students for the state exam." (R-1) "You have more time to go deeper into the topics. You have more time to do the real world activities that connect with them." (I-16) "I feel comfortable taking another day for students to master a concept rather than feeling pressured to move on." (R-3)
Carol	"In the non-EOC classes I feel that I can spend more time on projects and activities." (R-3)

Due to the fact that there were no significant differences in how teachers used test data between their EOC and non EOC classes, the information on test data collection and use is summarized in Table 11. Three out of the four teachers used assessment data to determine how many students missed certain questions or concepts and then did some form of remediation based on the test data information. Ann used the information to determine what few questions needed to be reviewed in class after the test and what concepts needed to be focused on in review close to the final exam. Carol provided remediation and re-testing based on the number and types of questions missed on the test. Dora commented that she reteaches the concepts with which students did poorly in conjunction with current lessons. Beth simply responded that she entered test data as grades.

Table 11

Test Data Collection and Use

Teacher	Data Relevant to Test Data Collection and Use
Ann	"When you have a multiple-choice test, you know, you can go through and look at the questions that they missed and you can take a tally for the class. Immediately after they take a test, I use it to determine which questions or topics we need to spend a little more time on and in the long term, you know, tests as whole, like the motion test in Physical Science, that is a test as a whole that I know at the end of the year before that EOC, I am going to have to spend the most time on that because they do poorly on that test. Or maybe another test that the class as a whole will do poorly on that gets pushed to the end of the year to see what I need to go over the most before the EOC. In the short term it is pretty much just to see what few questions we need to go over in class." (I-9)
Beth	"Put them in as grades." (I-9)
Carol	"I go through and I record how many people missed each question. And then they have a remediation right after that test. I find problems similar, I put the number it was on the test so they can look back at their answer sheet and we talk about the most missed questions." (I-9)
Dora	"I graded a test that they had on the parts of speech and I looked at it. I am going to during the next couple of weeks, in conjunction with what we are doing, go back and reteach some of that and give them an opportunity to re-test." (I-9)

In addition to the open-ended pre-interview, interview and reflection questions, each study participant was given a check list of test preparation activities and asked to mark the appropriate boxes to indicate if the listed activity was used in classes that have mandated end-of-course assessments (EOC) and in classes that do not have end-of-course assessments. Table 12 summarizes the test preparation activity data collected from the participants. Only positive responses which indicated that the strategy was used in the class were tabulated. The number of yes, or positive responses, were counted and recorded. Each of the numbers in Table 12 should be interpreted as a number out of four teachers. For example, the number representing practicing bubbling and erasing on answer sheets in EOC classes is four. Therefore, it should be determined that four out of the four teachers questioned in the study had their students practice bubbling and erasing on answer sheets in EOC classes. Only one out of the four teachers had her students practice this skill in a class without an EOC.

Table 12

Test Preparation Activity Check-List Results

Test Preparation Activities	EOC classes	No EOC
Practice bubbling and erasing on answer sheets	4	1
Breaking down unfamiliar or unknown words in questions	4	4
Underlining or highlighting key information in test questions	4	4
Paraphrasing questions into students own words	4	4
Monitoring time during testing	4	2
Narrowing answer choices	4	3
Staying on line with question and number on answer sheet	4	1
Posture, stretching, and break times during test	4	1
Practice multiple-choice questions from test banks, testlets, and North Carolina Department of Instruction (DPI) sample items	4	1

In addition to the test preparation activities listed in Table 12, teachers were asked to list any additional test-taking strategies they used in their classrooms. Beth listed an additional strategy of marking out answers that were not smart choices. She indicated that she used this strategy in the EOC classes but not in classes that did not have an EOC. Beth also indicated in the interview that she did not use multiple-choice questions in her classes that were not EOC classes.

Dora noted that the classes she taught without a North Carolina EOC were Advanced Placement (AP) classes. Although her students were not going to take a state mandated end-of-course assessment, per se, she worked with her non-EOC AP classes to prepare them for the AP test. The student's performance on this important test would determine if he or she received college credit for the high school course. Therefore, Dora taught all of the test preparation techniques listed in Table 12 in all of her classes.

The pre-interview questionnaire was also used to solicit information on the types of assessments the National Board Certified teachers used in classes in which students would take an EOC and classes in which they would not take an EOC (see Appendix A). The information provided in this questionnaire showed that all four participants used multiple-choice tests as their number one assessment or teaching strategy in their classes with an EOC. Short answer questions and problem based questions ranked as the most used assessment strategies in classes without end-of-course tests. Projects and products ranked among the least used forms of assessment in classes that had end-of-course tests, yet teachers indicated they used these strategies more often in classes without end-of-course tests.

CHAPTER 5

Conclusions & Recommendations

This study was conducted in an effort to determine how the discrepancy between state mandated end-of-course assessments and the standards supported by the National Board for Professional Teaching Standards is addressed in the classrooms of National Board Certified teachers. The four teachers who participated in the study were National Board Certified who taught classes with and without North Carolina End-of-Course tests (EOCs). The analysis of data revealed six themes into which interview data was grouped. The themes identified within the data were curriculum material selection and development, teacher goals, test taking skills, instructional role of teacher, pacing and time management, and gathering and using assessment data. Data was grouped into each category based on whether it was given in reference to classes that had an end-of-course test or not. Data for gathering and using assessment data was presented in one table because there were no differences noted between classes with and without end-of-course tests.

Discussion of Conclusions

The data collected from the National Board certified teachers regarding their practices in classes that had state mandated assessment support what was found in the literature in reference to test-preparation practices and focusing content on tested material. All of the study participants indicated that their instructional practices were centered on student performance on the EOC. Instructional goals were established based on maximizing student proficiency levels. The participants selected curriculum materials based on their relevance to the EOC. All of the National Board certified teachers chose multiple-choice assessment as their most utilized assessment strategy in EOC classes and each teacher spent a significant amount of time

implementing all of the test-taking strategies found in the literature such as narrowing answer choices, monitoring time, and checking answers as reported by Paris, Lawton, Turner, and Roth (1991).

Along with the utilization of multiple-choice testing comes the teaching of test-taking strategies. Each teacher said that she spent class time teaching test-taking strategies to students. Participants also indicated that more strategies were used and more time was spent teaching the test-taking strategies in the classes that had an EOC when compared to those classes that did not have an EOC. All agreed that it was important for students to have some level of test-taking skills, but in the EOC courses the test-taking skills seemed essential to the EOC and much more time, time that would have been spent in meaningful instruction, was spent teaching test-taking skills and strategies.

Teaching test-taking strategies seemed to take away from student learning and understanding and encouraged students to concentrate on "bubbling" and erasing answer sheets correctly and manipulating answers to fit questions. Ann said, "I find that the focus of my testing strategies in EOC classes is more on making sure the answer sheet is error-free and less about analyzing information and deciding on the best answer." Carol remarked, "For my EOC classes, some of them, it is just over their heads. Their best hope is guess and check, and yes, I teach the guess letter." These statements are in sharp contrast to the effective teaching characteristics described by Brophy (2000) and promoted by the National Board for Professional Teaching Standards (NBPTS).

Paris, Lawton, Turner, & Roth (1991) suggested that the introduction of test-taking skills and the narrowing of the curriculum were consequences of "teaching to the test". Both of these effects are seen in the strategies the National Board certified teachers employed in their EOC

classes. In fact, the study participants admitted that they selected curriculum materials based on their similarity to the EOC. It seems that the National Board certified teachers' actions were in alignment with Perrone's (1991) suggestion that developing a responsive, developmental classroom risks lower scores on standardized tests.

The teachers seemed to fear a decrease in student performance that might come if they implemented many of the effective teacher characteristics described by Brophy (2000) and the strategies supported by the National Board for Professional Teaching Standards. In their EOC classes, the National Board certified teachers relied on techniques that had been shown to improve standardized test scores. They focused the students on selecting one right answer from multiple-choice questions rather than utilizing the open-ended thought provoking questioning and exploration techniques they demonstrated to receive National Board Certification and continued to use in their classes without an EOC.

Beth utilized only multiple-choice test questions in her classes that had an EOC. She further explained that in the EOC Algebra I class, she taught students to work problems backwards, plugging the multiple-choice answers into the given problem to determine which answers would and would not fit. This method removed the critical thinking skills and reasoning that could have been used to derive the answer.

Beth explained that students experienced frustration when they took her non-EOC class, Advanced Functions and Modeling, in which she did not use multiple-choice assessment. Students who enrolled in this class had completed Algebra I, Geometry, and Algebra II, all classes with an EOC. Beth felt that the students found difficulty with the Advanced Functions and Modeling class because they no longer had multiple-choice assessments. Beth required students to work their problems out and provide reasoning for their answer choices. The level of

difficulty students found with this task suggests that the students had not developed the critical thinking skills they needed in the lower math classes. Most likely this was due to the focus on test-taking strategies and multiple-choice assessment in the previous EOC tested math classes.

Ann and Carol also reported differences in teaching methodologies when they discussed testing in relation to their non-EOC classes. Ann stated, "I do not spend much time at all on multiple-choice strategies in non-EOC classes. Instead, I focus more on interpreting and understanding questions." Carol remarked, "In the non-EOC classes, I feel that I can spend more time on projects and activities." It seems that the National Board certified teachers knew, as Hammerman (2005) suggested, effective learning is not facilitated by practicing test questions. Furthermore, conventional assessments such as standardized testing are not supported by the NBPTS as a valid measure of student understanding (Ballou, 2003). The teachers felt that instructional units with inquiry opportunities and hands-on experiences, which the teachers provided for their students in non-EOC classes, maximized student learning (Hammerman, 2005).

National Board certified teachers stated that they used teaching techniques that facilitated critical thinking, concept understanding, and forming connections between concepts in their classes without an EOC. In reference to her class with no EOC, Beth commented, "You have more time to go deeper into the topics. You have more time to do the real-world activities that connect with them." Ann said that her most important consideration for the selection of curriculum materials was, "Whether they are going to force my kids to step it up a little bit." In addition she looked for assessment items that were, "more open-ended instead of right or wrong." Beth stated, "Some of the activities are graded. If we talk about a pattern in class, they get graded if they can figure out the math behind it." Beth was not grading for right or wrong

answers to multiple-choice questions, but for true understanding and the relation of mathematics concepts to bigger ideas. Brophy (2000) reinforced the teaching practice of expecting students to internalize content and link information with prior knowledge as a quality found in effective teachers. When asked about selecting curriculum materials for the non-EOC class, Ann replied, "Well, see, you don't have the test to worry about." Many participants expressed similar feelings of decreased pressure and freedom to teach in the more meaningful ways described by Brophy (2000) and supported by NBPTS. In fact, Carol felt that the EOC encouraged "mediocrity" and Dora referred to the test as the "lowest denominator."

Brophy (2000) noted the importance of the teacher's utilization of available time to focus on stimulating activities designed to fulfill instructional goals. All data indicate that the National Board certified teachers managed their time this way in their non-EOC classes. The teachers said that they wanted the students in the non-EOC classes to "master the concepts", "apply knowledge to a problem and draw conclusions", "work toward their individual goals", and "see things other than the obvious". In the absence of the EOC, teachers felt less pressure and were able to incorporate student interests, abilities, and skills into their classroom instruction and modify their lessons as needed. Teachers were able to allow student interest and level of understanding to guide the lessons, a practice supported by NBPTS and reinforced by Stepanek and Jarrett (1997). According to Perrone, teachers should focus instruction on providing successful learning experiences and not allow time to determine when activities begin and end. By allowing student interest and understanding to guide the lessons, Ann found that she was able to engage her students in meaningful class discussion, as suggested by Brophy (2000). However, when there was an EOC, she did not employ much open classroom discussion because the EOC was a "written test, not a verbal one." In addition, when there was an EOC, Ann, as well as all

the other study participants, used a pacing guide developed around the EOC to guide her planning and lessons.

In the EOC classes, the teachers spent time teaching test-taking strategies and following pacing guides. Ann stated, "You have to touch on things so quickly to get them where they need to be to pass that test and you don't have time for depth." Beth stated, "The time limit is so hard that you feel more pressure to go, go, go. I do not stay on one topic until everyone masters the topic." Carol commented, "I feel rushed because I know that I have to have time left at the end for test-prep and review."

The utilization of student assessment seemed to serve the same purpose for the teachers in their EOC and non-EOC classes. As suggested by Brophy (2000), the teachers used student mistakes to facilitate the student learning process. Ann, Carol, and Dora all used assessment data to identify student weakness. They then implemented different forms of remediation and re-teaching to reinforce the concepts with which students needed help. Student assessment data was reviewed by the teachers in both the EOC and non-EOC classes. The only difference was that most of the data in the EOC classes was obtained from multiple-choice tests, and most of the data in the non-EOC classes was obtained from open-ended questions and class discussion. Therefore, the data gathered in non-EOC classes was much richer and provided much more insight into student understanding and misconceptions in the non-EOC classes.

Limitations and Delimitations of the Study

Several limitations and delimitations were encountered during the study. One limitation was encountered when addressing feedback during the interview process. When the National Board certified teachers were asked if they gave informative or evaluative feedback to their students in their EOC and non-EOC classes, participants did not understand the difference

between informative and evaluative feedback. Some asked what the question meant and others paused for a very long time before attempting to answer the question. The researcher should have given a definition of each type of feedback and asked participants to provide examples of the feedback they gave their students. This would have allowed the researcher to determine if the terms were being interpreted in the way that was intended and may have provided additional data for the study.

The study also was limited in the investigation of the impact of National Board Certification on the participants. Although the participants were asked how obtaining National Board Certification affected their teaching practices in the reflection questions, they did not elaborate on the impact of the certification process or include specific details about what aspect of the application process was the most challenging. Collecting additional information about the teachers, such as the teacher rationale for the courses selected to feature in the NBPTS portfolio submission and student proficiency rates on the North Carolina End-of-Course tests, may have yielded additional variables to consider in studying the contrast between state mandated testing and the practices of National Board certified teachers.

An additional limitation was that the teachers were not directly questioned about why they did not use the same strategies in their EOC and non-EOC classes. The causes of the differentiation of instruction between EOC and non-EOC classes revealed during the interviews were pacing, the size of the curriculum, and the push to cover all the information that may be presented on the EOC. Additional causes may have been revealed if the participants had been directly questioned about their teaching style differences in EOC and non-EOC classes.

Also, study results could be skewed by restrictions and mandates for EOC classes placed on the teachers by the county in which they teach. For example, if county mid-term exams

and/or county pacing guides were mandated, classroom instruction would be affected. If administrators and central office staff in the county in which the study took place put excess pressure on teachers to increase student performance on the EOC, study participants could perceive more pressure and focus directed toward the EOC in relation to other teachers in other counties in North Carolina.

One of the outstanding characteristics of National Board certified teachers is their ability to individualize instruction to meet the needs of their learners. National Board certified teachers are cited by Gunter, Reffel, Rice, Peterson, and Venn (2005) as a group of teachers who possess expertise in curricular accommodations for students who find it difficult to master the general education curriculum. This exploration of this idea was a delimitation encountered in the study. Several teachers mentioned individualizing instruction but the researcher did not veer from the approved structured interview questions to explore the teachers' ideas of individualized instruction. Exploring the modifications and individualized instructional methods used by the National Board certified teachers in their non-EOC classrooms would have provided additional information in an area where there appeared to be distinct differences between the type of instruction used in EOC and non-EOC classes.

The small sample size used in the study was a delimitation. The qualitative study design was chosen to yield rich, informative data. Because a single researcher implemented this qualitative study, a small number of participants were selected so that the data collected would be meaningful, as well as manageable. Although five participants were initially contacted and selected, only four were able to follow through with the study. Of those four, only three responded to the follow-up reflective questions, despite verbal and email reminders to the participants.

Another delimitation of the study was the homogeneity of the participants. All of the teachers selected for this study were white females who taught in the same county. This delimitation resulted from the selection criteria used in the study. Within the county in which this study was conducted, the only teachers who were National Board certified and taught EOC classes within the two selected high schools were white females.

Implications of this Study

According to Tuerk (2005), certification and licensure have become one of the most important measures of teacher quality for school administrators and policymakers. In addition, good scores on standardized tests validate a school's curriculum and teaching (Gray, 1999). However, the teaching practices supported by NBPTS are not suited to the educational policy objective of improving student achievement on objectively measured standardized assessments (Cunningham and Stone, 2005). The student performance in core curricula (English, math, science, social studies) that policy makers are seeking to increase is being measured by standardized testing practices that do not promote student learning.

In an effort to reward teachers for the outstanding teaching performance they demonstrated to receive National Board Certification, North Carolina rewards teachers with a 12% bonus for each year the teacher is certified. The pay for National Board certified teachers is based on individual teacher performance, not on school-wide student achievement on a standardized test. National Board Certification encourages teachers to explore their own strengths and weaknesses in an effort to improve their teaching and ultimately student learning. Therefore, the practice of promoting and supplementing the salaries of National Board certified teachers should continue to encourage teachers to utilize and develop the most effective teaching strategies that foster student learning and growth.

Monetary rewards based on the North Carolina ABCs of Public Education are dependent on factors that are beyond the control of individual teachers. School wide EOC test performance, drop-out rates, and attendance all figure into the formula used to calculate high school proficiency and growth. As of 2007, the ten high school subjects, Biology, Chemistry, Physics, Physical Science, Algebra I, Geometry, Algebra II, Civics and Economics, US History, and English I are currently state tested. The practice of using standardized testing seems to be the most efficient method to measure student, school, and county academic performance, therefore, it seems futile to suggest that this practice be removed or decreased.

However, the researcher suggests that there be no more classes added to the state mandated testing program and that a reduction in the amount of required curriculum content be considered. A reduction in curriculum content would allow teachers more time to implement more meaningful instruction in their EOC classes. The researcher also suggests that there continue to be classes in science, math, social studies and English that are not tested. This will enable teachers to have an opportunity to use their best teaching practices and infuse their curriculum with rigor and relevance. In addition, students will be given opportunities to take classes that hone their critical thinking skills and encourage them to become life-long learners.

Recommendation for Future Research

The results of this study imply that the teaching practices of National Board certified teachers are affected by state mandated assessments. However, additional information is needed due to the small, homogenous sample used in this study. To increase the transferability of the study, teachers from different counties as well as different racial/ethnic backgrounds and genders, should be incorporated. As mentioned in the limitations, additional information such as test score data and courses used in developing the NBPTS portfolio might

add to the findings of this study. With a larger sample size, data could be enriched by incorporating a quantitative component.

Summary

This study has shown that the teaching practices of National Board certified teachers are affected by state mandated assessments. The interview data shows that National Board certified teachers, who have demonstrated accomplished teaching practices, chose to do what they felt was necessary to increase student performance on mandated assessments. As Smith (1991) found, testing programs designed to improve student performance on standardized tests reduced the amount of time spent on instruction. In addition, the National Board certified teachers narrowed their curriculum to materials and methods that supported and promoted standardized testing skills and the information tested on the EOC.

REFERENCES

Ballou, D. (2003). Certifying accomplished teachers: A critical look at the national board for professional teaching standards. *Peabody Journal of Education, 18*(4), 201-219. Retrieved October 1, 2006, from the Academic Search Premier database.

Birrell, J. R., & Ross, S. K. (1996). Standardized testing and portfolio assessment: Rethinking the debate. *Reading Research and Instruction, 35*(4), 285-98.

Bloom, B.S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. New York: D. McKay, Co.

Bowker, M., & Irish, B. (2003). *Using test-taking skills to improve students' standardized test scores.* Chicago, IL: Saint Xavier University & Skylight. (ERIC Document Reproduction Service No. ED481116)

Bond, L., Smith, T., Baker, W. K., & Hattie, J. A. (2000). *The certification system of the National Board for Professional Teaching Standards: A construct and consequential validity study.* Greensboro, NC: University of North Carolina Center of Educational Research and Evaluation. Retrieved October 10, 2006 from the National Board for Professional Teaching Standards Web site: http://www.nbpts.org/resources/research/browse_studies?ID=168

Brophy, J. (2000). *Teaching: Educational practices series – 1*. (Report No. SP039106) Geneva, Switzerland: International Bureau of Education. (ERIC Document Reproduction Service No. ED440066)

Calkins, L., Montgomery, K., & Santman, D. (1999). Helping children master the tricks and avoid the traps of standardized tests. *Practical Assessment, Research & Evaluation*, 6(8). Retrieved January 19, 2007 from http://PAREonline.net/getvn.asp?v=6&n=8

Cavalluzzo, L. C. (2004). *Is national board certification an effective signal of teacher quality?* (Report No. 11204CIPR) Alexandria, VA: The CNA Corporation. (ERIC Document Reproduction Service No. ED485515)

Cunningham, G. K., & Stone, J. E. (2005). Value-added assessment of teacher quality as an alternative to the National Board for Professional Teaching Standards: What recent studies say. In Robert Lissitz (Ed.). *Value added models in education: Theory and applications*. Maple Grove, MN: JAM Press.

Darling-Hammond, L., & Wise, A. E. (1985). Beyond standardization: State standards and school improvement. *Elementary School Journal, 85*(3), 315-336.

Firestone, M. A., Mayrowetz, D., & Fairman, J. (1998). Performance-based assessment and instructional change: The effects of testing in Maine and Maryland [Electronic version]. *Educational Evaluation and Policy Analysis, 20*(2), 95-113.

Goldhaber, D., & Anthony, E. (2003). *Teacher quality and student achievement* (Report No. UDS-115). Washington, DC: Department of Education. (ERIC Document Reproduction Service No. ED477271)

Goldhaber, D., & Anthony, E. (2004). *Can teacher quality be effectively assessed?* Washington, DC: The Urban Institute. (ERIC Document Reproduction Service No. ED490921)

Gray, D. L. (1999). Improving your school's test scores. *Principal. 78*(3), 47-48.

Gulek, C. (2003). Preparing for high-stakes testing. *Theory into Practice, 42*(1), 42-50. Retrieved October 1, 2006, from the Academic Search Premier database.

Gunter, P. L., Rellel, J. M., Rice, C., Peterson, S., & Venn, M. L. (2005). Instructional modifications used by national board certified teachers. *Preventing School Failure, 49*(2), 47-54. Retrieved October 1, 2006, from the Academic Search Premier database.

Haladyna, T. M., Nolen, N. S., & Hass, S. B. (1991). Raising standardized achievement test scores and the origins of test score pollution. *Educational Researcher*, *20*(5), 2-7.

Hammerman, E. (2005). Linking classroom instruction and assessment to standardized testing [Electronic version]. *Science Scope*, *28*(4), 26-32.

Herman, J. L., Abedi, J., & Golan, S. (1994). Assessing the effects of standardized testing on schools. *Educational & Psychological Measurement*, *54*(2), 471-483.

Mayer, D. P. (1997). Will new teaching standards be implemented if old tests are the yardstick for success? (Report No. TM027655) New York: College Entrance Examination Board. (ERIC Document Reproduction Service No. ED413347)

McCown, C., & Runnebaum, R. (2001). Rising stars: High school's change process produces higher test scores. *Momentum*, *32*(2), 48-50.

Mehrens, W. A., & Kaminski, J. (1989). Methods for improving standardized test scores: Fruitful, fruitless, or fraudulent?. *Educational Measurement: Issues and Practice*, *8*(1), 14-22.

National Board for Professional Teaching Standards (2007, January 9). Press releases: More than 1,500 N.C. teachers achieve National Board Certification. Retrieved January 15, 2007 from http://www.nbpts.org/about_us/news_media/press_releases?ID=115

National Board for Professional Teaching Standards (2006) Mission. Retrieved January 14, 2007 from http://www.nbpts.org/about_us/background/mission

National Board for Professional Teaching Standards (2006) Resources. Retrieved March 11, 2007 from http://www.nbpts.org/resources/state_local_information/NC

Needham, N. R. (1994). One giant step for teaching. *NEA Today, 13*(4), 4-5. Retrieved October 1, 2006, from the Academic Search Premier database.

Paris, S. G., Lawton, T. A., Turner, J. C., & Roth, J. L. (1991). A developmental perspective on standardized achievement testing. *Educational Researcher, 20*(5), 12-20.

Patton, M.Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications, Inc.

Perrone, V. (1991). On standardized testing. *Childhood Education, 67*(3), 131-142.

Pershey, M. G. (2001). How to create a support network for national board certification candidates. *Clearing House, 74*(4), 201-206. Retrieved October 1, 2006, from the Academic Search Premier database.

Poplin, M., & Rivera, J. (2005). Merging social justice and accountability: Educating qualified and effective teachers. *Theory Into Practice, 44*(1), 27-37. Retrieved October 1, 2006, from the Academic Search Premier database.

Ross, E. W. (1999). Resisting test mania: From the editor. *Theory and Research in Social Education, 27*(2), 126-128.

Rotberg, I. C., Futrell, M. H., & Lieberman, J. M. (1998). National board certification. *Phi Delta Kappan, 79*(6), 462-466. Retrieved September 28, 2006, from the Academic Search Premier database.

Schmidt, C. (2004). The analysis of semi-structured interviews. In U. Flick, E. von Kardorff, & I. Steinke (Eds.), A companion to qualitative research (pp.253-258). Thousand Oaks, CA: Sage Publications Ltd.

Smith, M. L. (1991). Put to the test: The effects of external testing on teachers. *Educational Researcher, 20*(5), 8-11.

Stepanek, J., & Jarrett, D. (1997). Assessment strategies to inform science and mathematics instruction: It's just good teaching. (Report No. SE061102) Portland, OR: Northwest

Regional Educational Laboratory. (ERIC Document Reproduction Service No. ED415114)

Trochim, W. M. (2005). *Research methods: The concise knowledge base.* Cincinnati, OH: Atomicdog Publishing.

Tuerk, P. W. (2005). Research in the high-stakes era: Achievement, resources, and no child left behind. *Psychological Science, 16*(6), 419-425. Retrieved September 28, 2006, from the Academic Search Premier database.

Appendix A. Pre-interview Questionnaire

THE EFFECTS OF HIGH STAKES TESTING ON THE TEACHING PRACTICES OF NATIONAL BOARD CERTIFIED TEACHERS

Read the assessment strategies listed below and think about each strategy in reference to the classes that you teach with a North Carolina End-of-Course test (EOC) at the end and those classes that do not have an EOC at the end. Rank the following assessment strategies in order from those that you use most (#1) to those that you use the least. Please think about and complete the ranking for your EOC classes and non-EOC classes separately. If you do not use the assessment practice in your classroom, place NA in the space provided. Please add any forms of classroom assessment you use in the space provided and include them in your numerical ranking.

Assessment or Teaching Strategy	**EOC classes**	**No EOC**
Multiple-choice tests		
Short answer tests		
Essay exams		
Problem-based questions		
Worksheets/Book work		
Scenarios/case studies		
Projects/products		
Presentations/ performances		
Collaborative grouping		
Portfolios		
Other assessments (list below):		

Table adapted from Brophy, J (2000) Teaching Educational Practices Series International Bureau of Education www.ibe.unesco.org

Please provide a rationale for your selection and ranking of assessments for your classes that have an EOC.

Appendix A continued

Please provide a rational for your selection and ranking of assessments for your classes that do not have an EOC.
Please read the test preparation activities listed below and place a check mark in the box if you teach your students the specific test taking strategy. Indicate strategies for classes with an EOC and without an EOC separately.

Test Preparation Activities	EOC classes	No EOC
Practice bubbling and erasing on answer sheets		
Breaking down unfamiliar or unknown words in questions		
Underlining or highlighting key information in test questions		
Paraphrasing questions into students own words		
Monitoring time during testing		
Narrowing answer choices		
Staying on line with question and number on answer sheet		
Posture, stretching, and break times during test		
Other test preparation activities: (please list them below)		
Practice multiple-choice questions from testbanks, testlets, and DPI sample items		

Compare the amount of time you spend in each class (EOC and non-EOC) working with students on multiple-choice test taking strategies.

Do you feel that teaching test taking strategies is important? Why or Why not?

Appendix B. Interview Questions

Interview Questions

When answering the following questions, please think only of your **classes that have** a North Carolina End-of-Course Test.

1. What would you like for your students to accomplish by the end of the semester/class?

2. Describe your role as a teacher in this class

3. As you develop curriculum materials for this class, what is your most important consideration?

4. How important is it to you that your students perform well on the EOC? Why?

5. Do you use outlines or graphic organizers in your EOC classroom?
    a. What kinds do you use?
    b. Why do you use them?

6. What do you choose for the course, depth or breadth? Why?

7. Is your feedback to students mostly informative or evaluative? Explain.

8. Do you use cooperative learning? If yes, for what types of activities? Do you aim to achieve group or individual goals?

9. How do you use the results of assessments?

10. On average, how much of an EOC class period is spent in
    a. Direct instruction?
    b. Cooperative grouping?
    c. Independent seat work?

11. How do you motivate students in an EOC class?

When answering the following questions, please think only of your classes that do NOT have a North Carolina End-of-Course Test.

12. What would you like for your students to accomplish by the end of the semester/class?

13. Describe your role as a teacher in this class.

14. As you develop curriculum materials for this class, what is your most important consideration?

15. Do you use outlines or graphic organizers?
    a. What kinds do you use?
    b. Why do you use them?

16. What do you choose for the course, depth or breadth? Why?

17. Is your feedback to students mostly informative or evaluative? Explain.

18. Do you use cooperative learning? If yes, for what types of activities? Do you aim to achieve group or individual goals?

19. Do you use commercial test materials (item banks) for assessment? How important are the item banks to this class?

20. How do you use the results of assessments?

21. On average, how much of a class period is spent in
    a. Direct instruction?
    b. Cooperative grouping?
    c. Independent seat work?

22. Do you use the same motivational techniques with the same intensity if the students do not take an EOC at the end of the class?

23. Do you believe that all students are capable of learning? What does this phrase mean to you? Does it mean the same thing for the students in EOC and non-EOC classes?

Appendix C. Reflection Questions after Interview

Follow-Up Reflective Questions

1. Discuss how the North Carolina End-of-Course test has affected your teaching?

2. Discuss how completing the portfolio and obtaining National Board Certification affected your teaching?

3. What, if any, are the greatest differences between how you teach your classes with and without an EOC?