

5-14-2010

The Relationship Between National Board Certification and Teachers' Perceived Use of Developmentally Appropriate Practices

Nancy Ellen McKenzie Lowery
University of New Orleans

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The Relationship Between National Board Certification and Teachers' Perceived Use of
Developmentally Appropriate Practices

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy
in
Curriculum and Instruction

by

Ellen Nancy McKenzie Lowery

B.S., University of South Alabama, 1981
M.Ed., University of New Orleans, 2005

May, 2010

DEDICATION

I dedicate this dissertation to my son, Brennan, and my niece, Megan. You both have helped and supported me throughout this difficult process. Words cannot express my love and appreciation for you.

I also dedicate this to my Shadow. You were always there for me.

ACKNOWLEDGEMENTS

To my son, Brennan, without your encouragement and support, this would have never happened. Thank you for tirelessly reading and re-reading the same words over and over, for listening to me talk incessantly about things that mean nothing to you, and for all you sacrificed while I was working on this. You are an amazing person and I love you with all my heart.

To Megan, without you I would have been thirsty and unfed. Thank you for understanding when I didn't answer a question for four hours, bringing me drinks and food, and for making me go to the beach when I was about to lose my mind. I love you dearly.

To my mother, for teaching me that I can do anything I put my mind to doing. For saying, "You could stand on your head for a week if you had to." Those words echoed in my head for five hard months. I hope you are proud of me, Mom. I love you and miss you.

To Dr. McHugh,
My Chair,

Thank you for believing in me, for encouraging me, for telling me to take breaks, for being an inspiration to me, and mostly, for being my friend through this difficult process. Thank you for encouraging me to pursue a doctoral degree, instilling in me the confidence to continue, and for changing the way I viewed early childhood education. You are my role model, my mentor, and my friend. You will always have a special place in my heart.

To Dr. Paradise,
My Methodologist,

Thank you for always helping me, encouraging me, and pushing me to write better. Thank you for your tireless help, for fast edits, and for solid advice that always made sense. I think the world of you.

To Dr. Austin,

Thank you for inspiring me so many years ago. Thank you for taking time to talk to me about becoming a doctoral student on the sidewalk in front of the Education building. Your encouragement that day stayed with me throughout this process.

To Dr. Kieff,

Thank you for being you and for loving children and advocating for their rights. Thank you for teaching me how to really know children and plan curriculum around that understanding. Thank you for your belief in the value of play and for inspiring me to stand up for my beliefs.

To my students and their families,

Thank you for encouraging me and for understanding when I had to miss school to write. You've all been so very supportive and understanding, and I appreciate you so very much.

To my friends,

Thank you for listening, encouraging, and supporting me. I couldn't have done this without you.

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ABSTRACT

This study utilized a causal-comparative design to investigate a relationship between the independent variable, National Board certification, and the dependent variable, perceived use of developmentally appropriate practices (DAP). A self-developed survey, the *Early-childhood Teacher Inventory of Practices* (E-TIP), was emailed to participants to collect data comparing differences in perceived use of DAP among early childhood teachers. Two hundred and forty-six Non-National Board certified (Non-NBCT) and 135 National Board certified (NBCT) early childhood teachers were surveyed. Inferential and descriptive statistics were used to analyze scores to determine if there was a difference in the mean scores. Descriptives were reported for age, years of teaching experience, grade level currently teaching, ethnicity, degree type, certification type, and degree level. Multiple analysis of variance (MANOVA) and univariate analysis of variance (ANOVA) were used to understand the differences between perceived use of DAP. NBCTs scored significantly higher than Non-NBCTs on the E-TIP in three of the four target areas and on the Total of the Scale. Pearson product-moment correlations were used to determine a relationship between years of experience or level of education and NBCTs' perceived use of DAP. Years of experience were significantly related, but level of education was not. The findings indicate that National Board certified teachers perceive they incorporate more developmentally appropriate practices into their teaching than Non-National Board certified teachers.

Keywords: National Board for Professional Teaching Standards; teacher quality; Developmentally Appropriate Practices.

CHAPTER ONE

INTRODUCTION

Social Concerns for Education

The need for quality teachers has been the focal point of the educational reform movements of the twentieth century. The federal report, *A Nation at Risk: The Imperative of Educational Reform* (The National Commission on Excellence in Education, 1983), was issued in 1983, escalating public concern regarding the state of education in America (Harman, 2001). This report was alarming to many Americans who were suddenly made aware of the social and economic consequences of an education system purportedly “failing to keep pace with a changing American and global society” (Harman, p. 1). As a result of this report, *A Task Force on Teaching as a Profession* (Carnegie, 1986) was created by the Carnegie Forum on Education and the Economy, and their duties included critically examining the teaching profession. Their findings were presented along with recommendations for policy via a report to the American people – *A Nation Prepared: Teachers for the 21st Century* (Carnegie, 1986).

A New Vision for Teaching

These recommendations included a massive plan for reforming and restructuring teaching and learning in schools. The task force envisioned teachers of the future as independently thinking professionals with a depth and breadth of knowledge in their specialization area who would become agents of social change through education (Vandevoort, Amrein-Beardsley, & Berliner, 2004). To many, this document concluded that American education was in a state of

crisis and the solution was to devise a way of identifying and recognizing exemplary teachers in order to advance the quality of teaching and learning in American schools.

A Nation Prepared answered this call with a plan of action that would establish a National Board for Professional Teaching Standards, recommended by The Carnegie Task Force on Teaching as a Profession (Vandevoort et al., 2004). The goal of the board was to create a set of national standards for what excellent teachers would need to know and be able to do, then they would grant advanced certification to the teachers who measured up to those standards (Harman, 2001). The board would be comprised of teachers, professionals from the fields of business and higher education, and state department of education representatives, as well as people from local school boards (Vandevoort et al., 2004). A team was formed consisting of 33 teachers, business people, and experts in the field of education. After procuring funding, the team began to write the bylaws of the National Board of Professional Teaching Standards (NBPTS) and held its first official meeting in October, 1987 to begin to define standards for high quality teaching (Vandevoort et al., 2004).

Teacher Quality

Teacher quality has been in the public focus for decades. Quality teaching is one of the most pivotal factors in determining student success; consequently, there is a need to describe quality teaching and identify quality teachers (Darling-Hammond, 2000). Researchers and experts in the field of education have attempted to identify the characteristics that contribute to the quality of classroom teachers. According to Ashton and Crocker (1987), there is a positive relationship between subject matter knowledge and teacher performance. Some studies suggest that coursework and education determine the quality of the teacher (Ferguson & Womack, 1993). Researchers have found only a small and statistically insignificant correlation between teaching

performance and measures of teachers' intelligence or general academic ability (Schalock, 1979). Murnane and Phillips (1981) found a relationship between teachers' effectiveness and years of teaching experience. Verbal ability has also been found to contribute to teacher success (Murnane, 1985). Evertson, Hawley and Zlotnik (1985) found certified teachers to be more effective than noncertified teachers. Although there are multiple variables that contribute to teacher quality, there appears to be no absolute combination of factors that guarantee high quality teaching.

Teaching Practices

Though teacher quality is hard to define, quality teaching practices in the classroom are even more contentious to identify. Researchers have studied teaching practices and strategies in an effort to identify the ones that contribute to a more successful classroom environment. In an attempt to identify best practices in teaching, Zemelman, Daniels and Hyde (1998) synthesized an increasing body of research relating to classroom teaching. They used the standards of the content oriented professional organizations, such as The National Council of Teachers of Mathematics, the National Council for the Social Studies, The International Reading Association, the American Association for the Advancement of Science, The National Council of Teachers of English, and the National Science Teachers Association, as well as their findings, to develop a list of thirteen interconnected principles that would constitute best classroom practices in teaching. They found that effective teachers use practices that are experiential, expressive, holistic, authentic, reflective, social, cognitive, challenging, constructivist, collaborative, democratic, student-centered, and developmental (Zemelman et al., 1998, p.8).

Mission of the National Board for Professional Teaching Standards

The National Board for Professional Teaching Practices would identify and grant certification to teachers who demonstrated best classroom practices in their teaching (Bennett, 2004). The original mission of the National Board was to bring back faith in public education, encourage teachers' self-perceptions as professionals, and to improve the public opinion of teachers (Harman, 2001). At the heart of this restructuring was the need for increasing the knowledge base for teaching and the advancement of more rigorous teacher education and professional development programs. Another goal of the NBPTS was to raise the perception of the teaching field to professional status (Harman, 2001). To achieve these goals, the National Board needed to establish high standards for teacher knowledge and application and develop a voluntary system of assessment and certification of teachers who meet the standards set forth by the board. The ultimate goal was to improve student learning in schools across America.

The National Board solicited assistance from researchers in the field of education to begin defining what would constitute an accomplished teacher. Six years of work resulted in an articulation of standards that would identify what teachers should know and be able to do to attain advanced certification (Vandevoort et al., 2004). The standards put forth by the National Board are based on five core propositions about teaching and instruction (NBPTS, 2002).

National Board for Professional Teaching Standards Core Propositions

Proposition One expects that teachers are committed to students and their learning (NBPTS, 2002). Proposition Two indicates that teachers know both the subjects they teach and how to teach those subjects to students. Proposition Three emphasizes that teachers are responsible for managing and monitoring student learning. Proposition Four expects that

teachers think systematically about their practice and learn from experience. Proposition Five states that teachers are members of learning communities. Accomplished teachers collaborate with others on policies, curricula, and professional development (NBPTS, 2002). .

Certification Areas

As of 2009, the board offers 25 certificate areas in 16 subject categories that are divided into seven student age categories (NBPTS, 2010). These include advanced certification in Art, Career and Technical Education, English as a New Language, English Language Arts, Exceptional Needs Specialist, Generalist, Health, Library Media, Literacy, Mathematics, Music, Physical Education, School Counseling, Science, Social Studies-History, and World Languages other than English. These areas are further broken down by the age of the teacher's students and include Early Childhood, Middle Childhood, Early and Middle Childhood, Early Childhood through Young Adulthood, Early Adolescence, Adolescence and Young Adulthood, and Early Adolescence through Young Adulthood. There is no list of specific or recommended practices for advanced certification, but the National Board has implanted similar research-based practices in the standards for each certification level and type (NBPTS, 2010). The practices are similar at all levels and across the certification types.

Advanced Certification for Early Childhood Teachers

In 1990, the National Board enlisted the help of an expert panel consisting of early childhood teachers and other educators with expertise in early childhood education to develop a set of advanced standards for teachers of students ages three to eight (Sadowski, 2006). This group became the Early Childhood/Generalist Standards Committee, and they had the job of translating the core propositions into a set of standards that would define outstanding teaching in

early childhood education. The standards for Early Childhood Generalist (EC/Gen) are based on what the board deemed accomplished early childhood teachers know and do in regards to classroom teaching. These are further stated as specific standards for what an early childhood teacher should exhibit in practice. Using the National Association for the Education of Young Children (NAEYC) position statement on developmentally appropriate practice (DAP), relying on current research on how young children learn, and aligning their teaching standards with NAEYC standards, the NBPTS outlined the standards that must be met to become an accomplished early childhood teacher (Sadowski, 2006).

The National Board Certification Process

Through voluntary involvement in the certification process, accomplished early childhood professionals can earn the rank of Early Childhood Generalist (EC/Gen) (NBPTS, 2001). In order to achieve certification, candidates must prepare a series of 4 portfolios to submit for scoring. For EC/GEN certification, candidates submit a series of portfolios which include reflections on teaching practices, evidence of student work, and a written analysis of their teaching style along with video-taped lessons. These portfolio entries include: Examining Children's Literacy Development, Building a Classroom Community, Integrating Mathematics and Science, and Documented Accomplishments: Contributions to Student Learning. Through these portfolio entries, candidates must show they meet the standards set forth by the National Board. The portfolios are mailed to the National Board, and scored by trained assessors. They must also participate in an assessment process which includes demonstration and response activities. Candidates are allotted three years to complete the process (NBPTS, 2009).

The factors that make up accomplished teaching in pre-kindergarten through third grade are outlined through the Early Childhood Generalist standards. The NBPTS outlined types of

competencies accomplished early childhood teachers must possess to teach effectively and provide all young children with high quality early education (Sadowski, 2006).

Early Childhood Generalist Standards

In order to attain national certification, early childhood professionals must demonstrate their ability to improve and engage student learning by meeting not only the five core propositions put forth by the board, but also by meeting the ten Early Childhood Generalist standards (NBPTS, 2001).

In order to meet the standards, accomplished early childhood teachers must prove they:

- (1) have knowledge of child development and use this knowledge to understand and plan for the individual needs of children in order to help each child meet his or her full potential;
- (2) employ methods for teaching children from diverse backgrounds, calling for equity, fairness and diversity among students and instilling these dispositions in their students;
- (3) use multiple forms of assessment to paint a picture of the whole child as an individual learner and person;
- (4) know how to organize learning environments in ways that best facilitate learning and development, while providing a balance of teacher directed and child – initiated learning and using play as a vehicle for learning;
- (5) integrate the curriculum and learning that occurs through centers, project work and playful learning all of which reflect the interests and needs of children;
- (6) find and use resources and technologies to enhance student learning;
- (7) value and stress the value of families as allies in the child’s education and make bonds with families;
- (8) engage in professional development and collaborate with colleagues;
- (9) reflect on their practices and continually learn from this reflection; and
- (10) view early childhood learning as a continuum from preschool through third grade, aligning instruction and learning expectations across grade levels

(Sadowski, 2006, p. 4).

Advanced Program Standards

The National Association for the Education of Young Children's (NAEYC) Standards for Advanced Programs (2002) state:

New research on the importance of early development and learning, and on the role of highly qualified teachers in promoting positive outcomes for children, makes it imperative to produce a new generation of professionals with outstanding preparation well beyond that provided in initial licensure programs (p. 1).

NAEYC has answered that call with a set of standards for early childhood professional preparation in advanced programs. These are the same as the standards for early childhood programs. To meet them, applicants must demonstrate higher levels of proficiency with greater depth and specialization. According to NAEYC, accomplished teachers promote child development and learning; build family and community relationships; observe, document and assess learning to support young children and families; use developmentally effective methods to promote teaching and learning; and participate in professional growth through continuous learning, collaboration and reflective practice.

Developmentally Appropriate Practice

In 1987, the National Association for the Education of Young Children (NAEYC) issued the original position statement *Developmentally Appropriate Practice in Early Childhood Programs* (Bredekemp, 1987). This was put forward in an effort to provide guidelines for the education, care and environments of young children which are in harmony with the child's level of development. These guidelines detail developmentally appropriate practice (DAP) which describes the type of instructional methods endorsed by NAEYC and is one of the foundational

bases of early childhood education. DAP is based on the theories of Vygotsky, Dewey, Piaget, Bruner, Katz, Erikson, Gardner, and other theorists, and reflects a child-centered, interactive, constructivist vision of learning (Bredekamp, 1987; Bredekamp & Rosegrant, 1992). The DAP guidelines served to enhance the quality of early education, encourage professionalism and visibility for the early education field, connect knowledge about child development with teaching practices, assist advocates for early childhood education negotiate with state, local and national school boards and enhance public perception and understanding of early childhood education (Novick, 1996, p. 4).

Benefits of Developmentally Appropriate Practice

There has been extensive research on the effects of developmentally appropriate practices. In early childhood classrooms where learning is child-initiated, children appear to be more creative and use more divergent thinking than students in more didactic, academic - centered classrooms (Hyson, Hirsch-Pasek, & Rescoria, 1990). Further, students in classrooms that incorporate DAP have stronger verbal skills (Dunn, Beach, & Kontos, 1994). In developmentally appropriate classrooms where active learning is child-centered, children exhibit fewer stress behaviors including nail biting, fidgeting and aggressive behaviors, than children in didactic, teacher-directed environments where instruction is typically delivered whole group, worksheets are the main mode of instruction and adjustments are not made to lessons and materials to meet the individual and cultural needs of the child (Burts, Hart, Charlesworth, & Kirk, 1990). Marcon (1999) studied DAP extensively, surmising that children taught in child-centered classrooms demonstrate the greatest mastery of basic skills including receptive, expressive and written communication, daily living skills, interpersonal relationships and social skills, and gross and fine motor skills. In a similar study of DAP, Roberts (1991) studied

African-American students in first-grade classrooms, and found that students taught literacy via developmentally appropriate methods scored significantly higher in all assessment areas than students taught via didactic instruction such as worksheets, whole group lessons, lengthy lessons and direct instruction. African-American students taught using developmentally appropriate methods scored higher in word study skills, reading vocabulary, and comprehension.

Disadvantages of Developmentally Inappropriate Practice

While there are many reported benefits to children who learn in classrooms where teachers use developmentally appropriate practices, researchers have also explored the negative effects of developmentally inappropriate practices (DIP). Burts, Hart, Charlesworth, Mosley, Thomasson and Fleege (1992) studied the effects of developmentally appropriate and inappropriate classrooms on children. Their findings indicated that children in developmentally inappropriate kindergarten classrooms exhibited more stress behaviors than children in developmentally appropriate classrooms. Students in classrooms that were considered less developmentally appropriate fidgeted, bit their nails, and showed more aggression than students in developmentally appropriate classrooms. The researchers found that in developmentally inappropriate classrooms, African- American students displayed more stress than Caucasians during whole group, waiting, workbook/worksheet, and group transition activities. In addition to high levels of stress, developmentally inappropriate practices may also cause a decrease in the child's normal, healthy disposition towards learning (Elkind, 1981). Elkind further stated that being in developmentally inappropriate programs may result in feelings of shame, anxiety, inadequacy and helplessness.

Teacher Use of Developmentally Appropriate Practice

Research has shown that developmentally inappropriate practices are prevalent among early childhood teachers in America. One reason for this problem is that successful implementation of DAP has historically been problematic. According to Dunn and Kontos (1997), only 20-30% of preschool and kindergarten teachers successfully implement developmentally appropriate practices in programs in the United States. This is corroborated by a study by Zeng and Zeng (2005) who found the majority of early childhood teachers either use inappropriate practices or only partially use practices that are considered developmentally appropriate. There are several reasons why teachers have difficulty implementing DAP. These include lack of support from principals and school boards and lack of understanding by parents and teachers. There are many barriers to successful implementation of developmentally appropriate practices including parents, teacher preparation, teacher dispositions, and state and school board mandates (Jones, Burts, Buchanan & Jambunathan, 2000). Another reason for higher use of developmentally inappropriate practices in early childhood classrooms is broad scale educational overhauls such as *No Child Left Behind* (Schmidt, Burts, Durham, Charlesworth & Hart, 2007). The trickledown effect of federal mandates and statewide programs on schools and classrooms results in mandated standardized testing, reading instruction as a first priority in early childhood classrooms, rigid, timed, scripted, and paced teacher proof state-wide curricula, standardized grade level expectations, and heavy emphasis on test preparation and test results for school accountability. Faced with scripted curricula, many teachers default to practices that are developmentally inappropriate (Crawford, 2004).

With state mandates concerning grade level expectations and reading instruction as a main concern in schools, early childhood teachers have difficulty instituting DAP into their

classroom teaching. Teachers typically lack the knowledge or understanding of developmentally appropriate practices to successfully implement them. They also find it difficult to rely on teaching methods that encourage students to explore knowledge through investigations, projects and child-centered learning that is mentally challenging. Often, children end up spending more time in teacher-directed lessons and activities, and less time in child-directed activities and social interactions, both of which are important aspects of developmentally appropriate practices (Geist & Baum, 2005).

National Board Certification Outcomes

Although limited in number, research studies indicate National Board certification impacts teacher quality. Bond, Smith, Baker and Hattie (2000) examined student work, and found that students of National Board certified teachers (NBCT) showed a deeper and more integrated understanding of targeted concepts and that students taught by NBCTs outperformed students taught by Non-NBCTs. Researchers concluded that NBCTs consistently performed better than Non-NBCTs in regards to understanding subject matter, relying on pedagogical content knowledge, creating challenging and engaging lessons, and in their ability to meet individual needs by adapting instruction.

Similarly, in a study of math scores, Cavalluzzo (2004) examined the association between student gains in math in 9th and 10th grades and teachers with National Board certification. Cavalluzzo examined student records to understand if professional characteristics of teachers including degrees, experience, National Board certification and other indicators impacted student achievement in mathematics. She found that NBCTs made a statistically significant impact on the academic outcomes of their students – particularly African-American and Hispanic students, concluding that National Board certification is an effective indicator of teacher quality.

In order to determine teacher perceptions of the National Board certification process, Tracz, Daughtry, Henderson-Sparks, Newman and Sienty (2005) interviewed 25 teachers to discover how the process impacted their teaching practices. The researchers found that teachers who went through the National Board process were more reflective in their teaching practices, and used this reflection to meet the individual needs of their students. The teachers studied used authentic assessment to drive their curriculum, basing student learning and lessons on a variety of assessment information. They also found that teachers who achieved certification viewed themselves as decision making individuals and advocates for students and families, resulting in more professionalism in the teaching field among National Board certified teachers.

According to Bohen (2001), the National Board certification process encourages the development of highly qualified teachers. She found the process to be a valuable vehicle for developing, fostering and increasing teachers' knowledge and skill base. In a study of National Board teachers, Bohen found that teachers achieved greater professional confidence, improved their analysis of instruction, sharpened their focus on student outcomes, and increased their commitment to professional growth. Similarly, Rotberg, Futrell and Lieberman (1998) found that successful completion of National Board certification required expertise and knowledge in application of standards as well as analytical skills. Successful candidates were able to construct stronger lessons and curricula, and successfully evaluate student learning.

In another study of National Board certification, Jacobson (2004) reported the results of research on the value of National Board certification, finding that National Board certified teachers were more effective at raising reading and math scores than teachers who participated in the National Board certification process and did not achieve certification. Additionally, teachers

with National Board certification had more positive impact on students from low-income families and younger students.

In contrast to studies where researchers found National Board certification raised student achievement, increased student test scores, and generally improved teacher quality, Goldhaber and Anthony (2004) examined successful and unsuccessful National Board applicants in regards to effectiveness, teacher quality and whether completing the process was a vehicle for increasing teacher effectiveness. Using test scores from students in third, fourth and fifth grades, the researchers sought to understand if students taught by NBCTs scored higher than students taught by Non-NBCTs. Although the researchers found benefits to students being taught by NBCTs, the researchers found no evidence that the National Board certification process increased teacher effectiveness.

Though most studies indicate that the National Board certification process is beneficial in a general sense, there is nothing to indicate that the process raises teacher quality in early childhood classrooms. *Eager to Learn* (Bowman, Donovan, & Burns, 2000), a report by the Commission on Behavioral and Social Sciences and Education, produced an extensive review of available literature on early childhood teaching and learning in order to recommend practices for teacher training in early education programs. The findings indicate that the professional development of teachers is directly related to the quality of early childhood programs. They also suggest that early childhood program quality positively predicts developmental outcomes for students. A strong relationship was also found between years of education, training, and classroom teaching (King & Luebchow, 2006). Researchers believe that an early childhood teacher's years of education and classroom teaching experience enhances program quality and promotes learning.

In the most recent revision of the NAEYC position statement on developmentally appropriate practices, NAEYC states that the role of the teacher is crucial for improving outcomes for children in early childhood classrooms and that teacher quality and effectiveness is a main concern (Copple & Bredekamp, 2009).

Research on the effects and outcomes of National Board certification is mixed, but there are a few powerful studies (Bond et al., 2000; Cavalluzzo, 2004; Tracz et al., 2005; Bohen, 2001; and Jacobson, 2004) suggesting that teachers who attempt or receive this higher level of certification produce more positive outcomes in student test scores than teachers who do not pursue it. Overall, the evidence that National Board certification improves teacher quality and impacts student learning is not conclusive.

Significance of the Study

One of the ways America is addressing teacher quality is through the process of National Board certification, yet there are few published research studies concerning the impact of this advanced certification. Previous research has shown mixed outcomes. Although research on the effects and outcomes of advanced certification is mixed, there are a few powerful studies suggesting that teachers who achieve certification produce more academic gains in students than teachers who are not certified or do not achieve certification (Bond et al., 2000; Cavalluzzo, 2004; Tracz et al., 2005; Bohen, 2001; and Jacobson, 2004). There needs to be more research on the topic of National Board certification in relation to student gains and teacher quality as well as how the practices are actually used and how teachers believe they are using or not using these practices. There is no research available on advanced certification in the area of Early Childhood Generalist. Research is greatly needed in this area.

Purpose of the Study

This study examines the relationship between the National Board for Professional Standards Early Childhood Generalist certification and teachers' perception of their classroom use of developmentally appropriate practices among early childhood educators. This study was designed to compare the perceived practices of early childhood educators and therefore will provide much needed new knowledge about benefits of National Board certification.

Rationale

State and local school boards and teachers spend hundreds of hours and millions of dollars a year on National Board certification. Since there is no research on the impact of certification on teaching practices, achievement of students, or effectiveness of the certification process for early childhood teachers, this is an appropriate time to begin to understand the effectiveness of certification in the area of Early Childhood Generalist.

Research Questions

Overarching Research Question: What is the impact of attaining National Board certification on early childhood teachers' attitudes, opinions toward, and perceived use of developmentally appropriate practices?

Research Questions:

1. Is there a relationship between National Board certification status and perceived use of developmentally appropriate practices by early childhood generalists?
2. Do National Board certified early childhood teachers perceive that they have greater knowledge of child development and use that knowledge to inform their teaching practices more than their Non-National Board certified peers?

3. Do National Board certified teachers perceive that they use more developmentally appropriate teaching methods and incorporate materials more appropriate to the development of the child than Non-National Board certified teachers?
4. Do National Board certified teachers perceive that they use authentic assessment and developmentally appropriate teaching practices in order to plan meaningful early learning experiences?
5. Do National Board certified teachers perceive that they incorporate more developmentally appropriate instructional practices than Non-National Board certified teachers?
6. Does level of education relate to National Board certified teachers' perceived use of developmentally appropriate practices?
7. Do years of teaching experience relate to National Board teachers' perceived teacher use of developmentally appropriate practices?

Hypotheses

The central research hypothesis of this study was that teachers who have successfully completed National Board for Professional Teaching Standards Early Childhood Generalist certification will perceive they use more developmentally appropriate practices as measured by their scores on the Early Childhood Teacher Inventory of Practices (E-TIP). Teachers who have attained Early Childhood Generalist certification for National Board for Professional Teaching Standards will score higher on the E-TIP than teachers who have not attained this advanced certification.

Methodology

I used a causal-comparative design (Gay, Mills & Airasian, 2006) to assess the relationship between National Board certification and teachers' perceived use of developmentally appropriate practices. My population was public school pre-kindergarten through third grade teachers in Louisiana with three or more years of teaching experience. Using the Early-childhood Teacher Inventory of Practices (E-TIP) that I developed, I surveyed public school veteran pre-kindergarten through third grade teachers.

This study utilized a causal-comparative design to recognize a relationship between the independent variable, National Board certification, and the dependent variable, perceived use of developmentally appropriate practices. A self-developed survey, the E-TIP, was emailed to participants in order to collect data to compare differences in use of developmentally appropriate practice among early childhood teachers. Descriptive and inferential statistics were used to analyze scores from the E-TIP to determine if there was a difference in the mean scores of NBCTs and Non-NBCTs. Descriptive statistics were reported for age, years of teaching experience, grade level currently teaching, ethnicity, degree type, certification type, and degree level. I used a multiple analysis of variance (MANOVA), and univariate analysis of variance (ANOVA) to understand the differences between National Board certified and Non-National Board certified teachers' perceived use of developmentally appropriate practices.

Definition of Terms

Child-centered learning – Child-centered learning includes teaching practices where the individual child's interests, needs and culture serve as springboards for lessons and materials.

Developmentally appropriate practices – developmentally appropriate practices describe the type of instructional methods endorsed by the National Association for the Education of Young Children (NAEYC), and is one of the foundational bases of early childhood education. DAP is based on the theories of Vygotsky, Dewey, Piaget, Bruner, Katz, Erikson, Gardner, and other theorists, and reflects a child-centered, interactive, constructivist view of learning (Bredekamp, 1987; Bredekamp & Rosegrant, 1992).

Developmentally inappropriate practices – Developmentally inappropriate practices describes the type of instructional methods in direct opposition to developmentally appropriate practices. Instruction is typically given whole group, lessons and materials are not adjusted to meet child's individual or cultural needs, and direct instruction is the usual format for learning (Bredekamp & Rosegrant, 1992). The teacher makes the choices about learning, instruction is typically given to the whole group, and activities are designed for a "one size fits all" type of education.

Didactic teaching – Didactic teaching includes lecture style of instruction based using many whole group, skill and practice lessons.

Highly qualified – Highly qualified has many meanings and interpretations. Highly qualified is defined by individual states but typically means the teacher has a bachelor's degree in the subject area of teaching. Some states expect that highly qualified teachers hold a bachelor's degree, have state certification and exhibit mastery of their subject area (Porter-Magee, 2004).

Teacher quality – Teacher quality can be defined many ways and is difficult to evaluate. Teacher quality includes knowledge and ability, certification and licensure, experience,

knowledge of subject matter, in-service training, teaching methods, qualifications, and teaching practices (Whitehurst, 2002).

Teacher-directed learning – Teacher-directed learning typifies the type of practices where the teacher makes most or all of the choices about lessons, materials and curriculum without considering the developing needs and interests of the students (Bredekemp, 1987).

Veteran teacher – As defined by NBPTS, a veteran teacher has three or more years of successful teaching experience (NBPTS, 2001).

Summary

One of the ways America is addressing teacher quality is through the process of National Board for Professional Teaching Standards certification. The National Board used the NAEYC position statement on developmentally appropriate practices along with research on child development to detail what an early childhood teacher should know and be able to do in classroom practices to be an accomplished teacher in the area of Early Childhood Generalist. This chapter provided an overview of my research study on the impact of National Board certification on early childhood teachers' perceived practices. The focus of chapter two is related literature surrounding the topics of National Board certification, teacher quality, and developmentally appropriate practices. In chapter three, I describe in detail the purpose of the research, data collection procedures, research design, instrumentation, instrumentation validity and reliability, statistical analysis procedures, quantitative analysis procedures, and threats to validity. In chapter four, I describe the results of the data analyses. In chapter five, I discuss the results and implications of the study.

CHAPTER TWO

REVIEW OF THE LITERATURE

The purpose of this chapter is to examine the research and literature related to teacher quality, National Board for Professional Teaching Standards (NBPTS) certification in the area of Early Childhood Generalist (EC/Gen), and teacher use of developmentally appropriate practices (DAP). The first section discusses what is known about teacher quality. The second section discusses the conceptual framework of teacher quality, National Board certification and teacher implementation of developmentally appropriate practices. The third section presents what is known about the National Board certification process in regards to student outcomes and teacher and public perceptions. The fourth section discusses developmentally appropriate practices in regards to academic and psychological outcomes for students, and teacher implementation. The fifth section summarizes the literature. This study explores the relationship between National Board certification and teachers' perceived use of developmentally appropriate practices.

Teacher Quality

Teacher quality has been a key concern for education in the United States for years. One of the strongest predictors of student success is the quality of the teacher (Darling-Hammond, 2000). Teacher quality is a multifaceted phenomenon, one that is difficult to define and even harder to test (Lewis, Parsad, Casey, Bartfai, & Farris-Westat, 1999). There needs to be a solid definition of teacher quality and ways to identify those teachers who exhibit good teaching practices (Darling-Hammond, 2000). For years, researchers and experts in the field of education

have worked to identify the characteristics that contribute to the quality of classroom teachers, finding a slight positive relationship between a teacher's knowledge of subject matter and performance (Ashton & Crocker, 1987). Others propose that a teacher's education and coursework have the strongest impact on teacher quality (Ferguson & Womack, 1993). Murnane (1985) found a teacher's verbal acumen was key to successful teaching. No statistically significant correlation could be found between teacher performance and intellectual or academic abilities (Schalock, 1979). Years of teaching experience have been found to contribute to teacher quality (Murnane & Phillips, 1981). Evertson, Hawley and Zlotnik (1985) found certified teachers to be more successful than noncertified teachers.

Definitions of teacher quality range from ones that focus on what should be taught, and how knowledge should be conveyed to the type of content knowledge and training teachers' possess. Two broad categories are generally accepted as typifying what it takes to be a quality teacher: teacher preparation and qualifications, and teaching practices. Teacher preparation and qualifications include pre-service learning, certification, professional development, mentoring, and advanced degrees. Teaching practices broadly describe the behaviors and practices that teachers use in their classrooms (U.S. Department of Education, 1996a).

Whitehurst (2002) defines a highly qualified teacher as one who has a bachelor's degree and is fully licensed to teach. Teacher quality is affected by broad knowledge and ability, certification and licensure, experience, teaching methods, subject-matter knowledge, rigorous and focused in-service training, teaching practices, and congruence between teacher training and standards-based reforms (Whitehurst, 2002, p. 12).

Berliner (2005) takes a more holistic view toward teacher quality. He defines a teacher's value by the amount of impact the teacher has on the lives of students. To Berliner, this goes far

beyond teacher testing for initial certification. Berliner believes teacher qualities must consist of certain rational acts of teaching which include modeling, illuminating, defining, demonstrating, and correcting. These qualities also include psychological acts such as caring, encouraging, rewarding, punishing, evaluating, inspiring, and planning. Berliner further explains that there are moral acts of teaching such as exhibiting honesty, tolerance, bravery, sympathy, empathy, fairness, and respect (p. 208).

Shulman (1987) defined seven areas of professional knowledge for quality teaching. He recognized these to include knowledge of curriculum, materials and programs, teaching strategies, teaching goals and purposes, teaching environment, students' cultures and backgrounds, academic subject matter, and subject specific knowledge for teaching students with special needs (Shulman, p. 8).

Teacher quality indicators can be grouped into three categories – personal resources, performance and effectiveness (Kennedy, 2008). Personal resources include the teacher's beliefs, attitudes and values about students and teaching (Kennedy, 2008, p. 60). Kennedy (2008) believes that knowledge, skills, and expertise are also personal resources upon which teachers draw to meet the needs of learners (p. 60). Performance is the work teachers perform daily in their practices. Performance includes practices in and out of the classroom, and learning activities planned to enhance student learning. And finally, Kennedy (2008) points out that effectiveness refers to the teacher's ability to: raise student achievement on tests, foster personal responsibility and social concern, and motivate students to achieve to their highest ability (p. 60). There have been many approaches to attempt to evaluate teacher quality. These include commercial online questionnaires, local hiring interviews, teacher exams including Praxis and the National Teacher Exam, examining college transcripts and state licensure status, annual

performance evaluations and portfolios, parent feedback, value-added modeling, student test scores, and observations (Kennedy, 2008, p. 61).

Linda Darling-Hammond (2000) conducted a survey of the fifty states and determined that teacher quality is comprised of certain factors that have the ability to impact student achievement. A teacher's verbal ability and content knowledge contributes to teaching quality, as well as education coursework on methods of teaching within the discipline. When teachers use a broad range of practices that are focused and diagnostic, while responding to students and curricular needs, they exhibit teacher quality. The ability to be flexible and resourceful, while showing enthusiasm for learning is a strong contributor as well. Darling-Hammond believes that experience and scores on state licensing exams are also big factors that contribute to the quality of the teacher. There is no single consensus on what determines the quality of the teacher. What is lacking is a clear definition of teacher quality and a clear way to measure it.

Early Childhood Teacher Quality

Teacher quality is even more difficult to define in early childhood classrooms. Pre-kindergarten through third grade teachers are subject to a broad assortment of credentials and entry standards (King & Luebchow, 2006). This difficulty is partly due to the variety and types of environments, curriculum, and teachers for young children and partly due to funding from the state government, federal government or privately funded programs (King & Luebchow). The No Child Left Behind Act of 2001 (NCLB, 2001) was the federal government's first widespread effort to regulate teacher quality. NCLB does not regulate teacher quality among pre-kindergarten programs, nor does it require early educators to have integrated pre-kindergarten through third grade training (King & Luebchow, 2006). According to the statute, highly qualified teachers have earned a bachelor's degree, are licensed by the state, and are competent

in the core academic subjects they teach (NCLB, 2001). Making teacher quality even more confusing among early childhood educators, NCLB does not address what the core academic subject areas for early childhood educators include (King & Luebchow, 2006).

Teaching Practices

Quality teaching practices are equally difficult to identify. Researchers have also been interested in discovering which classroom practices and strategies foster the best classroom environments. Zemelman, Daniels and Hyde (1998) synthesized a large body of research about classroom teaching, in an effort to define good teaching practices. They combined their synthesis with the standards of the content oriented professional organizations, such as The National Council of Teachers of Mathematics, the National Council for the Social Studies, the American Association for the Advancement of Science, The National Council of Teachers of English, The International Reading Association and the National Science Teachers Association, Zemelman et al. and came up with a list of thirteen overarching themes that define best teaching practices. The researchers suggest that the most effective teachers use practices that are experiential, expressive, holistic, authentic, reflective, social, cognitive, challenging, constructivist, collaborative, democratic, student-centered, and developmental (Zemelman et al., p. 8).

National Board for Professional Teaching Standards

History

The National Board for Professional Teaching Standards arose during a critical time for the American educational system. During the 1980s, America was entrenched in the Cold War.

Soviet competition threatened every American freedom, and had implications as far reaching as the American education system. This resulted in a federal report, *A Nation at Risk: The Imperative of Educational Reform* (The National Commission on Excellence in Education, 1983). This highly controversial document was the product of nearly two years of work by a blue-ribbon commission. Claiming poor academic performance at every level, it warned that the American education system was being swept away by a growing wave of mediocrity (The National Commission on Excellence in Education). America was declared a nation at risk in regards to education, and the target was teachers.

During this time, Albert Shanker was the president of the American Federation of Teachers (NBPTS, 2008). Shanker focused on professional issues including more rigorous standards for students and enhanced teacher quality (NBPTS, 2008). He believed that higher standards for students necessitated higher standards for teachers as well (NBPTS, 2008). Part of this plan included an effort to recognize teachers with superior classroom performance (Kahlenberg, 2007). In 1985, Shanker proposed the creation of a national teaching standards and evaluation board, suggesting that this board of people study precisely what a teacher should know and devise a method to assess teacher knowledge. His dream was that the board would eventually be controlled by the teaching profession (NBPTS, 2008), and that through board certification, teaching would be elevated beyond an occupation into a true profession (Kahlenberg, 2007).

At the same time, the Carnegie Forum on Education and the Economy created *A Task Force on Teaching as a Profession* (Carnegie, 1986). The duties of the task force included critically examining the teaching profession. Their findings were presented along with recommendations for policy via a report to the American people – *A Nation Prepared: Teachers*

for the 21st Century (Carnegie, 1986; NBPTS, 2008). The task force also recommended a massive plan for reforming and restructuring teaching and learning in schools.

A Nation Prepared devised a massive plan to improve teaching and learning in schools across America (Harman, 2001). A new view of teachers of the future was part of this plan. The vision was that teachers would be seen as highly specialized professionals who would bring about social change (Vandevoort, Amrein-Beardsley, & Berliner, 2004). They would be the solution to the state of crisis in the American education system, and teachers who were commendable would be identified and recognized. One major result of this report, at the recommendation of The Carnegie Task Force on Teaching as a Profession, was to establish a national certification board for certifying exemplar teachers (Vandevoort et al., 2004). This marked the birth of the National Board for Professional Teaching Standards (NBPTS, 2008).

Mission of the National Board

The original mission of the National Board for Professional Teaching Standards was to establish high standards for teacher knowledge and application, to develop and maintain a voluntary system of assessment and certification of teachers who meet the standards set forth by the national board, and ultimately, to improve student learning in schools across America (NBPTS, 2008). Other goals included restoring public faith in the United States education system and its teachers, as well as bolster teaching to professional status (Harman, 2001).

Teachers and experts from state and local departments of education would comprise the board (Vandevoort et al., 2004). Mary Hatwood Futrell, president of the National Education Association, Lee Shulman, a researcher from Stanford University and Albert Shanker, president of the American Federation of Teachers, were early supporters of the plan to develop a National Board for teaching standards. The original team who led the development of the board was

composed of 33 teacher and leaders in business and education. Once funding was in place, this team articulated the bylaws of the National Board of Professional Teaching Standards. They held their first official meeting in October, 1987 with the purpose of defining standards for exemplary teaching (Vandevoort et al., 2004).

The Board intended to determine best classroom practices and reward the teachers who exhibited them in their classrooms. For this to happen, the Board would have to develop high standards for teacher knowledge and application. They would also create and maintain a voluntary system of assessment and certification of teachers who meet their standards. The National Board for Professional Teaching Standards was founded to characterize outstanding teaching practices and to identify those teachers who achieve the strenuous standards presented by the Board (Bennett, 2004).

Standards Development

Researchers in the field of education assisted the Board in targeting the factors that make up an accomplished teacher. The development of the National Board standards was a six year process resulting in an articulation of the required knowledge and teaching practices for advanced certification (Vandevoort et al., 2004). These standards are based on core propositions about teaching and instruction (NBPTS, 2002).

In 1991, the National Board issued an initial policy statement identifying the five core propositions that provide the foundation for all of the work of the NBPTS (Harman, 2001). These propositions are: teachers are committed to students and their learning; teachers know the subject they teach and how to teach these subjects to students; teachers are responsible for managing and monitoring student learning; teachers think systematically about their practice and learn from experience; and teachers are members of learning communities (Harman, 2001).

Focusing on these five core propositions, members of the NBPTS developed content standards for 31 certification areas which correspond to the developmental ages of the children and subject matter taught (Harman, 2001).

National Board for Professional Teaching Standards Core Propositions

Proposition 1 expects that teachers are committed to students and their learning (NBPTS, 2002). Accomplished teachers believe that all children can learn and are committed to making information and knowledge available to all learners. Recognizing individual differences in students, they treat students equitably while using their knowledge of individual children to plan instruction. They treat students equitably and recognize individual differences in students, using this knowledge to inform their practices. Accomplished teachers also use student interest, skills, observation, knowledge, and family circumstances to adjust their practices. They understand how students develop and learn while integrating theories of learning and intelligence in their practices. Accomplished teachers value the influence of background and culture on students' behavior. They promote students' self-esteem, motivation, character, and civic responsibility. Accomplished teachers encourage students to value and respect individual, cultural, religious, and racial differences (NBPTS, 2002).

Proposition 2 indicates that teachers know both the subjects they teach and how to teach those subjects to students (NBPTS, 2002). Accomplished teachers have deep subject matter understanding, and are aware of how knowledge of their subject matter is organized and connected to other academic areas. Accomplished teachers can apply classroom learning to real world situations, and help their students develop critical and analytical capacities. They know how to communicate subject matter to their students while understanding and drawing upon their students' background knowledge. Accomplished teachers use a wide range of instructional

materials and strategies to differentiate and modify lessons and practice to fit student needs (NBPTS, 2002).

Proposition 3 emphasizes that teachers are responsible for managing and monitoring student learning (NBPTS, 2002). Accomplished teachers construct and sustain classroom environments to maintain student interest while using instructional time to the best advantage of the students. They know how to engage student learning and solicit other adults to help with teaching. Accomplished teachers collaborate with colleagues to enhance their own knowledge about instruction. They engage learners in a structured learning environment and arrange instruction to meet student goals, while setting standards for social interactions among students and teachers. They motivate students to learn and maintain the prolonged interest of learners. Accomplished teachers are able to evaluate individual student progress as well as the progress of the entire class by using a variety of assessments to measure student progress, and are able to articulate performance of their students to parents (NBPTS, 2002).

Proposition 4 details that teachers think systematically about their practice and learn from experience (NBPTS, 2002). Accomplished teachers are curious, tolerant, honest, fair, respectful of diversity, and appreciative of cultural differences. They seek intellectual growth and are able to use creativity to take risks, experiment and solve problems. Accomplished teachers use their understanding of instruction, human development, and subject matter, combined with their understanding of their students as individuals and as a group to plan instruction and incorporate practices to meet student needs. They rely on experience when making decisions about curriculum and instruction. Accomplished teachers are lifelong learners and encourage their students to be as well. They critically reflect on their practice in order to increase their

understanding of teaching methods, expand their understanding, and adjust their practices to incorporate new techniques, findings, and theories (NBPTS, 2002).

Proposition 5 expects that teachers are members of learning communities (NBPTS, 2002). Accomplished teachers collaborate with others on policies, curricula, and professional development. They understand state and local educational objectives and allocate school resources to meet those expectations. Accomplished teachers utilize community resources to engage students in learning. They work in conjunction with parents to productively engage them in the work of the school (NBPTS, 2002).

Certification Areas

There are 25 certificate areas in 16 subject categories, divided into seven student age categories offered by the board as of 2009 (NBPTS, 2010). These advanced certification areas include advanced certification in Art, Career and Technical Education, English as a New Language, English Language Arts, Exceptional Needs Specialist, Generalist, Health, Library Media, Literacy, Mathematics, Music, Physical Education, School Counseling, Science, Social Studies-History, and World Languages other than English. The certifications are also delineated by age groups to include Early Childhood, Middle Childhood, Early and Middle Childhood, Early Childhood through Young Adulthood, Early Adolescence, Adolescence and Young Adulthood, and Early Adolescence through Young Adulthood. Best teaching practices are included in all certification areas and types (NBPTS, 2010).

Early childhood generalist certification.

To address the certification area of Early Childhood Generalist, the NBPTS assembled a group of early childhood educators along with experts in the field of early childhood education

and child development to define the factors that make up “accomplished” teaching in pre-kindergarten through third grade (NBPTS, 2008). The NBPTS detailed an outline of the types of competencies accomplished early childhood teachers must possess to teach effectively and provide all young children with high quality early education (Sadowski, 2006). Teachers completing the National Board certification process can earn the rank of Early Childhood Generalist.

In order to attain national certification, early childhood professionals must meet detailed standards based on several core propositions. National Board certification is a two-fold procedure. Candidates develop and submit a series of portfolios which reflect their teaching methods, show evidence of student work, include written analysis of teaching style and student learning, and video-taped teaching practices. Candidates must also successfully complete a series of assessments through demonstration and response activities at an assessment center. The certification process takes from one to three years to complete.

Accomplished early childhood teachers: 1) have knowledge of child development and use this knowledge to understand and plan for the individual needs of children in order to help each child meet his or her full potential; 2) employ methods for teaching diverse children, calling for equity, fairness and diversity among students and instilling these dispositions in their students; 3) use multiple forms of assessment to paint a picture of the whole child as an individual learner and person; 4) know how to organize learning environments in ways that best facilitate learning and development, while providing a balance of teacher directed and child – initiated learning and using play as a vehicle for learning; 5) integrate the curriculum and learning that occurs through centers, project work and playful learning all of which reflect the interests and needs of children; 6) find and use resources and technologies to enhance student learning; 7) value and stress the

value of families as allies in the child's education and make bonds with families; 8) engage in professional development and collaborate with colleagues; 9) reflect on their practices and continually learn from this reflection; and 10) view early childhood learning as a continuum from preschool through third grade, aligning instruction and learning expectations across grade levels (Sadowski, 2006, p. 4). The Early Childhood Generalist standards are further detailed through examples of the breadth and depth of understanding a teacher must exhibit in order to successfully achieve advanced certification.

Early Childhood Generalist Standards

Using National Association for the Education of Young Children's position statement on developmentally appropriate practice, aligning NBPTS standards with NAEYC standards, and relying on current research on how young children learn, the NBPTS outlined what an accomplished early childhood teacher knows and can do in the classroom, accomplished early childhood professionals can earn the rank of Early Childhood Generalist (Sadowski, 2006).

Standard I, Understanding Young Children, states that accomplished early childhood teachers have extensive knowledge of child development (NPBTS, 2001). They know how the young child develops and learns, and they use that knowledge to plan and facilitate learning. Accomplished early childhood teachers know and understand each child's distinctive needs and potential, and incorporate activities and strategies to meet those needs. They design learning experiences based on children's developmental levels, needs and learning styles (NPBTS, 2001).

Standard II, Equity, Fairness, and Diversity, expects that accomplished early childhood teachers create safe and secure learning environments where individual differences and needs are respected and celebrated (NPBTS, 2001). They understand the diverse nature of our society and teach children to treat others with equity, fairness, and dignity. They incorporate learning

strategies and materials that meet the diverse needs of their learners. Accomplished early childhood teachers respect the diverse cultures, values, ethnicities, languages, and backgrounds of their students (NPBTS, 2001).

Standard III, Assessment, expects that accomplished early childhood teachers use a wide range of assessment measures to document student learning and involve parents in the assessment process (NPBTS, 2001). Accomplished early childhood teachers systematically monitor student behavior and learning through observations, portfolios, running records, and multiple assessment techniques. They use this composite information to improve their teaching, communicate with parents, and build student learning. Accomplished early childhood teachers are adept at collecting and interpreting assessment information, while observing the young child in the classroom context. They view assessment as an ongoing process which informs instruction, curriculum and teaching methods and strategies (NPBTS, 2001).

Standard IV, Promoting Child Development and Learning, expects that accomplished early childhood teachers create challenging and significant learning experiences (NPBTS, 2001). They select suitable tasks and provide opportunities for student choice while utilizing the appropriate resources and materials. Accomplished early childhood teachers teach and nurture the whole child while supporting the child's social, emotional, physical, linguistic, and cognitive development. They plan the learning environment to facilitate the learning and development of young children while modeling, facilitating, coaching, evaluating, and managing student learning (NPBTS, 2001).

Standard V, Knowledge of Integrated Curriculum, states that accomplished early childhood teachers use an integrated curriculum that builds on the child's knowledge base while moving towards more complicated skills, concepts, and understandings (NPBTS, 2001). They

plan and execute lessons and integrative learning experiences from the core academic subjects within and across the disciplines. Accomplished early childhood teachers understand the significance of exploration, discovery, inquiry, and investigation in teaching the young child. They integrate technology, media, and resources into their practice. They provide for guided discovery, creative expression, and social interactions for students (NPBTS, 2001).

Standard VI, Multiple Teaching Strategies for Meaningful Learning, insists that accomplished early childhood teachers provide engaging lessons that encourage social interaction and cooperation (NPBTS, 2001). They use multiple strategies for grouping children while promoting cognition, problem-solving and conceptual learning. Accomplished early childhood teachers use a broad range of teaching strategies and materials to provide for individual learning and multiple paths to understanding (NPBTS, 2001).

Standard VII, Family and Community Partnerships, expects that accomplished early childhood teachers communicate with families to convey information and support student learning (NPBTS, 2001). They work with communities to find support for children who need additional resources. They utilize the community as a source for student learning, and they engage parents and families as partners in the child's learning and development (NPBTS, 2001).

Standard VIII, Professional Partnerships, states that accomplished early childhood teachers are leaders in their profession (NPBTS, 2001). They collaborate with other professionals in the community to build and improve practices and programs for children and their families. Accomplished early childhood teachers are involved in professional development activities and further learning. They are advocates for the field of early childhood education (NPBTS, 2001).

Standard IX, Teachers' Reflective Practice, expects that accomplished early childhood teachers assess, examine and synthesize the quality and success of their teaching practices through ongoing reflection on their teaching (NPBTS, 2001).

The National Board Certification Process

Through voluntary involvement in the certification process, accomplished teachers can earn advanced certification (NBPTS, 2009). Having two chief components, the process takes a full year to complete and includes portfolios and assessments. Candidates must present a collection of 4 portfolios to gain certification in the area of Early Childhood Generalist, including reflective practices, student work samples, video-taped lessons, and written analyses of teaching styles. The portfolio entries are: Building a Classroom Community, Examining Children's Literacy Development, Documented Accomplishments and Contributions to Student Learning, and Integrating Mathematics and Science. Candidates must prove they meet the NBPTS standards and propositions through their portfolio entries, work samples, and reflections on teaching. Candidates mail the portfolios to the National Board, which in turn ships them to trained assessors for scoring. Candidates must also successfully complete the assessment process which includes demonstration and response activities. Candidates are allotted three years to complete the process (NBPTS, 2009).

Cost of National Board Certification

The cost to apply for National Board certification is a staggering \$2300 per candidate. Candidates must pay a nonrefundable application fee. These fees are paid either by the teacher applying to become certified, state departments of education, local school boards, and

occasionally by teacher unions. These scholarships account for the largest portion of the candidates' cost of attempting certification.

National Board Certified Teacher Perspectives

Researchers have shown interest in teachers' perspectives of the National Board certification process. Cascio (1995) examined the value of the National Board certification process. Working in the Teacher Performance Evaluation Program as a teacher assessor, Cascio had the opportunity to observe many teachers and their practices. Cascio began working as a teacher-in-residence for the National Board for Professional Teaching Standards. Through interviews and observations of teachers, he had the opportunity to understand the value of National Board certification to many participants, suggesting that the NBPTS is the greatest hope teachers have for changing the way they are perceived and for changing the way teachers perceive themselves. Cascio found that teachers want to be recognized as professionals, and want to be respectful and respected.

In order to understand teacher perceptions of the National Board certification process, Rotberg, Futrell and Lieberman (1998) conducted a qualitative case study. Open-ended questions were asked of 38 teachers who were seeking or had achieved National Board certification. Data were collected through interviews. Researchers wanted to discover how teachers perceived their motivation to pursue National Board certification, how they perceived the National Board certification process contributed to their teaching skills, and the consistency between the NBPTS standards and their teaching practices. The researchers found that successful completion of the National Board certification process required expertise and knowledge in application of standards and analytical skills. The majority of teachers studied found the certification process to be a powerful professional development experience. From the

advanced certification process, successful candidates were able to construct stronger lessons and curricula, reflect on their practices, and successfully evaluate student learning.

In a similar study of teacher perceptions of the certification process, Place and Coskie (2006) sought to unveil what teachers perceived they learned in regards to literacy teaching and learning. Using qualitative data analysis, the researchers interviewed eight elementary school teachers. They found that going through the NBPTS process had a major influence on how these teachers began to view their teaching practices. Changes in literacy instruction included connecting reading and writing to student comprehension in more concrete ways. Teachers became more aware of the role of oral language in literacy development in the young child. They were more able to modify and target instruction as a result of the certification process. Also, the teachers interviewed believed they were more purposeful in their instruction as a result of certification. Other areas of growth included aligning curriculum and instruction with assessments, collaborating with peers, and reflecting on their own teaching practices. The researchers claim that completion of the NBPTS process is an excellent professional development opportunity and supports literacy teachers' growth.

In another study of teacher perceptions, Bohen (2001) reported findings of a case study of 13 teachers who participated in the certification process of the NBPTS. Through interviews, Bohen documented teacher perceptions before and after the National Board certification process. According to Bohen, the process encourages the development of highly qualified teachers and advances the status of teaching as a valuable profession. She states that teachers need ongoing professional development and that the National Board certification process is a valuable vehicle for developing, fostering and increasing their knowledge and skill base as teachers. The results of the study indicate that teachers interviewed grew in their ability to evaluate instruction, and

focus their attention on student outcomes. The teachers also felt they attained greater professional self-assurance and improved their dedication to professional growth.

Similarly, Keiffer-Barone, Mulvaney, Hillman and Parker (1999) looked at the experiences of National Board candidates. Five veteran English Language Arts teachers who had pursued National Board certification were the subjects of the study. The participants had between five and nineteen years of teaching experience. Participant observation, semi-structured interviews, group meetings and document analyses were used with data gathering and analysis taking place over a five-month period. Content analysis was used to find the three themes of the study, and triangulation through field notes, documents, interviews and meeting transcriptions helped with verifying results. The themes that emerged were team work, team talk, and mentoring. The researchers found that there appears to be some evidence that the experiences of National Board candidates working with a team with a National Board certified teacher (NBCT) as mentor created a learning community of teachers. By working with mentors and other applicants, candidates felt more prepared and more confident about the certification process. Being part of a mentoring group was helpful to these teachers during the National Board certification process.

In another qualitative study of teacher perceptions about NBPTS certification, Tracz, Daughtry, Henderson-Sparks, Newman and Sienty (2005) interviewed 25 teachers to determine how the National Board certification process impacted their teaching practices. Of the 25 teachers interviewed, 22 received certification, and three did not pass the certification process. Of teachers interviewed, 24 were white, and one did not report race. Participants were recruited through a local university that held National Board certification support classes. Researchers conducted semi-structured, open-ended telephone interviews to examine the teachers'

perceptions of specific impacts of this advanced certification using six guiding questions based on the California Standards for the Teaching Profession. Data were collected by taping telephone conversations after receiving permission from subjects. The data were transcribed, then coded and placed into overarching categories, then into themes. The three salient themes that emerged were reflection, assessment and professionalism. Results suggested that teachers who go through the National Board certification process are more reflective, use more authentic assessment to drive their curriculum and use more professionalism in their teaching practices.

In order to determine benefits of National Board certification, Hollandsworth and Meyer (2007) sought to understand if the National Board certification process influenced teachers' use of best practices as defined by Zemelman et al. (1998). Using a multi-site, mixed-methods design, the researchers collected data from ten first and second grade classroom teachers. Five of the teachers held National Board certification, and the other five did not have the advanced certification but were considered highly qualified teachers. Data were collected through observations, artifacts, and interviews. The qualitative data analysis revealed the themes of collaboration, experiential and holistic teaching, transitions, the role of research in teaching, modeling, and scaffolding. From the quantitative data analysis, the researchers determined that National Board certified teachers were more consistent in the use of 11 of the 13 best practices identified by Zemelman et al., (1998). They concluded that NBCTs consistently use best practices in classroom teaching.

Okpala, James and Hopson (2005) wanted to understand perceptions of the effectiveness of National Board certification. They used cluster sampling to identify schools in three districts in North Carolina. Surveys were sent to elementary, middle and high school administrators and personnel. Of the 75 surveys returned, the majority of the participants were Caucasian (54.7%)

and female (80%). The researchers used the National Board Effectiveness Survey, a questionnaire they devised for the study, to determine the perceptions of school personnel of National Board certified teachers. Qualitative data analysis was used to find the themes of reflective practitioner, steps for higher learning, as effective as other teachers, effective classroom skills, and higher behavior expectations. Descriptive statistics were used to determine if differences existed among genders, school levels, school roles, and their perceptions of the quality of Board certified teachers. Public school administrators and school board personnel perceived NBCTs to be very effective in instructional practices, classroom practices, and personal skills.

In an effort to discern what NBCTs learn from advanced certification, Lustick and Sykes (2006) used a mixed methods design to study the process. This dissertation was published on the NBPTS website. The researchers gathered data from 120 science teacher NBPTS applicants over a two year period. They used a recurrent institutional cycle research design, and collected both longitudinal and cross sectional data. Interviews were used to collect qualitative data, and were scored according to the Board standards for accomplished science teaching. From the quantitative data analysis, they found that pursuing advanced certification had a large impact on science teachers' knowledge and understanding of teaching their subject matter. The researchers verified that the certification process of the NBPTS is an effective standards-based learning format for teachers. The qualitative data analysis revealed that the NBPTS process impacts science teachers' practices positively. Changes in teaching practices due to earning advanced status did not occur immediately, but instead happened months or even years after certification.

A strong supporter of the National Board, Galluzzo (2005) reviewed the professional literature on the certification process, determining that the NBPTS model of certification views

teaching as both science and artistry. He found that the NBPTS uses a justifiable process of teacher evaluation that is inclusive and holistic. Galluzzo discusses the fact that colleges and universities are using the standards put forth by the board as the conceptual frameworks for their advanced degree programs. Galluzzo further claims that the National Board is the best hope for changing teacher education, professional development and possibly even the field of education.

Student Outcomes

Researchers have tried to determine if there is a relationship between National Board certification and student outcomes. Cavalluzzo (2004) examined the association between student gains in math in 9th and 10th grades and teachers with National Board certification, along with other indicators of teacher quality. Indicators of teacher quality included experience, state certification in high school, middle school math or other certification, in-subject-area teaching assignment, degree level, salary level, and selectivity of undergraduate education program. The researcher examined 108,000 student records from Miami-Dade County Public Schools in order to assess the effect of teachers' professional qualities on student achievement in mathematics in ninth and tenth grades.

Cavalluzzo (2004) used a multivariate framework to determine whether students who had NBCTs had larger achievement gains in math in the ninth and tenth grades than students with Non-NBCTs, whether students who had teachers who attempted but did not pass National Board certification had larger achievement gains than students with teachers who never attempted the advanced certification, and how the size of student gains relate to indicators of teacher quality. Student end of year exam scores in mathematics were used in the study. Cavalluzzo studied 61 NBCTs and 101 applicants to the National Board certification process. Seven of the nine indicators of teacher quality resulted in evidence of their influence on student achievement. The

most significant of those were having an in-subject-area teacher, National Board certification and state certification. She also found that NBCTs are more effective than Non-NBCTs at raising student math scores. National Board certified teachers made statistically significant impacts on the academic outcomes of their students. Cavaluzzo also found that gains were greater for African-American and Hispanic students being taught by NBCTs than those being taught by Non-NBCTs. The findings indicated that National Board certification is an effective indicator of teacher quality.

In a study of academic performance, Vandevoot et al. (2004) compared elementary students in classrooms of 34 NBCTs and their Non-NBCT peers in 14 school districts in Arizona. A teacher survey consisting of 27 questions was used to obtain information across three topic areas: background information, views concerning assessment, and experiences with the National Board certification process. Twelve of the NBCTs studied had gained Early Childhood Generalist certification, and 22 had achieved Middle Childhood Generalist certification. School principals were surveyed using the Principal Survey, which consisted of 30 questions centered on three areas: background information about the school and the NBCTs at their school sites, and student placement procedures; archival information and impressions about the NBCTs at their school sites; and principal's beliefs about NBCTs, teacher quality and student achievement. Principals rated National Board certified teachers as "one of the best teachers" at school sites 85% of the time. Using four years of test results from the Stanford Achievement Tests in reading, math and language arts, researchers compared student academic performance across grades three through six. In each year of data analyzed, students of NBCTs made greater gains than students of Non-NBCTs, resulting in an average of over one month's growth for students in the areas of English, math and language arts. Researchers claimed that National

Board certified teachers produced more positive effects on student achievement than Non-NBCTs.

In a similar study of student gains, Jacobson (2004) studied teachers who participated in the National Board certification process, examining records of students taught by candidates who applied and passed, and candidates who applied and did not pass the stringent certification process. Jacobson examined over 610,000 state test scores of 3rd, 4th, and 5th grade students in North Carolina during the school years from 1996-97 through 1998-99. Jacobson found that test scores improved an average of seven percent more for students whose teachers achieved National Board certification than students whose teachers did not earn the advanced certification. Further findings suggest that students from low-income families and younger students are more positively impacted by having teachers with National Board certification. Jacobson concluded that National Board certified teachers were more effective at raising student scores in reading and math than teachers who participated in the National Board certification process and did not achieve certification.

National Board certification and student outcomes were also studied by Bond, Smith, Baker and Hattie (2000). The researchers performed a comprehensive review of the research and literature on teaching practices, studies of effects and outcomes of schooling, and comparisons of expert and novice teachers. From this analysis, they identified 15 dimensions on which to compare the 65 teachers selected for the study. All of the participants had attempted advanced certification. Of the participants selected, 31 teachers had successfully completed National Board certification, and 34 had failed the advanced certification. The dimensions included thirteen attributes of excellent teachers, two indicators of student learning and a combination of student outcomes and teacher characteristics. The researchers used archival evidence,

observational visits and scripted interviews with teachers and students to collect data. Evidence about student work was obtained from student work products, writing samples and artifacts. Professional development involvement was obtained from participants via telephone interviews. In each comparison between NBCTs and Non-NBCTs on dimensions of teaching excellence, National Board certified teachers scored higher. They found that students of NBCTs showed a deeper and more integrated understanding of targeted concepts, finding that students taught by NBCTs outperformed students taught by Non-NBCTs. These researchers also concluded that NBCTs consistently performed better than Non-NBCTs in regards to understanding subject matter, relying on pedagogical content knowledge, creating challenging and engaging lessons, and in their ability to meet individual needs through adapting instruction.

In a comparable study, Smith, Gordon, Colby and Wang (2005) wanted to understand if teachers who successfully passed National Board certification fostered a deeper level of learning in their students than their Non-NBCT peers. They studied 64 teachers from 17 states including 35 teachers who applied for and passed National Board certification and 29 teachers who applied for and did not receive certification. Student work samples and standardized writing assessment results were analyzed. Teachers' instructional goals were also analyzed through qualitative and quantitative measures. Board certified teachers' lessons, units and instructional goals were used for these analyses. The researchers found a statistically significant relationship between students' depth of understanding on six of the seven areas measured. The researchers also studied "comparative teaching practices" to understand the effect of National Board certification, finding that NBCTs foster a deeper understanding of student learning due to the way they design instruction and because of the type of student assignments they use during instruction (Smith et al., 2005, p.18).

Although there were some positive outcomes of National Board certification, the research findings are not conclusive that National Board certification positively affects student outcomes. Goldhaber and Anthony (2004) studied the relationship between National Board certification of teachers and achievement of elementary students. Researchers used value-added models to estimate student level achievement to determine if the value added by NBCTs is different from that of Non-NBCTs. The researchers examined National Board applicants using teacher and student records from North Carolina's Department of Public Instruction. The student records included race, gender, learning disability, free or reduced lunch status, English proficiency status, grade and year in school, and test results for grades three through ten. The teacher records included teacher's race, gender, age, degree level, years of teaching, scores on the National Teacher Exam and Praxis, and sometimes SAT and GRE scores. The researchers restricted the study to students in third, fourth, and fifth grades. Using pre- and post-test scores for these students, researchers were able to match 771,537 students with teachers. Approximately 9,000 students had a teacher pursuing this advanced certification during the year the study was performed. Approximately 6,000 students had teachers who were NBCTs. Descriptive statistics were used to examine 610,000 test scores of 3rd, 4th, and 5th graders over three school years. The researchers found many positive outcomes of National Board certification for students and teachers, but the hypothesis was not verified in the research. The researchers found no evidence that the National Board certification process increased teacher effectiveness.

Similarly, McColskey, Stronge, Ward, Tucker, Howard, Lewis and Hindman (2005) found no significant differences in students' achievement based on the Board certification status of their teachers. The research took place in two sections, using data from 307 fifth grade teachers in North Carolina, 25 of which were NBCTs and 282 were Non-NBCTs. Achievement

test scores for fifth grade students taught by NBCTs were used to compare to scores of students taught by Non-NBCTs. The researchers used a value added model to ascertain if there was a gain in student achievement between the groups. Also, teaching practices were rated using observation, surveys, artifacts, and interviews. The teaching practices of NBCTs and Non-NBCTs were compared. Student achievement data were analyzed using regression modeling. Teaching practices were scored across several dimensions including planning and assessment, quality of assignments, teaching efficacy, and observational measures. Researchers found no statistical differences in student achievement test scores in reading or math. In the realm of teaching practices, NBCTs had higher mean scores than Non-NBCTs on cognitive and expressive areas of teaching reading. However, observers rated NBCTs significantly lower on classroom management, organization, positive student relationships, and student responsibility for learning.

Sanders, Ashton and Wright (2005) also found no evidence that National Board certified teachers were more adept at delivering instruction and raising test scores than their Non-National Board certified peers. The research team was hired by the NBPTS to measure the impact of certification and the effects of National Board certification on the quality of teaching and student achievement in American schools. The authors addressed three research questions. First, they wanted to find out if students of NBCTs make greater academic progress than students of teachers who have never attempted the process. The researchers also wanted to know if students of NBCTs make greater academic progress than students of Non-NBCTs who plan to attain certification at some point. Finally, they wanted to ascertain if students of NBCTs make greater academic progress than teachers who attempted certification but failed on their first attempt. High-stakes test scores from 4th and 8th grade exit exams were analyzed to compare NBCTs with

Non-NBCTs. School records of 260,000 students were included in the analysis. End of year grade scores and gain scores were studied. Teacher certification status, years of experience and gender and race of students were examined in relation to test scores. End of year scores and student gains were not significantly higher for students taught by National Board certified teachers. Researchers concluded that students of NBCTs did not receive better quality teaching than students of Non-NBCTs.

Harris and Sass (2007) used a value-added model to study the effects of NBCTs on student achievement using Florida's Department of Education's K-20 Education Data Warehouse. They used curriculum based statewide test scores that took place over a 4 year period. Harris and Sass used records of 6,355 elementary, middle and high school teachers. Using the database, they were able to match students to NBCTs who taught them. They measured the achievement of over a million students using scores on the Sunshine State Standards Florida Comprehensive Achievement Test. The researchers found no significant differences in the effectiveness on math or reading achievement ratings of students taught prior to Board certification and after receiving certification. The researchers found some evidence that NBCTs are more productive in teaching reading, but that this effectiveness drops during the application year. The researchers suggest the value of Board certification varies by grade level and by student group. In conclusion, as with many other studies, little support is found for National Board certification as a signal of teacher quality.

Berry (2007) reviewed previous research on the benefits of NBPTS certification, discussing what he considers to be the 12 most distinguished studies of advanced certification. According to Berry, the reviews are mixed on the value of Board certification. This is partially due to the inconsistency of methods used to evaluate its effectiveness, and partly because of the

limited data used by the researchers. He found that small sample sizes are typically used. After reviewing each study with a critical lens, Berry determined that the overall effects of student achievement by NBCTs are positive. He surmised that the scoring system for the portfolio and testing process is too ambiguous to rule out candidates achieving certification when they are not the exceptional quality teachers the Board seeks to certify. Berry concluded that the National Board has met its original mission of serving as a means for change for educators, but is concerned that NBCTs are more likely to teach in high performing schools than in the high need schools where their expertise is most needed.

This concern is corroborated by Humphrey, Koppich and Hough (2005), who found that only 19% of NBCTs teach in the lowest performing schools in the states with the highest percentages of Board certified teachers. Studying the records of teachers in California, Florida, Mississippi, North Carolina, Ohio and South Carolina, the researchers used descriptive statistics to determine if NBCTs mirror their Non-NBCT peers in school setting choices. The researchers used the school settings of 18,806 NBCTs, finding that 12% teach in schools with the majority (75%) of students receiving free or reduced lunch. Similarly, 16% of NBCTs teach in schools that are composed of primarily (75%) minority students. A mere 19 % work in low performing schools in those states studied. The researchers conclude that NBCTs are much less likely to teach in minority and poverty schools than their Non-NBCT peers. They also believe that the students who need expert teachers the most are not gaining access to their expertise.

In order to further understand the trend of NBCTs steering away from low performing schools, Berry and King (2005) gathered information from 4 urban school districts where there were high numbers of NBCTs. These districts were Charlotte, Chicago, Los Angeles and Miami. From interview transcripts, the researchers used qualitative data analysis to draw their

conclusions. They found that NBCTs want to work for strong leaders where they can use their knowledge and expertise, are willing to move to low performing schools if there are other highly skilled professionals at the school site, and want to receive an additional salary incentive for working in a hard to staff school.

Doubtful of the value of advanced certification, Stone (2002) addressed whether NBCTs are more effective at achieving gains in student learning. Using mixed model statistical methodology, he studied sixteen NBCTs in Tennessee school districts. Stone found that achievement gains for students taught by NBCTs were no greater than those of students taught by Non-NBCTs. He found that the Board certified teachers could not be considered exceptional teachers. Stone suggests that NBCT teacher stipends should be suspended until there is clear evidence that NBCTs are superior educators and the NBPTS process meets public expectations.

Robert Holland (2002) wrote an editorial piece on National Board certification, in an attempt to discredit the National Board certification process. Holland stated that there are no studies to prove that National Board certified teachers show more significant gains in student learning than their non-certified peers. Holland reviews the origination of the National Board, its history, its mission and its weaknesses. Holland questions whether National Board certified teachers are more accomplished, and makes it clear that there have been no studies that prove National Board certified teachers are more capable of raising student achievement than Non-National Board certified teachers. According to Holland, participation in and certification by NBPTS has no effect on teacher quality. Holland analyzed the validity of each of the research studies claiming that NBCTs are more adept at raising student achievement than their Non-NBCT peers. According to Holland, the studies which reportedly show student gains use an unreliable system of measurement for calculating student achievement.

These research studies were summarized by researcher, research question, setting and sample, research design, and results. This is shown in Table 1.

Table 1				
<i>National Board for Professional Teaching Standards Research Studies</i>				
Researcher(s)	Research Question	Setting/Sample	Methodology	Results
Berry, B. & King, T. (2005)	How can school boards recruit and retain NBPTS in low-performing schools?	4 urban school districts.	Qualitative data analysis.	NBCTs want to work for strong leaders, and want an additional salary incentive for working in a hard to staff school.
Bohen, D.(2001)	What are NBPTS candidates' perceptions of the NBCT process?	13 NBCT candidates.	Qualitative analysis.	Teachers achieve greater professional confidence, improve analysis of instruction, sharpen their focus on student outcomes and increase their commitment to professional growth.
Bond, L., Smith, T., Baker, W., & Hattie, J. (2000)	What are the overarching themes in NBPTS certification in relation to student outcomes?	31 teachers who achieved NBCT; 34 who did not achieve NBCT.	Archival evidence, observations, and interviews.	Students taught by NBCTs have more integrated understanding of subject matter. NBCTs rely more on pedagogical knowledge, create engaging lessons, and modify lessons to meet individual needs.
Cascio, C. (1995)	What is the value of the NBPTS certification process?	Classroom teachers.	Interviews and observations were used for a qualitative study.	Suggests NBPTS is a way for teachers to change public perception of teaching.
Cavalluzzo, L. (2004)	Is National Board certification an effective signal of teacher quality?	108,000 ninth and tenth grade math students in Miami, Florida.	Multivariate data analysis.	NBCTs are more effective than Non-NBCTs at raising student math scores.
Galluzzo, G. (2005)	How do the NBPTS standards affect performance assessment and teacher education?			The NBPTS uses a justifiable process of teacher evaluation.

(Table 1, cont.)				
Goldhaber, D., & Anthony, E. (2004)	What is the relationship between NBCTs and elementary student achievement?	3rd, 4th and 5th grade students in North Carolina.	Descriptive and inferential statistics.	There were many positive outcomes of NBPTS certification. The certification process does not produce better teachers.
Harman, A. (2001)	What are the history and motives of the NBPTS?	None.	Document and policy analyses.	A brief but thorough history of the birth and mission of the NBPTS.
Harris, D. & Sass, T. (2007)	What are the effects of NBPTS certification on student achievement?	6,355 elementary, middle and high school teachers.	Value-added modeling.	No significant differences in the effectiveness on math or reading achievement ratings of students taught prior to Board certification and after receiving certification
Hollandsworth, S., & Meyer, C. (2007)	Do NBCTs use best practices?	Ten 1 st and 2 nd grade teachers. 5 NBCTs and 5 Non-NBCTs who were highly qualified.	Mixed-methods.	NBCTs use all 13 best practices consistently in classroom teaching.
Humphrey, D., Koppich, J., & Hough, H. (2005)	To what degree do the teacher assignment choices of NBCTs reflect those of Non-NBCTs?	Teachers in California, Florida, Mississippi, North Carolina, Ohio and South Carolina.	Descriptive statistics.	19 % work in low performing schools.
Keiffer-Barone, S., Mulvaney, C., Hillman, C., & Parker, M. (1999)	What are the experiences of NBPTS candidates while attempting certification?	Five veteran language arts teachers.	Content analysis using field notes, interviews and observation.	Working with mentors helps teachers complete the NBCT process.
Lustick, D., & Sykes, G. (2006)	What do teachers learn from the National Board certification process?	120 NBCT science teacher candidates.	Quasi-experimental.	The certification process had a significant impact on candidates' subject matter knowledge.
McColskey, W., Stronge, J., Ward, T., Tucker, P., Howard, B., Lewis, K., Hindman, J. (2005).	Is there a difference on student achievement between NBCTs and Non-NBCTs?	Data from 307 fifth grade teachers in North Carolina.	Regression modeling.	No significant differences in students' achievement based on the Board certification status of their teachers.

(Table 1, cont.)				
Okpala, C., James, I., & Hopson, L. (2005)	How effective are NBCTs?	3 districts in North Carolina.	Mixed - methods.	Public school administrators and school board personnel perceived NBCTs to be very effective in instructional practices, classroom practices, and personal skills.
Place, N. & Coskie, T. (2006)	What does the portfolio process of the NBPTS teach teachers about literacy teaching and learning?	Eight NBCTs.	Qualitative data analysis.	The NBPTS process helped teachers develop new ways of thinking about their students, learning, and changed the way they see themselves as teachers.
Rotberg, I., Futrell, M., & Lieberman, J.(1998)	What are teacher perceptions of the NBPTS process?	38 teachers who were seeking or had achieved NBCT.	Qualitative case study using open ended questions.	Successful completion of certification requires expertise and knowledge in application of standards and analytical skills.
Sanders, W., Ashton, J., & Wright, S. (2005)	Do NBCTs produce greater student gains than Non-NBCTs?	260,000 4th - 8th grade students in North Carolina.	Quantitative data analysis.	Students of NBCTs did not receive better quality of teaching than Non-NBCTs.
Smith, T., Gordon, B., Colby, S., & Wang, J. (2005)	What is the impact on depth of learning of students taught by NBCTs and Non-NBCTs?	64 teachers from 17 states.	Mixed - methods.	NBCTs foster a deeper level of student learning.
Stone, J. (2002)	Are NBCTs exceptionally effective in bringing about student gains?	16 NBCTs in Tennessee.	Mixed model statistical methodology.	National Board certification does not indicate or promote exceptional teaching.
Tracz, S., Daughtry, J., Henderson-Sparks, J., Newman, C., & Sienty, S.(2001)	What is the impact of NBPTS certification on teaching practices?	25 teachers; 22 NBCTs; 3 who did not achieve certification.	Qualitative data analysis using interviews.	Teachers perceived gains in reflection, assessment and professionalism.
Vandevoort, L., Amrein-Beardsley, A., & Berliner, D. (2004)	What is the relationship between NBCT and student achievement?	37 teachers and 208,650 students from Arizona school districts.	Survey analysis.	Students of NBCTs made greater gains in English, math and language arts than those of Non-NBCTs.

Developmentally Appropriate Practice

Background

Early childhood teacher quality has historically been addressed by the National Association for the Education of Young Children. Due to an increased number of women entering the work force, the 1980s saw an explosion of preschools and daycare facilities (Bevilacqua, 1997). The educational climate of the time was one of pressure for higher student performance. This academic pressure coupled with the need for early care and education for children of working mothers resulted in many low quality and often highly academic child care and preschool programs in the United States (Bredekamp, 1987). In response to this flood of early childhood programs, the National Association for the Education of Young Children (NAEYC) deemed it necessary to devise a position statement on best practices in early childhood education. Relying on 75 years of research about how young children learn, key researchers affiliated with NAEYC identified developmentally appropriate practices (DAP), and began publishing standards for the education and environments of young children (Bredekamp).

In 1987, NAEYC issued the original position statement on developmentally appropriate practices (Bredekamp, 1987) in an effort to provide guidelines for the education, care and environments of young children aged 0-8 years old that are in harmony with a child's level of development. To help teachers and child care providers understand and meet these standards, and to explain the meta-analysis of research, NAEYC published its first position statement on DAP - *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8* (Bredekamp, 1987).

The original DAP guidelines were written partly to counteract the trend of highly academic curricula and didactic teaching methods that were becoming prevalent in early

childhood classrooms (Bredekamp, 1987). The guidelines were supported by a large body of research and based on a child-centered, cognitive developmental point of view (Bredekamp). The guidelines emphasize active learning and interactions with peers, teachers and material. They were introduced to improve the quality of educational experiences for young children by linking child development knowledge to early childhood practices and to encourage professional identity for the field of early childhood education (Bredekamp). The position statement addressed curriculum goals, teaching strategies, child guidance, language and literacy development, cognitive development, physical development, aesthetic development, motivation, parent-teacher relations, assessment, and teacher qualifications in relation to programs for young children (Bredekamp, 1987).

Developmentally Appropriate

As outlined in the document, there are three dimensions of appropriateness: age, individual, and cultural. Developmentally appropriate practices describe the type of instructional methods endorsed by NAEYC and is one of the foundational bases of early childhood education (Bredekamp, 1987). DAP is based on the theories of Vygotsky, Dewey, Piaget, Bruner, Katz, Erikson, Gardner, and other theorists, and reflects a child-centered, interactive, constructivist vision of learning (Bredekamp, 1987; Bredekamp & Rosegrant, 1992).

A key element of developmentally appropriate practices is the belief that the child constructs his or her own knowledge through interaction with the social and physical environment (Bredekamp, 1987). Using knowledge of child development, teachers capitalize on the child's intrinsic motivation to experiment, explore and make sense of his or her own world. The teacher is viewed as one who facilitates, observes, extends and poses problems in order to make learning meaningful for the individual child (Bredekamp).

In developmentally appropriate classrooms, curricular experiences meet children's needs and stimulate learning across the cognitive, social/emotional and physical domains (Bredekamp, 1987). The curriculum is flexible and teachers allow for emergent themes and activities. The environment is designed for active exploration and interactions, and many concrete materials are available for children to use (Bredekamp). Children choose many of their own activities from a wide array of learning experiences and work in small groups or individually much of the day. Teachers use positive guidance to facilitate self-control in children through modeling, encouragement and redirection. Teachers provide children with daily opportunities to develop language, literacy, cognitive, motor and aesthetic abilities through an integrated curriculum (Bredekamp).

Developmentally Inappropriate

In contrast, developmentally inappropriate practice (DIP) is typically in opposition to developmentally appropriate practice. In DIP classrooms, teaching practices are often whole group where direct instruction is the main forum for teaching (Bredekamp, 1987).

Developmentally inappropriate practices are typically formal, teacher directed, skill and drill whole group lessons with heavy emphasis on paper and pencil tasks, worksheets and drill and practice activities that focus on discrete skill development (Bredekamp). DIP also includes reliance on mainly teacher selected activities with little input from the child about interests or individual needs (Bredekamp). Practices that are developmentally inappropriate also include following a prescribed curriculum where learning materials are primarily workbooks, ditto sheets and flash cards. Teaching is not individualized to the needs of the child but rather teachers teach to the middle of the class. The cultural backgrounds and differences between children are either ignored or viewed as problematic. Progress is typically measured by rigid standardized readiness

tests, and results are used to group and label children. Children's behavior is often managed through punishment (Bredekamp, 1987).

Revised Position Statements

In 1997, NAEYC issued a revised edition of the DAP position statement - *Developmentally Appropriate Practice in Early Childhood Programs* (Bredekamp & Copple, 1997). Because of controversy over the standards, the original position statement by NAEYC on DAP was updated and clarified (Bredekamp & Copple). In the revised edition, the use and understanding of developmentally appropriate practices and classroom implications were extended, clarified, restructured and simplified. The editors expanded and refined the original position using the increasing base of knowledge about child development and learning coupled with input of teachers who used the first publication (Bredekamp & Copple).

According to the editors, the revised edition builds and expands on the original position statement (Bredekamp & Copple, 1997). This change was in order to better reflect the vital roles of the teacher, the classroom as a community of learners, culture in the child's development, families in the education of young children, DAP in educating children with disabilities, and the significance of meaningful curriculum and assessment (Bredekamp & Copple). Another reason was the importance of offering and establishing resources to provide developmentally appropriate programs for all children. NAEYC had the goal of making knowledge and resources about DAP more available so that there would be fair and equitable distribution in hopes that all programs for young children would have access to developmentally appropriate programs (Bredekamp & Copple, 1997).

Another purpose for the revision was to move beyond the polarized either/or view of appropriate and inappropriate teaching practice towards both/and thinking to better replicate the

multifarious nature of teaching young children (Bredekamp & Copple, 1997). The juxtaposition of developmentally appropriate and inappropriate practices lead to misconceptions of the original position statement (Bredekamp & Copple). Confusions included the belief that DAP advocated a watered-down curriculum, completely child-directed learning, and learning based solely on play (Bevilacqua, 1997). The newer version provided clear information about classroom use of DAP, moving it into a continuum of practices with developmentally appropriate at one end and developmentally inappropriate at the other end (Bredekamp & Copple, 1997).

In 2009, NAEYC issued the third edition of the DAP position statement, *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8* (Copple & Bredekamp, 2009). According to the editors, the focus of the third edition is excellence and equity, intentionalism and effectiveness, continuity and change, and joy and learning (Copple & Bredekamp). The most recent edition of the DAP position statement intertwines new knowledge about how young children learn with what was previously known about child development (Copple & Bredekamp).

An essential goal of the third edition of the DAP position statement is promoting high quality early childhood education (Copple & Bredekamp, 2009). The third edition of the DAP position statement has a central goal of promoting excellence in early childhood education (Copple & Bredekamp, 2009). In the newly revised edition, NAEYC hopes to clarify misconceptions and misunderstandings related to the previous versions. To achieve this goal, critical issues in early childhood education are explored in the current educational context, and in light of new research and information about child learning (Copple & Bredekamp).

A focus of this newest version is providing the best possible early education for young children, particularly those considered “at risk” in order to lower the achievement gap in later

years (Copple & Bredekamp, 2009). Because early experiences vary vastly among children entering school settings, NAEYC believes that reducing the achievement gap must be a main concern for early childhood educators and policy makers (Copple & Bredekamp).

In the third edition of the developmentally appropriate practices position statement, the definition of DAP is refined to include meeting children where they are academically and socially and facilitating them in reaching challenging and attainable goals (Copple & Bredekamp, 2009). DAP includes teaching practices that are appropriate to the child's age and development, while being in tune with the child as an individual (Copple & Bredekamp). Such practices are responsive to the child's social and cultural context. In developmentally appropriate classrooms, teachers make certain that goals, activities and learning experiences are adapted and modified to the individual child's development and learning and are sufficiently challenging to encourage the child's growth, progress and interest (Copple & Bredekamp).

NAEYC's three editions of their positions statement on DAP reflect ongoing understanding of and changes in the field of early childhood education (Bredekamp, 1987; Bredekamp & Copple, 1997; Copple & Bredekamp, 2009). They are based on the central premise of providing high quality early childhood programs with safe environments where the individual child's needs, social development, culture, and learning are considered and honored when making choices about the educational program (Copple & Bredekamp, 2009).

Academic Outcomes

Researchers have studied academic outcomes of students who are involved in classrooms where DAP is practiced. In a comparative analysis, Roberts (1991) compared the writing abilities of children in a whole language classroom with those of children involved in a skills-based classroom. Thirty-seven African-American students in two first-grade classrooms in a low

socio-economic area school in a large southern city completed a reading and writing assessment after seven months of instruction. For the assessment, a sample of the Stanford Achievement Writing Test for second-grade students was used. One group of students had been instructed using a whole language developmentally appropriate literacy curriculum and the other group of students had been instructed using a traditional curriculum that emphasized skill mastery. Writing samples were analyzed according to content and the ability to express thought. Total words and number of thoughts were also compared between the groups. According to Roberts, results indicated that the whole language group scored significantly higher than the skill-oriented group.

Literacy environments were also studied by Dunn, Beach and Kontos (1994). The researchers studied literacy in day-care centers in order to understand the relationship of day-care quality and children's cognitive and language development. Researchers observed in 30 community-based day-care classrooms. In order to rate literacy activities, researchers used the Observational Rating Scale for Language and Literacy Programs in Preschools (Hyson, Van Triests, & Rauch, 1989). Observations lasted from two to three hours per classroom. Classrooms were rated on items related to early literacy environments. These included the availability of functional print, child access to books, writing and drawing materials, and story dictations. The Early Childhood Environment Rating Scale (ECERS; Harms & Clifford, 1980) was used to rate overall program quality. To assess language development, researchers used the verbal intelligence subscale of the Classroom Behavior Inventory (Schaefer & Edgerton, 1978). Cognitive development was assessed using the Preschool Inventory (Caldwell, 1970). In nine of the classrooms observed, there were no literacy-related activities during free play times. Seven classrooms had two literacy activities available during free play. No classrooms had more than

two literacy activities available during free play time. Although cognitive development was not found to be related to the quality of the classroom literacy environment, children's language development was related to the quality of the classroom literacy environment. Researchers found that the general quality of the literacy environment was a positive predictor of children's verbal intelligence ratings. Researchers also found that certified teachers scored higher on ECERS variables of language and reasoning and on activities that were developmentally appropriate. Researchers suggest that students in classrooms that incorporate DAP have stronger verbal skills.

In an effort to understand how family and school variables relate to measures of academic competence, emotional well-being and creativity, Hirsh-Pasek, Hyson and Rescorla (1990) studied 90 groups of middle to upper SES mothers and their prekindergarten children and followed 56 of those through the end of kindergarten. In order to define academic preschool, the researchers examined parental attitudes and behaviors along with preschool philosophies and practices. Using a modified version of the Developmental Expectations Card Sort (Hess, Price, Dickson, & Conroy, 1981) and the Educational Attitude Scale (Rescorla, Hyson, Hirsh-Pasek, & Cone, 1990), parental attitudes about educational experiences for young children were scored. Maternal behaviors were also assessed from videotaped mother-child learning tasks and a shared mother-child activity to determine mothers' conceptions of adult control and child autonomy. School philosophies and practices were measured by teachers and directors responses on a modified version of the Educational Attitude Scale (Rescorla, Hyson, Hirsh-Pasek, & Cone, 1990). The Classroom Practices Inventory (Hirsh-Pasek et al., 1990) was also used to evaluate preschools. Measures used to assess child outcomes included Academic Skills Inventory (Boehm & Slater, 1981), a modified version of the PASS First Grade Screening Test (Whiteman,

1987), Ravens Colored Progressive Matrices (Valencia, 1984), The Torrance Test of Preschool Creative Thinking (Torrance, 1983), Pictorial Scale of Perceived Competence and Social Acceptance (Harter & Pike, 1984), and the Measurement of Young Children's Attitudes Toward School (Van Trieste, 1989). The above measures were used over an 18-month period. The researchers found little to no differences in academic achievement of children who attended highly developmentally appropriate preschool programs than those who attended highly academic preschool programs. Although preschool type was not an indicator of kindergarten success, the researchers did find that children in child-initiated classrooms scored higher in areas of creativity and divergent thinking than children in academically oriented classrooms. Researchers suggest that highly academic orientations have no positive long term effects on intellectual development and are negatively associated with expressions of creativity in preschool and kindergarten children.

Lasting effects of participation in developmentally appropriate classrooms has been of interest to researchers. Burts, Hart, Charlesworth, DeWolf, Ray, Manuel and Fleege (1993) assessed the long-term effects of appropriate and inappropriate practices. The researchers attempted to understand first grade outcomes of children who attended DAP and DIP kindergarten classrooms. There were 204 students were involved in the study: 102 students were from high socio-economic status (SES), and 102 were from low SES. There were 102 male students and 102 female students. Of the students studied, 80 were African-American and 124 were Euro-American. The Teacher Questionnaire (Charlesworth, Hart, Burts, & Hernandez, 1991) was used to determine the developmental appropriateness of teachers' self-reported beliefs and practices. The Checklist for Rating Developmentally Appropriate Practices in Kindergarten Classrooms (Charlesworth, Hart, Burts, Mosley, & Fleege, 1993) was used by observers to

triangulate the data collected from the questionnaire. In this longitudinal qualitative study, the researchers found that more didactic methods in kindergarten did not produce higher academic outcomes for students in later grades. Low socio-economic status (SES) students who attended highly academic kindergartens began first grade less prepared for learning than any other group studied. In particular, students who attended developmentally appropriate kindergartens had higher reading scores in first grade than students who attended developmentally inappropriate kindergartens. When researchers looked at SES of the students in developmentally appropriate kindergartens, there were no differences in report card grades between high and low SES children. The researchers concluded that children of low SES who attended developmentally appropriate kindergarten classrooms had better reading scores in first grade than children who attended developmentally inappropriate classrooms.

In order to understand the effects of students' participation in different preschool models, Marcon (1999) identified three different preschool models. The Pre-K Survey of Beliefs and Practices (Marcon, 1999) was used to categorize early learning experiences based on five theoretical dimensions. These dimensions include: scope of developmental goals, conception of how children learn, amount of autonomy given to the child, conception of teacher's role, and provision of possibilities for learning from peers. The survey was completed by 193 prekindergarten and Head Start teachers in 123 school and child-care centers. Using cluster analysis, three groups of preschool models were identified. These were child-initiated, academically directed, and middle-of-the-road preschool. From the classrooms identified, 65 classrooms were randomly selected for further participation in the study. Survey responses were confirmed by observations using the Checklist for Rating Developmentally Appropriate Practices (Charlesworth, et al., 1993) and the Classroom Practices Inventory (Hirsh-Pasek, Hyson, &

Rescorla, 1990). From these classrooms, 300 children were randomly selected. They were tested using the Classroom Edition of the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1985). Students were rated on communication, daily living, social and motor skills. Marcon found that students in academically directed and child-initiated preschools outperformed students from the middle of the road preschool model. Marcon also found that children enrolled in the child-initiated preschool model mastered more basic skills. She also found that African-American children in child-initiated preschool models had higher gains in mastery of basic skills than other races. Although, students in the academically directed model had stronger skills in written language, students in the child-initiated model had more gains in expressive and receptive language, personal and interpersonal skills, and gross motor skills than students in the other models. Marcon believed that children taught in child-initiated classrooms that incorporate DAP demonstrated the greatest mastery of basic skills.

Three years later, Marcon (2002) studied this group of students again. She followed these students through their sixth year of school in order to understand the long term effects of preschool participation. She examined 160 students at the end of their fifth year of school and 183 children at the end of their sixth year of school. Marcon looked at school documents including report card grades, retention rates, and special education placements. No significant main effects were found for preschool model when the students were in their fifth year of school in overall grade point average or any specific subject for children studied. Conversely, Marcon found that students who attended developmentally appropriate preschool models showed significant gains in educational goals by their sixth year of school. Children whose preschool experiences had been more academic, less developmentally appropriate, earned significantly lower grades in the sixth year of school than the children who attended developmentally

appropriate programs. Marcon concluded that children's later school success appeared to have been enhanced by more active, child-initiated early learning.

Findings of brain research shed new light on the benefits of participation in developmentally appropriate classrooms. Rushton and Larkin (2001) highlighted links between findings in brain research and principles of DAP, discussing implications for practice in early childhood classrooms. The authors explored many correlations between brain research findings and a constructivist approach to learning. The researchers focused on environments designed to gain the learner's attention, cultivate meaningful connections with prior understanding while building on the knowledge base, and take advantage of short- and long-term memory skills through patterns and active problem solving. The researchers examined principles of DAP in light of research on the developing brain, finding that integrated curriculum, whole language, hands-on learning, authentic assessment, and developmentally appropriate practices echo brain research findings. According to the researchers, classroom environments set up to incorporate principles of DAP encourage the child's instinctive capacity to learn. This research indicates that teaching strategies apparent in DAP classrooms can stimulate particular areas of the brain.

But even with relevant studies such as these, there is a group of educators who are opposed to DAP. Van Horn and Ramey (2003) experimented with different elements of developmentally appropriate practices including integrated curriculum, social and emotional factors and child-centered teaching in an effort to determine whether DAP has positive outcomes in regards to test performance and receptive language. The researchers used multilevel growth curve modeling to estimate overall DAP effects among former Head Start students. Between 1500 and 4700 children were rated. According to the researchers, there were no significant

positive outcomes of DAP in regards to test performance and receptive language. The researchers stated that DAP had little or no effect on children's academic performance.

In a similar stance, Ryan and Grieshaber (2005) urged educators to reconceptualize early childhood education and frame it to fit changing times and a global society. According to the authors, the globalization of economies and cultures has led to more multiracial and multiethnic families in society. Ryan and Grieshaber suggest teachers and teacher education programs move away from constructivism and developmentally appropriate practices into a postmodern view of early childhood teacher education. They also urge teachers to view teaching and learning from more than one perspective and reflect those changes in their pedagogies. According to the authors, a postmodern view of early childhood education would produce teachers who are better prepared to teach in a global society. According to Ryan and Grieshaber, complex societal changes that shape early childhood and family life call for a change in teacher preparation and teaching strategies. Postmodernism draws on a broad range of theoretical perspectives which include critical theory, postcolonial theory, and poststructuralism (Ryan & Grieshaber, 2005). A concern of the researchers is their belief that the majority of research on DAP was conducted on predominantly Caucasian middle class student populations. Ryan and Grieshaber state that DAP is based on the theories of Piaget. There is extensive literature on the theories behind DAP, and those include Vygotsky, Bruner, Katz, Caine and Caine, Cazden, Heath, and many other influential theorists (Bredekamp & Copple, 1997). They also focus on whether or not DAP can accommodate varying cultural backgrounds, but a main premise of developmentally appropriate practices is teaching the individual child, while honoring and respecting the child's culture (Copple & Bredekamp, 2009).

Psychological Outcomes

Academic outcomes are not the only focus when teaching the young child. Educators are also concerned with psychological and emotional issues. Burts, Hart, Charlesworth, Fleege, Mosley and Thomasson (1992) studied the effects of more and less developmentally appropriate classrooms on children. According to the authors, environments that provide for active exploration, concrete experiences and positive guidance where learning is assessed by real objects or high quality pictures are developmentally appropriate for young children. In contrast, environments where teacher-directed, highly structured large group lessons and paper and pencil tasks, rote learning and direct teaching of discrete skills, overreliance on punishment and extrinsic rewards and use of standardized assessment tests are developmentally inappropriate. Using the Teacher Questionnaire (Charlesworth et al., 1991), researchers surveyed 219 early childhood teachers with a 93% return rate. Participants were observed using the Checklist for Rating Developmentally Appropriate Practice in Kindergarten Classrooms. Of the 204 children observed for the study, 99 were males, 105 were females, 80 were African-American and 124 were Euro-American. Of children studied, 103 children were in developmentally appropriate classrooms and 101 children were in developmentally inappropriate classrooms. Each child's SES was determined by the Hollingshead Four Factor Index of Social Status (1975) which uses occupation, education, marital status and gender to determine SES. Stress activities were rated by observation using the Classroom Child Stress Behavior Instrument (Burts, Hart, Charlesworth, & Kirk, 1990). Stress indices included nail biting, physical hostility, fighting, tremors or tics, nervous laughter, among others. The researchers found that children in developmentally inappropriate kindergarten classrooms exhibited more stress behaviors than children in developmentally appropriate classrooms. They also found that in DIP classrooms,

African-American students displayed more stress than Caucasians during most class activities. And therefore, students who attend developmentally appropriate kindergarten classrooms show fewer stress behaviors than those who attend DIP kindergarten classrooms.

In another study of child stress in relation to classroom environment, Fleege, Charlesworth, Burts, and Hart (1992) conducted a mixed methods study in an attempt to understand stress levels in children during standardized testing. Two kindergarten classrooms were chosen based on the willingness of the teachers to participate. One classroom was located in a rural small town and the other was in a suburban subdivision. The sample consisted of 36 children, 26 of whom were Euro-American and 10 of whom were African-American. There were 19 females and 17 males. The students ranged from low to upper middle SES backgrounds, as rated on the Hollingshead's Four Factor Index of Social Status (Hollingshead, 1975). Qualitative data were collected over a seven week period by participant observation in the two classrooms. The observations took place before, during and after the administration of the California Achievement Test (CAT). Data were also collected through interviews with children and teachers, written descriptions, video and audio tapes. At the same time, quantitative data were collected using the Child Stress Behavior Instrument (Burts et al., 1992). Frequencies of stress behaviors were observed and recorded. Quantitative data were collected over ten nonconsecutive days. The subjects were observed in a predetermined random order daily. Seventy-five scans were recorded on each subject before testing and fifteen on each child during testing. Qualitative data were analyzed using constant comparison. Qualitative findings indicated an increase in stress behaviors related during testing and a decrease following testing. Quantitative data analysis indicated that children exhibited significantly more stress during

testing than during typical classroom activities and more passive behaviors during testing than during typical classroom activities.

In an effort to understand if gender, socio-economic status and stress-behaviors were related, Hart, Burts, Durland, Charlesworth, DeWolf and Fleege (1998) studied children in different types of preschool environments. Eleven preschool and day care centers, chosen for their varying degrees of DAP, were asked to participate in the study. Five of the eleven sites agreed to participate in the study, resulting in ten classrooms with varying levels of DAP. To assess each teachers beliefs about and use of DAP, several measures were used. The modified Teacher Beliefs Scale (Charlesworth, Hart, Burts, Mosley, & Fleege, 1993) was used to empirically assess the range of developmental appropriateness based on self-reported teacher data. Also, researchers used the Checklist for Rating Developmentally Appropriate Practice (Charlesworth et al., 1993) to rate teachers on use of developmentally appropriate practices. Two observers rated teachers for three hours to determine developmental appropriateness of teaching practices and classroom activities. Finally, six classrooms were chosen to participate in the study. Three were considered developmentally appropriate and three were considered developmentally inappropriate. Stress behaviors were categorized into: self-with-self which includes hand wringing, mouth manipulation, ear pulling, and rocking; passive behavior which includes withdrawing, off-task behavior, and unfocused gazing; self-with-other which includes disruption, whining, and outbursts; and self-with-object which includes pencil tapping, biting objects, destroying papers, or clumsy behavior. Observers scanned subjects for a two second period in a predetermined random order over four to six nonconsecutive days. Each subject was scanned 60 times, and scans were recorded for each subject. Multivariate analysis were used and guided by the belief that effects of classroom type on activity type participation and stress

behavior would be assessed only as moderated by gender and SES. Findings indicated that children spent significantly more time using workbooks, watching television and waiting for a turn in DIP classrooms than in developmentally appropriate classrooms. In developmentally appropriate classrooms, children spent more time engaged in music, group stories, transitions and center activities. Preschool children in developmentally inappropriate classrooms exhibited twice as many overall stress behaviors as children in developmentally appropriate classrooms. Researchers also found that low SES children in developmentally inappropriate classrooms displayed more stress behaviors than high SES children in developmentally inappropriate classrooms. Another interesting finding was that males in developmentally inappropriate classrooms exhibited more stress behaviors during worksheet activities than females.

In developmentally appropriate classrooms, there were no gender differences during worksheet activities. Results also indicated that children in developmentally inappropriate classrooms exhibited significantly more stress behaviors during whole group activities than children in developmentally appropriate classrooms. The researchers concluded that children from lower SES backgrounds exhibited significantly more overall stress behavior than did high SES children in DIP classrooms. Overall stress behaviors were higher in developmentally inappropriate classrooms than developmentally appropriate classrooms. Further, the researchers found that boys exhibited more stress behaviors than girls in developmentally inappropriate classrooms where direct instruction was the primary mode of teaching.

In addition to high levels of stress, developmentally inappropriate practices may also result in a decrease in the child's normal, healthy disposition towards learning (Elkind, 1981). Elkind further states that being in developmentally inappropriate programs may promote issues of a psychological nature such as shame, anxiety, inadequacy and helplessness.

Perceived self-competence among preschool children was studied by Jambunathan, Burts and Pierce (1999). The researchers sought to understand if there was a correlation between the participation in preschools where DAP was practiced and children's self-competence. Seven early childhood programs were selected on the basis of geographic convenience and ethnic diversity of the children in the program. Perceived self-competence of 91 children was assessed using the Pictorial Scale of Perceived Competence and Social Acceptance (Harter & Pike, 1984). After assessing the children, the participating classrooms were rated using The Checklist for Rating Developmentally Appropriate Practices in Early Childhood Classrooms (Charlesworth et al., 1993) to assess the DAP level in the classrooms. Researchers observed between one and a half and two hours during center, music, recess, lunch and group times. Regression analyses were used, indicating that developmentally appropriate classrooms were significant predictors of peer acceptance on the preschoolers' perception of self-competence. Also, results indicated that curriculum goals, teaching strategies, motivation, and guidance were fairly strong predictors of peer acceptance. The researchers suggest that developmentally appropriate curricula promote opportunities for social development of children. They also put forward that more developmentally appropriate practices were significant predictors of the peer acceptance dimension of the preschoolers' perception of self-competence.

Further supporting research on stress in non-developmentally appropriate situations, Chang, Austin and Percy (2006) studied six children in different family day care facilities. The researchers examined child stress behaviors in relation to the developmental appropriateness of the facilities. The researchers rated three of the childcare providers as using DAP most of the time and three of the providers as rarely or never using DAP. The researchers also studied the way the providers managed children's stress behaviors. Six children were observed for the

study. According to the researchers, fewer active and passive stress behaviors were observed in high functioning DAP facilities; whereas, more active stress behaviors were observed in the low functioning DAP facilities. The researchers also discussed the diverse day care cultures found in the different settings that promote developmentally appropriate practices.

Teacher Use of Developmentally Appropriate Practice

Key to classroom use of developmentally appropriate practices in classrooms is teacher understanding. Dunn and Kontos (1997) reviewed all previous studies on developmentally appropriate practices. They focused on three key issues: how prevalent are DAP in programs for young children, what do teachers and parents think of developmentally appropriate practices and how do these beliefs influence classroom teaching, and how do appropriate and inappropriate practices influence child development. Findings from all major studies on DAP are included in the study, and indicate that as few as one-third to one-fifth of programs for young children exemplify DAP. The researchers also revealed a moderate positive relationship between teacher beliefs and practices. The research indicated that teachers who believe in shared decision-making and autonomy of children were more prone to use practices that were developmentally appropriate. Parents from middle and upper middle class families endorse DAP more often than didactic practices. African-American parents agreed with both didactic methods and DAP, indicating they do not see the two as dichotomous and that different cultural groups perceive DAP differently. Children exhibited more stress behaviors in DIP classrooms and lower stress in developmentally appropriate classrooms, and children from DAP pre-k and kindergarten classes were more confident, creative, autonomous and self-directed. The researchers concluded that teachers seem to know what constitutes appropriate practices, but have difficulty implementing such practices.

In an effort to identify supports and barriers to classroom use of developmentally appropriate practices, Jones, Burts, Buchanan, and Jambunathan (2000) conducted a mixed-methods study. Nine prekindergarten and kindergarten public school teachers were studied. All of the teachers studied graduated from the same university and the same educational program. One teacher was African American and the other eight were European American. All were novice teachers, having between two and four years of experience. Data were collected via surveys, observations and interviews. The teachers' self-reported beliefs and practices were gathered using the Teacher Questionnaire (Charlesworth et al., 1991) which has two subscales: the Teacher Beliefs Scale and the Instructional Activities Scale. The teachers were observed to assess classroom use of DAP and to verify responses on the Teacher Questionnaire using the Checklist for Rating Developmentally Appropriate Practice in Kindergarten Classrooms (Charlesworth et al., 1991). Open-ended interviews were used to collect qualitative data about teachers' perceived supports and barriers to using DAP. The findings indicate that experience, self-reliance, and education were supports; and class composition and school duties were barriers. Administration, co-workers, curriculum requirements, parents, and resources were both supports and barriers to classroom use of developmentally appropriate practices.

To further understand what dissuades teachers from instituting DAP, Wien (1996) conducted a qualitative study in order to examine how the organization of time undermines the use of developmentally appropriate practices in classrooms. Five teachers from five child care centers were selected to participate in the study. Data generation involved observations, interviews, videotaping and review of segments of the classroom programs. Data were collected over a five-month period. Field notes were taken as a participant observer. The results indicate that time constructs in school situations are barriers to the use of DAP in early childhood

classrooms. The three themes that emerged from coding were time in relation to routines, program content and teacher reflection.

To further identify barriers to teacher use of developmentally appropriate practices, Geist and Baum (2005) studied challenges teachers face in the classroom. According to the authors, teachers' choices concerning curriculum and practices are diminishing due to heavy emphasis on standardized testing from educational overhauls such as No Child Left Behind. Barriers to teacher use of DAP include scripted curriculum, time constraints, parental expectations, and use of standardized assessment.

Similarly, Crawford (2004) studied the effects of scripted curricula on teacher use of DAP. Using a case study design, Crawford followed a teacher through her first year of teaching in order to understand how she responded to the scripted basal reading program. During college coursework, the participant was a strong supporter of developmentally appropriate practices. When she began teaching first grade, the participant was required to use a rigid, timed, scripted and paced basal literacy curriculum. Reviewing interview transcripts, Crawford noted a shift in the teacher's practices, moving from developmentally appropriate towards developmentally inappropriate. Crawford concluded that scripted curricula leads to the deskilling of teachers (Apple, 1996). Further, faced with scripted curricula, many teachers default to practices that are developmentally inappropriate.

Use of developmentally inappropriate practices is prevalent. Zeng and Zeng (2005) investigated relationships between developmentally and culturally appropriate practices and teacher education and qualifications. The researchers analyzed self-reported data from 3,047 kindergarten teachers and 866 administrators across the United States. The variables analyzed were teacher practices and beliefs, teacher qualifications, and administrator qualifications.

According to the researchers, 53.6% of kindergarten teachers surveyed reported that children they teach receive two or more hours a day of direct instruction on a typical day. They also found that 52.4% of teachers surveyed believe that testing according to local, state, or professional standards holds a high importance. They also found that a high percentage of kindergarten teachers were poorly qualified which may account for a high frequency of developmentally and culturally inappropriate practices in kindergarten classrooms in the United States. The results of the study suggest that the prevalence of inappropriate practices in kindergarten programs is due to poorly qualified kindergarten teachers and administrators.

National Association for the Education of Young Children Standards

In order to operationalize use of DAP, NAEYC outlined comprehensive proficiencies of what early childhood teachers should know and be able to do at various points in their professional careers. These proficiencies are detailed through three sets of standards of professional preparation for early childhood programs at colleges and universities (NAEYC, 2001). NAEYC's standards are broken down into three levels: standards at the associate degree level, the initial licensure level, and the advanced level. Across the three levels, the standards represent common themes and values (NAEYC). Similar to The National Council for Accreditation of Teacher Education's (NCATE) standards, NAEYC's standards describe the kinds of knowledge, skills and dispositions a well-prepared teacher should possess, while presenting detailed guidance about the preparation of early childhood professionals (NAEYC).

These standards include: 1) Promoting Child Development and Learning; 2) Building Family and Community Relationships; 3) Observing, Documenting, and Assessing to Support Young Children and Families; 4) Teaching and Learning; and 5) Becoming a Professional (NAEYC). The first standard, *Promoting Child Development and Learning*, states that teachers

must understand young children's characteristics and needs, and use this understanding to create healthy, respectful, supportive and challenging environments for all children. They understand the compound and interrelated influences on children's development and learning. Teachers understand the developmental levels of their students and adapt instruction to meet these levels (NAEYC, 2001).

The second standard, *Building Family and Community Relationships*, states that teachers must know and understand family and community characteristics, and use this understanding to create mutual and respectful relationships with the families of their students. They should involve families and communities in many aspects of learning. Teachers use a variety of communication methods to involve families in the education of the child (NAEYC, 2001).

The third standard, *Observing, Documenting, and Assessing to Support Young Children and Families*, states that teachers use responsible and ethical assessment that supports children, their development, and their learning. They understand the benefits, goals and uses of assessment. Teachers use documentation, observation, and a variety of appropriate assessment tools. Assessment results are used to plan instruction, and assessment procedures are sensitive to the cultural and linguistic differences in students. Assessment is ongoing, and is used in partnership with families and other professionals (NAEYC, 2001).

The fourth standard, *Teaching and Learning*, is the most complex of NAEYC's standards. It has four sub-standards, which include: a) Connecting with Children and Families; b) Using Developmentally Effective Approaches; c) Understanding Content Knowledge in Early Education; and d) Building Meaningful Curriculum. According to standard four, teachers combine their understanding of children and families with their use of developmentally effective approaches in order to teach the young child. They use their knowledge of academic disciplines

to plan, execute and assess experiences that support positive development and learning for all children (NAEYC, 2001).

Substandard 4a, *Connecting with Children and Families*, states that teachers understand the importance of relationships in early education. Teachers create responsive relationships with children and their families. They display warm and nurturing interactions with children and their families. Teachers draw on these relationships to adapt teaching practices in order to be culturally sensitive. They emphasize cultural sensitivity among children and develop respectful relationships with children of all cultures (NAEYC, 2001).

Substandard 4b, *Using Developmentally Effective Approaches*, states that teachers should use and understand a wide range of effectual approaches, strategies, and tools in order to positively influence child development and learning. These include using play as a foundation for children's learning, linking the child's language and culture to curricular goals and plans, and drawing from a continuum of teaching strategies. They balance child-initiated with teacher-directed lessons and activities. Teachers use peer tutoring as a teaching tool to promote positive social interactions. They allow free exploration and offer support through scaffolding learning by providing tools to help students learn, then slowly withdrawing the tools when students are able to successfully complete the work on their own. Teachers demonstrate high expectations and strong support for all children. Teachers use sound knowledge of and skills in using technology as a teaching and learning tool. The teacher aims to develop children's self-regulation by guiding students to resolve conflicts in a productive way (NAEYC, 2001).

Substandard 4c, *Understanding Content Knowledge in Early Education*, states that teachers understand the importance of each of the content areas in early education. Teachers

understand the developmental foundations of children's interest in and understanding of each content area (NAEYC, 2001).

Substandard 4d, *Building Meaningful Curriculum*, states that teachers plan clear, appropriate goals for all children. The teacher develops curriculum that supports the young child's ability and motivation to solve problems and develop higher-level thinking skills. The teacher considers multiple modalities of learning when planning, and integrates academic disciplines with other content through emergent and thematic units (NAEYC, 2001).

The fifth and final standard is *Becoming a Professional*, which states that teachers conduct themselves as members of the early childhood profession. Teachers use ethical guidelines and professional standards related to early education. They are collaborative learners who use reflective practices. Teachers make informed decisions and serve as advocates for early education and care (NAEYC, 2001).

In the Standards for Advanced Programs, NAEYC (2002) states:

New research on the importance of early development and learning, and on the role of highly qualified teachers in promoting positive outcomes for children, makes it imperative to produce a new generation of professionals with outstanding preparation well beyond that provided in initial licensure programs (p. 1).

NAEYC has answered that call with a set of standards for early childhood professional preparation in advanced programs. These are the same as the standards for early childhood preliminary licensure. In order to meet them, candidates must display higher levels of ability. These must be deeper and more specialized. These are identical to the standards for early childhood initial licensure, but to meet them, candidates must demonstrate higher levels of competence with greater depth and specialization. According to NAEYC, accomplished teachers

promote child development and learning; build family and community relationships; observe, document and assess learning to support young children and families; use developmentally effective methods to promote teaching and learning; and participate in professional growth through continuous learning, collaboration and reflective practice. The advanced standards are completely aligned with the National Board for Professional Teaching Standards competencies for Early Childhood Generalist certification (NAEYC, 2002).

The studies concerning developmentally appropriate practices were summarized into a table format centering around the areas of researcher, research question, sample and setting, research methodology, and findings. This summary is presented in Table 2.

Table 2				
<i>Developmentally Appropriate Practice Studies</i>				
Researcher(s)	Question	Population	Methodology	Results
Burts, D., Hart, C., Charlesworth, R., Dewolf, D., Ray, J, Manuel, K, & Fleege, P. (1993)	What are the first grade outcomes for children who attended DAP and DIP kindergarten classrooms?	204 students, half male, half female, half high SES, half low SES, 80 African-American, 124 European-American.	Longitudinal qualitative study using checklists, questionnaires, and artifacts.	More didactic kindergarten teaching methods did not produce higher academic outcomes in first grade. Low SES students who attended highly academic programs were less prepared for first grade. Students from DAP kindergarten programs had higher reading scores in first grade. There was no difference in test scores based on SES from students who attended DAP kindergarten programs.

(Table 2, cont.)				
Burts, D., Hart, C., Charlesworth, R., Fleege, P., Mosley, I., & Thomasson, R. (1992)	What are the effects of more or less DAP classrooms on children's stress behaviors?	219 early childhood teachers were surveyed. 204 children were observed; 99 male; 105 female; 80 African-American; 124 European-American. 103 children were in DAP and 101 were in DIP classrooms.	Observation, checklists, and questionnaires were used to compare the behaviors of the students.	Children in DIP classrooms have more stress behaviors than students in DAP classrooms. African-American children exhibited more stress behaviors during most class activities.
Chang, C., Austin, A., & Piercy, K. (2006)	What is the relationship between child stress behaviors in day care facilities and the developmental appropriateness of the facilities?	Six students in day care facilities.	Observation.	There is a relationship between the amount of observed stress behaviors and the developmental appropriateness of the facility.
Crawford, P. (2004)	What are the effects of scripted curricula on teacher use of DAP?	One novice teacher.	Interviews were used for this case study.	Scripted curricula leads to the deskilling of teachers, leading to a higher use of DIP practices.
Dunn, L., & Kontos, S. (1997)	How prevalent are developmentally appropriate practices in programs for young children?	None.	None.	Teachers seem to know what constitute DAP but have difficulty implementing them.
Dunn, L., Beach, S., & Kontos, S. (1994)	What is the relationship of day care quality to children's cognitive and language development?	30 community-based day care classrooms.	Classroom observations using a language and literacy rating scale.	The overall quality of the literacy environment positively predicted children's verbal intelligence ratings.

(Table 2, cont.)				
Fleege, P., Charlesworth, R., Burts, D., & Hart, C. (1992)	What stress behaviors occur in kindergarten children during standardized testing?	36 students; 26 European-American; 10 African-American, in 2 kindergarten classrooms.	Mixed methods study including observations, interviews and audio and video tapes. Stress behaviors were compared using statistical analyses.	Children exhibited significantly more stress during testing.
Geist, E., & Baum, A. (2005)	What are barriers to teacher use of DAP?	Teachers.	Interviews.	Challenges teachers face in the classroom such as heavy emphasis on standardized tests and NCLB are barriers to teacher use of DAP.
Hart, C., Burts, D., Durland, M., Charlesworth, R., DeWolf, M., & Fleege, P. (1998)	Are gender and SES status related to demonstrated stress behaviors in preschool children?	6 classrooms; 3 DAP; 3 DIP.	Multivariate analysis.	Children in DIP classes exhibited twice as much stress behavior. Males in DIP classrooms exhibited more stress behaviors than females. Lower SES students exhibited more stress in DIP programs.
Hyson, M., Hirsh-Pasek, K., & Rescorla, L. (1990)	What are preschool parents' attitudes and behaviors towards preschool philosophies and practices?	Ninety groups of middle to upper socio-economic status mothers and their children.	Affective scales, tests and inventories to collect data.	Little to no difference was found between the achievement of children in highly developmentally appropriate and highly academic preschool programs. Children in DAP classes scored higher in creativity and divergent thinking.
Jambunathan, S., Burts, D., & Pierce, S. (1999)	Is there a correlation between participation in preschools where DAP is practiced and the self-competence of the children who attend those classes?	91 children from 7 early childhood programs.	Scales, checklists and observations. Regression analyses.	DAP classrooms are significant predictors of peer acceptance. Curriculum goals, teaching strategies and motivation and guidance are also strong predictors of peer acceptance.

(Table 2, cont.)				
Jones, L., Burts, D., Buchanan, T., & Jambunathan, S. (2000)	What are supports and barriers to beginning prekindergarten and kindergarten teacher use of DAP?	9 prekindergarten and kindergarten teachers from the same university; 8 European-American; 1 African-American.	Surveys, questionnaires, observations and interviews to gauge teacher self-reported beliefs and practices.	Experience, self-reliance and education were supports to use of DAP. Class composition and school duties were barriers to use of DAP.
Marcon, R. (2002)	What is the impact of preschool model on skill mastery of fifth and sixth grade students?	160 fifth grade students and 183 sixth grade inner-city students.	Test scores were analyzed to compare groups of students.	Students who attended DAP preschool models showed significant gains in educational goals by the end of their sixth year of school. Students from more academic preschool models had significantly lower test scores than those who attended DAP preschool models.
Marcon, R. (1999)	What is the impact of preschool model on skill mastery of preschool children?	300 children from 65 classrooms in inner-city settings.	Surveys, scales and inventories were used to compare preschool children. Cluster analysis of teacher survey responses.	Preschool children in the child-initiated model exhibited greater skill mastery than children in models that emphasized academics and skill instruction.
Roberts, R. (1991)	How do the writing abilities of children in whole language classrooms compare to those of children involved in a skills based classroom?	37 African-American first grade students.	Quasi-experimental.	The whole language group of students scored higher than the skills based group of students on the Stanford Achievement writing test.

(Table 2, cont.)				
Rushton, S. & Larkin, E. (2001)	What are the links between brain research and principles of developmentally appropriate practice? What are the implications for practice?	None.	Compared principles of DAP to new research on the developing brain.	Integrated curriculum, whole language, hands on learning, and authentic assessment echo brain research findings.
Ryan, S., & Grieshaber, S. (2005)	Should teacher education programs move away from constructivism and DAP towards a post-modern perspective more in line with a global society?	None.	None.	A post-modern view of early childhood education would produce teachers who are better prepared to teach in a global society.
Van Horn, M., & Ramey, S. (2003)	Does DAP have positive outcomes in regards to test performance and receptive language?	Between 1500 and 4700 children former Head Start students.	Multi-level growth curve modeling.	No significant positive outcomes of DAP in regards to test performance and receptive language were found.
Wien, C. (1996)	What dissuades teachers from using DAP?	5 teachers from 5 childcare centers.	Field notes, observations, interviews and videotaping to perform a qualitative study.	Time constructs in school situations are barriers to the use of DAP.
Zeng, G., & Zeng, L. (2005)	What is the relationship between DAP and teacher education and qualifications?	3047 kindergarten teachers and 866 administrators.	Hierarchical linear modeling was used for this longitudinal study.	A high percentage of kindergarten teachers were poorly qualified which may account for the high frequency of developmentally and culturally inappropriate practices in classrooms.

Summary

The debate continues concerning teacher quality and best practices in early childhood education. In an effort to provide guidelines for teachers of young children, the National Association for the Education of Young Children delivered a position statement on developmentally appropriate practices and detailed standards for licensure (NAEYC, 2001).

Research supports the use of developmentally appropriate practices and connects DAP to the developing brain of the young child (Rushton & Larkin, 2001). Further, in early childhood classrooms where learning is child-initiated, children emerge with stronger language abilities than students in more didactic, academic -centered classrooms (Dunn, Beach, & Kontos, 1994). Additionally, students in classrooms that incorporate DAP score higher on tests of basic skills (Marcon, 1999), and display fewer stress behaviors than children in inappropriate environments (Burts, et al., 1992). Research indicates that student involvement in developmentally inappropriate programs may stimulate negative psychological effects including shame, anxiety, inadequacy and helplessness (Elkind, 1981). Students in classes and day care facilities where DAP is used have a higher view of their own self-competence (Jambunathan, Burts, & Pierce, 1999).

Despite some empirical evidence that indicates developmentally appropriate practices encourage higher academic gains, induce fewer stress behaviors, and foster positive attitudes and feelings towards learning and self worth, the majority of teachers, principals and school boards endorse didactic, direct instruction (Dunn & Kontos, 1997). Successful implementation of DAP continues to be difficult, and researchers believe this disconnect occurs because of lack of training and expertise among teachers and principals (Zeng & Zeng, 2005). Poorly qualified teachers and teaching out of certification area may account for a high frequency of

developmentally and culturally inappropriate practices in kindergarten classrooms in the United States (Zeng & Zeng, 2005). Additionally, principals who have not had early childhood training may add to the high use of developmentally inappropriate practices observed in schools (Zeng & Zeng, 2005).

Research indicates that teachers who believe in the value of developmentally appropriate practice use it in their practices, but teachers find many hurdles to using DAP (Dunn & Kontos, 1997). There are a few supports and many barriers to incorporating practices that are developmentally appropriate. Understanding, knowledge, classroom experience and self-reliance are supports; time constraints, class composition and duties at school are considered barriers (Jones, Burts, Buchanan, & Jambunathan, 2000). The organization of time in school settings can serve as a barrier to successful use of developmentally appropriate practices (Wien, 1996). Other barriers include scripted curricula and heavy emphasis on test preparation (Crawford, 2004; Geist & Baum, 2005). Shared decision making with students can serve as a support to developmentally appropriate practices (Dunn & Kontos, 1997). Also, when early childhood teachers learn use reflection to refine their teaching practices, they are much more successful with incorporating developmentally appropriate practices (Dunn & Kontos, 1997). Further, teachers who are confident in their abilities to teach young children are more likely to incorporate DAP in their practices (Jones, Burts, Buchanan & Jambunathan, 2000). Advanced training and professional development may lead to deeper understanding of developmentally appropriate practices resulting in more use in classroom practices. Administrators at the school board and school site level are perceived as both supports and barriers to teacher use of developmentally appropriate practices (Jones et al., 2000; Zeng & Zeng, 2005).

In the most recent revision of their position statement on developmentally appropriate practices, NAEYC states that the role of the teacher is crucial for improving outcomes for children in early childhood classrooms and that teacher quality and effectiveness is a main concern (Copple & Bredekamp, 2009). One of the ways America is addressing teacher quality is through the process of National Board certification. The National Board for Professional Teaching Standards used NAEYC's position statement on developmentally appropriate practices along with research on child development to detail what an early childhood teacher should know and be able to do in classroom practices in order to be an accomplished teacher in the area of Early Childhood Generalist (Sadowski, 2006).

Research on the effects and outcomes of National Board certification is mixed, but there are a few powerful studies suggesting that teachers who attempt or receive certification produce more positive outcomes in student test scores than teachers who do not pursue certification. Research indicates that National Board certification is an effective indicator of teacher quality (Cavaluzzo, 2004). Some researchers found that teachers who achieve National Board certification positively impact student learning and raise student test scores and performance (Cavaluzzo; Vandevoort et al., 2004). Additionally, researchers believe that students of NBCTs have a deeper understanding of subject matter than students taught by Non-NBCTs (Bond, et al., 2000). Researchers also found that NBCTs are more adept at meeting the individual needs of learners (Bond et al.). Other researchers found that teachers who undergo and achieve certification develop and cultivate an increased knowledge and skill base, analyze instructional purposes and student outcomes, and use the process for professional growth (Rotberg et al., 1998).

In studies of teacher perceptions, researchers found that teachers believe the certification process helps them become better teachers by targeting instruction, improving their knowledge of subject matter, increasing their ability to adjust and individualize instruction, and heightening their effectiveness at developing challenging and engaging lessons (Place & Coskie, 2006; Bohen, 2001; Keiffer-Barone et al., 1999; Tracz et al., 2005; Okpala et al., 2005; Lustick & Sykes, 2006; and Galluzzo, 2005). Although National Board certification can be viewed as a useful indicator that a teacher is effective in the classroom, there is no research that proves whether the certification process itself makes teachers more effective or if high-quality teachers are more apt to become involved in the certification process.

In value-added studies, researchers believe that National Board certification improves instruction and student test scores. Though there is some available evidence supporting the claim that students of NBCTs exhibit higher academic achievement than those who are taught by Non-NBCTs, no study has conclusively shown that National Board certified teachers are better than their Non-National Board certified peers at raising student achievement.

The evidence that National Board certification improves teacher quality and impacts student learning is not conclusive. Some research suggests that National Board certification has no impact on student learning. Researchers found that students of NBCTs did not receive better quality of teaching than students of Non-NBCTs (Sanders, Ashton, & Wright, 2005). Other researchers found no evidence that the National Board certification process improved teacher quality (Goldhaber & Anthony, 2004).

Since the creation of the National Board in 1987, 64,000 teachers have achieved certification (NBPTS, 2008). State and local school boards and teachers spend hundreds of hours and millions of dollars a year on National Board certification, yet there is little empirical

evidence that teachers who achieve certification positively impact student learning. There is no research available on National Board certification in the area of Early Childhood Generalist. Research is greatly needed in this area. Since there is no research on the impact of certification on early childhood teaching practices or student outcomes, this is an appropriate time to begin to understand the effectiveness of this advanced certification in the area of Early Childhood Generalist.

In this chapter, I discussed the literature surrounding National Board certification and developmentally appropriate practices as they relate to this study. In chapter three, I will discuss the methodology for this study, including sampling, procedures, data collection, and data analysis.

CHAPTER THREE

METHODOLOGY

The methodology for the study on the relationship between National Board for Professional Teaching Standards (NBPTS) certification in the area of Early Childhood Generalist (EC/Gen) and early childhood teachers' perceived use of developmentally appropriate practices (DAP) in pre-kindergarten through third grade teacher sample populations is described in this chapter. The relationship between National Board certification and developmentally appropriate practices has not been explored in the literature and may be beneficial to informing policy and practice. I used a causal comparative design (Gay, Mills & Airasian, 2006) to assess veteran (having three or more years teaching experience) teachers' and National Board certified teachers' perceptions of use of DAP. Research design and questions along with hypotheses examining the relationship between these two constructs is detailed. Next, participants and sampling procedures are discussed. Instrumentation, including validity and reliability issues related to measurement of concepts, is included in this chapter. Finally, the plan for quantitative data collection and analysis is presented.

Research Questions

Overarching Research Question: What is the impact of attaining National Board certification on early childhood teachers' attitudes, opinions toward, and perceived use of developmentally appropriate practices?

Research Questions:

1. Is there a relationship between National Board certification status and perceived use of developmentally appropriate practices by early childhood generalists?
2. Do National Board certified early childhood teachers perceive that they have greater knowledge of child development and use that knowledge to inform their teaching practices more than their Non-National Board certified peers?
3. Do National Board certified teachers perceive that they use more developmentally appropriate teaching methods and incorporate materials more appropriate to the development of the child than Non-National Board certified teachers?
4. Do National Board certified teachers perceive that they use authentic assessment and developmentally appropriate teaching practices in order to plan meaningful early learning experiences?
5. Do National Board certified teachers perceive that they incorporate more developmentally appropriate instructional practices than Non-National Board certified teachers?
6. Does level of education relate to National Board certified teachers' perceived use of developmentally appropriate practices?
7. Do years of teaching experience relate to National Board teachers' perceived teacher use of developmentally appropriate practices?

Derivative Research Hypotheses

Hypothesis 1: National Board certified teachers will score higher on the E-TIP than Non-National Board certified teachers.

Hypothesis 2: National Board certified teachers will score higher on the clustered subscale 1- Knowledge of Child Development of the E-TIP than Non-National Board certified teachers.

Hypothesis 3: National Board certified teachers will score higher on the clustered subscale 2- Methods and Materials of the E-TIP than Non-National Board certified teachers.

Hypothesis 4: National Board certified teachers will score higher on the clustered subscale 3 – Teaching and Learning, than Non-National Board certified teachers.

Hypothesis 5: National Board certified teachers will score higher on the clustered subscale 4 – Instructional Practices of the E-TIP than Non-National Board certified teachers.

Hypothesis 6: There is a relationship between greater levels of education and perceived used of developmentally appropriate practices for National Board certified teachers.

Hypothesis 7: There is a relationship between greater years of experience and perceived use of developmentally appropriate practices for National Board certified teachers.

Research Design

Participants

There are approximately 3000 pre-kindergarten through third grade public school teachers practicing in the state of Louisiana. My population was Louisiana public school pre-kindergarten through third grade teachers with three or more years of teaching experience, which is approximately 2000 veteran teachers.

Characteristics of the Sample

The sample for this study was drawn from pre-kindergarten through third grade public school teachers in Louisiana. Criteria for participation included being a state certified teacher

with 3 or more years of teaching experience. Teacher email addresses were obtained from school and school board websites. A total of 2638 emails were sent to pre-kindergarten through third grade teachers in public schools in Louisiana. A total of 410 emails were returned undeliverable and were deleted from the potential pool, yielding a sample of 2228 possible participants. Surveys were returned by 413 participants, representing a return rate of 18.53% for all participants. A total of 1963 surveys were emailed to Non-National Board certified teachers with a return rate of 13.75%. A total of 265 surveys were emailed, faxed, or mailed to National Board certified teachers with a return rate of 54%. Thirty-one participants' surveys were unusable because the participants did not fit the criteria for selection; therefore, the number of usable returned surveys was 382. There are 135 National Board certified teachers participating in the study, and 247 Non-National Board certified teachers participating. The results are displayed in Table 3.

Table 3
Frequency Distribution by National Board certification status

Status	F	%
National Board certified	135	35.3
Non-National Board certified	247	64.7
Total	382	100.00

Participants were asked to identify their types of degrees. The majority of respondents held elementary education degrees (61.8%), while early childhood education majors responded at a rate of 22.3% of the total. Participants with other degree types composed 15.4% of the total. Many of the participants who selected other had gone through an alternative certification program. Other degree types included special education, educational leadership, home economics, psychology, sociology, journalism, economics, secondary English, social studies, art

history, fine arts, art education, child development, political science, general studies, microbiology, social work, interdisciplinary studies, and philosophy. Their responses are listed in Table 4.

Table 4
Frequency Distribution by Degree Type

Degree Type	F	%
Early Childhood Education	85	22.3
Elementary Education	236	61.8
Other	59	15.4
No response	2	0.5
Total	382	100

Note. Other includes self-reported degrees in special education, educational leadership, home economics, psychology, sociology, journalism, economics, secondary English, social studies, art history, fine arts, art education, child development, political science, general studies, microbiology, social work, interdisciplinary studies, and philosophy.

Participants were asked to identify their school settings by urban, suburban or rural placements. The majority of participants were in rural (43.5%) school districts, while 39.5% of the participants taught in suburban districts. Only 14.9% of the participants taught in urban school districts. Their responses are listed in Table 5.

Table 5
Frequency Distribution by School Setting

School Setting	F	%
Urban	57	14.9
Suburban	151	39.5
Rural	166	43.5
No response	8	2.1
Total	382	100.00

Participants were asked to indicate their level of education. Their responses appear in Table 6. The majority of participants held a bachelor's degree (54.2%). One hundred and twelve

participants held a master's degree (29.3%), and 58 participants (15.2%) held master's plus thirty graduate hours or educational specialist degrees. Three participants held a doctorate degree (0.8%).

Table 6
Frequency Distribution by Education Level

Education Level	F	%
Bachelor's Degree	207	54.2
Master's Degree	112	29.3
Master's 30 or Specialist	58	15.2
PhD or EdD	3	0.8
Other	1	0.3
No Response	1	0.3
Total	382	100

Note. Other includes bachelor's degree with 130 extra hours of science.

Respondents were asked to identify their race. The overwhelming majority of respondents identified themselves as Caucasian/European (87.4%). African Americans (7.3%) made up the second largest category. Five participants were Hispanic (1.3%), and 4 (1%) participants identified themselves as other which included French, Native American, Asian and American Cypriot. The results are shown in Table 7.

Table 7
Frequency Distribution of Respondents by Race

Race	F	%
Caucasian	334	87.4
African-American	28	7.3
Hispanic	5	1.3
Other	4	1
No Response	11	2.9
Total	382	100

Note. Other includes French, Native American, Asian and American Cypriot.

Respondents were asked to identify the grade currently taught or position currently held. The majority of the respondents (26.2%) were kindergarten teachers. First grade teachers composed 18.1% of the respondents. Third grade teachers (18.3%) were the second highest group of respondents. Some respondents had moved out of the classroom and into leadership positions such as teacher leaders (2.6%), literacy coaches (1.3%), and administrative positions (.3%). Teacher leader positions included curriculum coordinators and facilitators, Master teachers, instructional strategists and coaches, and professional development resource teachers. Twenty four participants (6.3%) indicated other positions including fourth grade math, fifth and sixth grade, talented art, computer lab K-2, early childhood science, ESL, and ninth grade teachers and library specialists. The results are shown in Table 8.

Table 8
Frequency Distribution by Grade Level or Position

Grade Level or Position Held	F	%
Kindergarten	100	26.2
First Grade	69	18.1
Second Grade	46	12
Third Grade	70	18.3
Pre-Kindergarten	38	9.9
Special Education	14	3.7
Reading Teacher	5	1.3
Literacy Coach	5	1.3
Teacher Leader	10	2.6
Administration	1	0.3
Other	24	6.3
Total	382	100

Note. Other includes self-reported 4th, 5th, 6th and 9th grade, talented art, ESL, computer, early childhood science and library specialists.

Respondents were asked to report their years of teaching experience. Three hundred and eighty-one participants responded. Means, medians, and standard deviations are reported in Table 9.

Table 9
Means, Standard Deviations and Medians by Years of Experience

	N	M	SD	Med
Years of Experience	381	16.65	8.94	16.00

Instrumentation

After reviewing the literature on developmentally appropriate practices, I developed a survey for my study – the Early-childhood Teacher Inventory of Practices (E-TIP) (see Appendix A). I used the NAEYC position statement titled, *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth Through Age Eight* (Bredekamp & Copple, 1997) to identify behaviors relating to early childhood teaching practices. The DAP position statement details appropriate and inappropriate practices along a continuum for infants and toddlers, children age 3 through 5, and children age 6 through 8. The focus of my study was public school children in early childhood classrooms, so I focused on the indicators for children age 3 through 5 and children age 6 through 8. The position statement further delineates the following five subsections: *Creating a Caring Community of Learners*, *Teaching to Enhance Development and Learning*, *Constructing Appropriate Curriculum*, *Assessing Children's Learning and Development*, and *Establishing Reciprocal Relationships with Parents*.

Using the subsections of the NAEYC position statement, I identified 20 child behaviors related to teacher use of DAP. I chose to identify 20 behaviors because I wanted a few questions

for each subsection of the position statement, with a small number of total questions for the scale. After reviewing other measures of classroom use of DAP, I realized that most had 40 to 60 questions. Likert scales should have a limited number of questions, preferably ten to twenty (Trochim, 2006).

After generating 20 behaviors based on the NAEYC position statement for DAP, I formed questions related to the 20 behaviors I had identified. Using these questions, I generated 20 items to determine the existence of DAP in early childhood classrooms. I formed three items related to a caring community of learners, seven items related to teaching and learning, six items related to appropriate curriculum, three items related to assessment, and one item concerning parent relationships. Only one item is related to the fifth area, *Reciprocal Relationships with Parents*, because the focus of my study is classroom teaching practices. There are differing numbers of items because the primary focus of the survey is on curriculum and teaching practices. These items would serve as indicators of teacher use of DAP with regards to teaching practices.

The final survey contained 20 Likert scale questions based on a 5-point scale of frequency of use. I chose 20 items because I wanted to design a survey that teachers would be able to answer without taking too much time away from instruction, and that would give a picture of their classroom practices. The ratings are never, rarely, sometimes, often and always. The focus of the survey is on implementing developmentally appropriate practices as delineated in NAEYC's position statement as assessed by frequency of use with 20 items from DAP using a 1 to 5 Likert scale. Half of the items were reverse coded to prevent response bias and later recoded for analysis.

Once the survey was completed, I conducted an expert panel of two professionals to ensure content validity. This panel included a professor of early childhood education and a professor of educational research. The results of the expert panel were the alignment of E-TIP questions with the NAEYC position statement on DAP as detailed in Table 10.

Table 10		
<i>E-TIP Survey Questions Aligned with DAP Position Statement</i>		
E-TIP Survey Question	DAP Position Statement	DAP Indicator
1. In my classroom, I create a caring community of learners.	Creating a Caring Community of Learners	Teachers view the early childhood classroom as a community of learners where all participants are respected and contribute to each other's well being.
2. In my teaching, I promote a culturally responsive environment.	Creating a Caring Community of Learners	Teachers display warm, nurturing interactions and adapt teaching practices to be culturally sensitive.
3. In my classroom, I fill my students with important knowledge and information.	Teaching to Enhance Learning and Development	Teachers use knowledge of child development to help children derive meaning from experiences and connect new information to children's prior knowledge.
4. In my planning, I plan for individual and group needs of children.	Assessing Children's Learning and Development	Teachers develop and use a variety of teaching strategies to help children develop in all developmental areas.
5. In my practices, I utilize technology to reinforce academic skills.	Constructing Appropriate Curriculum	Teachers combine technology with other teaching tools to integrate and reinforce learning.
6. In my planning, I choose materials and equipment to meet children's developmental levels.	Teaching to Enhance Learning and Development	Teachers understand the developmental levels of individual students and adapt instruction to individual students.
7. In my teaching practices, I use worksheets to reinforce academic skills.	Teaching to Enhance Learning and Development	Teachers develop curriculum and activities to support the young child's ability to solve problems and develop higher-level thinking skills including using teaching approaches based on knowledge of individual children.
8. In my planning, I balance teacher directed and child initiated learning experiences.	Teaching to Enhance Learning and Development	Teachers use a continuum of teaching strategies which range from child-initiated to adult-directed learning.

(Table 10, cont.)		
9. In my teaching practices, I draw on children's curiosity and desire to make sense of their world.	Teaching to Enhance Learning and Development	Teachers provide opportunities for children to explore and question objects, materials, and events and encourage children to engage in simple investigations.
10. In my classroom, I use stickers and rewards to promote good classroom behavior.	Teaching to Enhance Learning and Development	Teachers aim to develop children's self-regulation and respect for others by guiding students to conflict resolution.
11. In my planning, I integrate curricular areas through themes and projects.	Constructing Appropriate Curriculum	Teachers integrate academic disciplines with other areas in emergent or thematic curriculum.
12. In my planning, I provide time daily for extended child initiated play.	Teaching to Enhance Learning and Development	Teachers use play as a foundation for children's learning.
13. In my planning, I provide daily opportunities to develop children's language and literacy skills through meaningful experiences.	Constructing Appropriate Curriculum	Teachers provide high-quality, meaningful language and literacy experiences across a developmental continuum.
14. In my teaching, I use a variety of strategies to help children develop concepts and skills in mathematics, science and social studies.	Constructing Appropriate Curriculum	Teachers integrate subject-matter knowledge from math, science and social studies into lessons that include the arts and literacy into thematic units.
15. In my teaching, I provide daily practice of academic skills.	Constructing Appropriate Curriculum	Teachers use approaches based on research, knowledge of individual children, and use assessment to plan challenging learning.
16. In my classroom, I provide opportunities for children to develop gross motor and fine motor skills using movement and hands on materials.	Constructing Appropriate Curriculum	Teachers provide children with varied and repeated experiences with functional movement and manipulation.
17. In my assessment, I use tests to ensure the children are learning.	Assessing Children's Learning and Development	Teachers observe, collect objective data and use a variety of appropriate assessment tools to plan instruction.
18. In my practice, I form partnerships with parents, colleagues and the community.	Reciprocal Relationships with Parents	Teachers value partnerships with parents, colleagues and the community and involve families and communities in many aspects of the child's development and learning.

(Table 10, cont.)		
19. In my planning, I group students by ability level to assure all children learn.	Creating a Caring Community of Learners	Teachers develop curriculum that is meaningful and challenging for all young children, including those with developmental delays and disabilities and promote collaborative work, sharing, and discussing ideas among peers.
20. In my classroom, I incorporate strategies to meet multiple intelligences.	Assessing Children's Learning and Development	Teachers understand that children's backgrounds, learning styles and experiences are different and incorporate many diverse learning experiences to meet the multiple intelligences of children.

Using SurveyMonkey.com™, an online survey tool that hosts surveys and responses, I field tested the E-TIP using 15 Non-National Board certified and 8 National Board certified veteran public school kindergarten teachers in Louisiana parishes. Teachers were selected by convenience sampling from school board websites. I sent them a cover letter via email with a link to the survey on SurveyMonkey.com™. This would provide some preliminary information on a group who was similar in characteristics to my population of interest for my dissertation as well as provide an accurate pilot testing of the instrument.

The participants in my pilot study completed the E-TIP, and their data were analyzed to test the validity of the survey questions. In order to the validity of the E-TIP, I correlated all of the scores to each other and to the total using Pearson product-moment correlation coefficient. Each item was positively related to the others and to the total of the items. To assess the psychometric properties of the survey tool, I conducted a principal components factor analysis with a varimax rotation of individual items to determine if there was any relationship between the test items on the E-TIP, and to confirm the structure of the constructs being measured – the subscales of the NAEYC position statement of DAP. I expected that the items, when analyzed, would reflect the NAEYC position statement. Using cluster analysis, I was able to classify the items into subsets, which gives strength to the survey items and the survey (Gall, Gall, & Borg,

2003). This enabled me to see where each item's strength was and to determine onto which category each of the questions loaded. This is shown in Table 11.

Table 11					
<i>Factor Analysis with Varimax Rotation</i>					
<i>Matrix Table</i>					
Item	Factors				
	I	II	III	IV	V
1	0.716	0.191	-0.094	0.148	0.077
3	0.174	0.054	0.158	0.911	-0.115
6	0.292	0.747	0.068	-0.047	-0.111
7	-0.065	0.511	0.108	0.282	0.480
8	0.304	0.774	0.180	-0.043	0.266
9	0.651	0.158	0.401	-0.068	0.212
10	-0.088	0.840	-0.060	0.169	0.004
11	0.365	0.015	0.785	0.183	-0.162
12	0.068	0.542	0.603	0.041	-0.074
13	0.265	0.003	-0.053	0.032	0.902
14	0.833	0.123	0.259	-0.037	0.120
15	0.072	0.153	0.173	0.834	0.234
16	0.388	-0.111	0.596	-0.006	0.555
17	-0.035	0.207	0.831	0.273	0.202
18	0.922	-0.034	-0.076	0.065	-0.006
19	-0.272	0.685	0.502	0.217	-0.067
20	0.750	-0.148	0.281	0.245	0.228
Extraction Method: Principal Components Analysis					
Rotation Method: Varimax with Kaiser					
Normalization Significant Factor Loadings are boldfaced					

Using this analysis, I was further able to collect validity data for the test items. Items with a score of .500 or higher were clustered together to form subsets. Items with a score of below .500 were deleted. Items 2, 4 and 5 were omitted due to low validity. Each of the omitted items scored less than .500 on the factor analysis. I had originally envisioned a 5 factor solution, but only one question loaded onto the fifth category. The fifth category was deleted, and a four factor solution which closely resembled my original vision was found.

A four factor solution was identified which accounted for a total of 85% of the variance. These findings supported the construct validity of the survey and therefore, improved the

technical quality or psychometric properties of E-TIP. The items lined up with the factors indicated in the four factor solution. Following the analysis, I identified each category based on the items which loaded on it. A four factor solution closely paralleling that of the original conceptualization was identified. The final subsets for my survey are Knowledge of Child Development, Methods and Materials, Teaching and Learning, and Instructional Practices. Cronbach's alpha on internal consistency and reliability for the 17 item E-TIP was .85. These subscales contained the individual test items that were identified through factor analysis. This is shown in Table 12.

Table 12
*Clustering Item Results based on Factor
Structure of E-TIP After Items Deleted*

Subset	Knowledge of Child Development	Methods and Materials	Teaching and Learning	Instructional Practices
E-TIP Question Number	1,9,14,18,20	6,7,8,10,19	11,12,13,16,17	3,15

The three omitted items were revised and subsequently reviewed by an expert panel consisting of two professors of early childhood education and a professor of educational research for content and construct validity. The revised items are shown in Table 13.

Table 13
Revised E-TIP Items

E-TIP Survey Question	DAP Position Statement	DAP Indicator
2. In my classroom, the individual child's language and culture serve as springboards for planning.	Creating a Caring Community of Learners	Teachers display warm, nurturing interactions and adapt teaching practices to be culturally sensitive.
4. In my classroom, I use whole group direct instruction to ensure all children are exposed to important information.	Assessing Children's Learning and Development	Teachers develop and use a variety of teaching strategies to help children develop in all developmental areas.

(Table 13, cont.)		
5. In my practices, technology is used by individual children for discrete skill development.	Teaching to Enhance Learning and Development	Teachers use knowledge of child development to help children derive meaning from experiences and connect new information to children's prior knowledge.

The final version of the E-TIP contains 20 items and utilizes a 7-point Likert scale to maximize the potential variability of each item. The ratings are never, almost never, rarely, sometimes, often, almost always and always. Items 3, 4, 5, 7, 10, 15, 17 and 19 are reverse coded to prevent response bias. After further reviewing the NAEYC standards and position statement on DAP, I further delineated and defined the categories for the E-TIP. The final categories and test items are displayed in Table 14.

Table 14 <i>Clustering Item Results based on Factor Structure of E-TIP</i>				
Subset	Knowledge of Child Development	Methods and Materials	Teaching and Learning	Instructional Practices
E-TIP Question Number	1,9,14,18,20	6,7,8,10,19	11,12,13,16,17	2,3,4,5,15

Pilot Study

I conducted a pilot study utilizing a self-created survey tool – the E-TIP (see Appendix A). This study became the springboard for my dissertation study. The pilot study examined the differences in self-reported beliefs and practices of National Board certified and Non-National Board certified teachers and their perceived use of DAP. The main question of the pilot study was to test the validity of the E-TIP in order to provide psychometric reliability and validity data. I wanted to determine if there is a relationship between National Board certification and use of developmentally appropriate practices by early childhood generalists. Other questions included

if National Board certified early childhood teachers are more adept at meeting individual needs, using materials and methods appropriate to the development of the child, and incorporating lessons that are culturally appropriate. In general, I wanted to determine if NBPTS certification improves the quality of teaching among early childhood educators. This pilot study questioned whether the National Board for Professional Teaching Standards process was related to veteran teacher development among early childhood educators with particular emphasis on developmentally appropriate practices.

The survey was distributed to 35 veteran kindergarten teachers in Ascension, Calcasieu, Plaquemines, St. Charles, St. James, St. Tammany, Tangipahoa, and Washington parishes in Louisiana. It produced a 66% return rate. Teachers (N=23), having between 3 and 33 years of experience, were asked to evaluate their classroom teaching practices. Fifteen teachers who did not have NBPTS certification (Non-NBCT) and eight teachers with NBPTS certification (NBCT) returned completed surveys. The two groups were compared to look at trends for National Board and Non-National Board certified teachers. Descriptive statistics were used to analyze the quantitative data obtained from the teacher surveys. National Board certified teachers (N=8) scored higher on all four areas of the E-TIP than Non-National Board certified teachers (N=15), indicating a considerable difference in the self-evaluation of teachers with National Board certification. The results suggest that NBCTs scored higher on all areas of the E-TIP. The data were showing trends in the right direction. Sums, means and standard deviations for E-TIP ratings of NBCTs and Non-NBCTs on variables rated on the E-TIP are shown in Table 15.

Table 15

Pilot Study Means and Standard Deviations for E-TIP Ratings of NBCTs and Non-NBCTs

Variables on which teachers were rated	<u>NBCT</u>			<u>Non-NBCT</u>		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
SS1 Knowledge of Child Development	8	3.95	0.54	15	3.75	0.44
SS2 Methods and Materials	8	3.63	0.58	15	3.02	0.65
SS3 Teaching and Learning	8	3.68	0.47	15	3.43	0.29
SS4 Instructional Practices	8	4.13	0.44	15	4.04	0.43

A purposeful sampling from the survey group was used to select the four participants who were the focus of a qualitative portion of the pilot study that sought to understand the National Board certification process from the perspectives of NBCTs. Participants were interviewed, and qualitative data were analyzed using constant comparison (Wellington, 2000). To analyze the data, I began by indexing and coding. Next, I compared new data with existing data and categories until the categories achieved an appropriate fit with the data. Categories were modified until I had accounted for all data. The properties and categories across the data were compared continuously until no more variation occurred and saturation was reached (Wellington, 2000). Three content related themes of awareness, trust, and reflection emerged from the data. I surmised from the qualitative data that National Board for Professional Teaching Standards Early Childhood Generalists reflect on their teaching to refine their practices, are aware of and use developmentally appropriate practices, trust themselves as experts on child development, and believe that practices that are developmentally appropriate are right and best for children. From the quantitative and qualitative data analysis, I found that the

NBPTS process was perceived to be beneficial by veteran kindergarten teachers in their understanding and use of developmentally appropriate practices.

The pilot study became the basis of the subsequent development of the refined survey instrument used in my research study. From the analysis of the pilot data, I was able to improve the E-TIP. Also, the pilot study enabled me to further develop my research questions and enhance the research design for my dissertation.

Research Design

The current study utilized a causal-comparative design in an attempt to recognize a causative relationship between the independent variable, National Board certification, and the dependent variable, perceived use of developmentally appropriate practices. Researchers use causal-comparative research design in an effort to find reasons or causes for an existing condition (Gay et al., 2006). The relationship is more suggestive than proven because of a lack of control over the independent variable, National Board certification. Causal-comparative is an ex post facto design, because the independent variable has already occurred (Gay et al.). Teachers surveyed already had National Board certification when I began my study, so it had to be studied in retrospect.

A crucial part of the procedure for causal-comparative research is the definition and selection of the groups being studied (Gay et al., 2006). The NBCTs that I surveyed comprised a comparison group, and the Non-NBCTs were the other comparison group. According to Gay et al. (2006), comparison groups may differ in two ways – one group may possess a characteristic that the other group does not possess, or each group may possess the characteristic in differing degrees. According to Gay et al. (2006), the independent variable that differentiates the groups

must be clearly and operationally defined. National Board certification was a very clear definition for my study.

Variables

The dependent variable in the study was perceived use of developmentally appropriate practices as exhibited through teachers' total score on the E-TIP. Four areas of teaching practices were explored including knowledge of child development, instructional practices, methods and materials for teaching the young child, and teaching and learning in early childhood classrooms, and the total of the subscales. The independent variable was National Board certification. Other independent variables examined for their moderating effects were years of teaching experience and education level.

Procedures

This study relied on self-report data. An emailed survey was used to collect data about early childhood teaching beliefs and practices in order to assess the differences in perceived use of developmentally appropriate practices among early childhood National Board certified and Non- National Board certified pre-kindergarten through third grade teachers. Following dissertation committee approval, I sent a letter to the University of New Orleans (UNO) Human Subjects Review Committee to request permission to conduct my proposed study (see Appendix B).

All procedures and protocol related to data collection were reviewed and approved by the University of New Orleans Committee for the Protection of Human Subjects in Research (IRB) (see Appendix B). After receiving IRB approval, data were collected from elementary school pre-kindergarten through third teachers listed on Louisiana public school websites. To ensure an

adequate representation from the population, participants were selected from each parish in Louisiana that had a website with teacher email listed. Teachers were emailed individually requesting participation. The email message included a brief description of the study, a statement regarding participant anonymity, and indicated that their participation was their consent to participate (see Appendix C). The message also included directions for accessing the Early-childhood Teachers Inventory of Practices (E-TIP) via a secure electronic link generated by SurveyMonkey™ (<http://www.surveymonkey.com>). Data were collected anonymously through SurveyMonkey™, an online survey and data collection service. Potential participants were identifiable by their electronic mail address prior to data collection, but the E-TIP does not contain any questions that could reveal the identity of specific respondents.

Teacher email addresses for Non-NBCTs were obtained from school and school board websites in Louisiana parishes. Teacher names for NBCTs were obtained from the NBPTS website, and their email, fax, and mail addresses were obtained from school and school board websites. National Board certified teachers who did not have a useable email address were sent faxed copies of the email message (see Appendix C). A copy of the email was sent by mail to National Board certified teachers who had neither an email address or a fax number available (see Appendix C). The results of the electronic survey were available immediately upon completion. The survey took no longer than 15 minutes to complete.

I used a two-step process for collecting information from participants. Because I offered an incentive for participation, teachers were given the option to send me their names and contact information to me under separate cover after completing the survey. These names were kept confidential. Names of teachers completing the survey were put into a pool, and drawn for the chance to win an IPOD. Those involved with completing the survey might benefit from the

results of this study in order to better understand the potential benefits of attaining National Board Certification in the perceived use of developmentally appropriate practices in their classrooms.

Participation in my study was voluntary. Completion of the survey was the participants' informed consent. Three weeks after the first distribution of the survey, a set of identical surveys were emailed. Faxed copies of the email were sent to National Board certified teachers who did not have email addresses. A final email was sent two months after the study began. Complete anonymity was used to help control for social desirability.

Data Analysis

As the surveys were returned, all data was organized and entered into a computer database. The statistical software used in this study was SPSS for Windows version 16 Graduate Pack. Descriptive statistics were used to describe the characteristics of the sample, and inferential statistics were used to answer the hypotheses. Descriptive statistics were reported on the variables from the researcher constructed questionnaire. The descriptive statistics were reported for age, years of teaching experience, grade level currently teaching, ethnicity, degree type, certification type, school setting, and degree level. I conducted descriptive statistics including means, standard deviations and frequencies with the relevant demographic data. In order to identify variables related to early childhood teachers' perceived use of developmentally appropriate practices, data analysis for this study included descriptive statistics, univariate analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA).

Hypothesis 1.

National Board certified teachers will score higher on Total of the Subscales of the E-TIP than Non-National Board certified teachers. Data for this question were gathered from questions 1 through 20 of the E-TIP. A MANOVA was used to compare the results of the total of all items on the E-TIP between teachers who have National Board certification and teachers who do not have National Board certification. Univariate ANOVAs were used as post hoc tests to see which items contributed to the significant multivariate *F*.

Hypothesis 2.

National Board certified teachers will score higher on the clustered subscale 1- Knowledge of Child Development of the E-TIP than Non-National Board certified teachers. Data for this hypothesis were gathered from questions 1, 9, 14, 18 and 20 of the E-TIP. A univariate ANOVA was used to compare the results of the total of these items on the E-TIP between teachers who have National Board certification and teachers who do not have National Board certification.

Hypothesis 3.

National Board certified teachers will score higher on the clustered subscale 2- Methods and Materials of the E-TIP than Non-National Board certified teachers. Data for this hypothesis were gathered from questions 6, 7, 8, 10, and 19 of the E-TIP. A univariate ANOVA was used to compare the results of the total of these items on the E-TIP between teachers who have National Board certification and teachers who do not have National Board certification.

Hypothesis 4.

National Board certified teachers will score higher on the clustered subscale 3 – Teaching and Learning, than Non-National Board certified teachers. Data for this hypothesis were gathered from questions 11, 12, 13, 16 and 17 of the E-TIP. A univariate ANOVA was used to compare the results of the total of these items on the E-TIP between teachers who have National Board certification and teachers who do not have National Board certification.

Hypothesis 5.

National Board certified teachers will score higher on the clustered subscale 4 – Instructional Practices of the E-TIP than Non-National Board certified teachers. Data for this hypothesis were gathered from questions 2, 3, 4, 5, and 15 of the E-TIP. A univariate ANOVA was used to compare the results of the total of these items on the E-TIP between teachers who have National Board certification and teachers who do not have National Board certification.

Hypothesis 6.

There a relationship between greater levels of education and perceived used of developmentally appropriate practices for National Board certified teachers. Data for this question were gathered from questions 1 through 20 of the E-TIP and level of education reported by National Board certified teachers. A Pearson product-moment correlation coefficient was computed to assess the relationship between National Board certified teachers' levels of education and their scores on the Total of the Subscales of the E-TIP.

Hypothesis 7.

There a relationship between greater years of experience and perceived use of developmentally appropriate practices for National Board certified teachers. Data for this question were gathered from questions 1 through 20 of the E-TIP and years of teaching experience reported by National Board certified teachers. A Pearson product-moment correlation coefficient was computed to assess the relationship between National Board certified teachers' years of experience and their scores on the Total of the Subscales of the E-TIP.

Validity

Causal-comparative research design has many advantages, but it also has serious limitations. National Board certification has already occurred so the same types of controls used in an experimental study cannot occur. Another issue when using causal comparative research is the possibility that the cause may be the effect – teachers who believe in DAP may be more likely to pursue National Board certification.

Assumptions

An assumption of this study was that participants are candid and truthful in their answers when completing this survey instrument. Another assumption was that developmentally appropriate practices are linked to early childhood teacher quality.

Summary

The methodology for the study on the relationship between National Board for Professional Teaching Standards certification in the area of Early Childhood Generalist and early childhood teachers' perceived use of developmentally appropriate practices in pre-kindergarten

through third grade teacher sample populations was described in this chapter. Participants and sampling procedures, instrumentation, and plans for quantitative data collection and analysis were also presented. In chapter four, I will discuss the results of the study.

CHAPTER FOUR

RESULTS

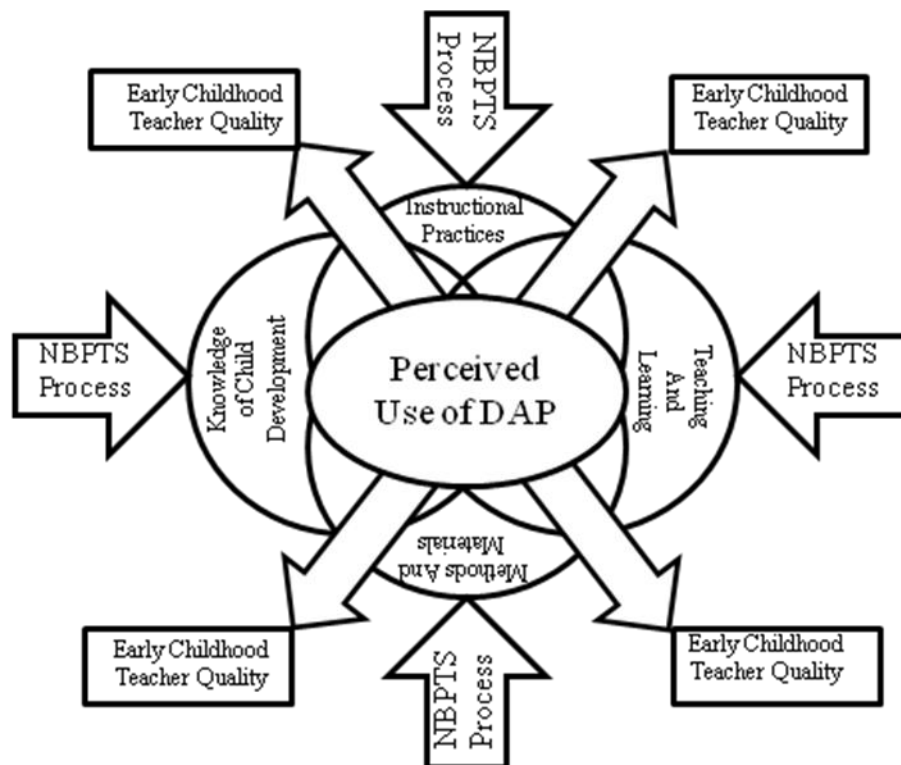
The purpose of this study was to examine the relationship between the National Board for Professional Teaching Standards' Early Childhood Generalist certification and teacher perception of classroom use of developmentally appropriate practices among early childhood teachers. Additionally, this study endeavored to ascertain whether there were differences in practices among teachers' perceived use of developmentally appropriate practices based upon the teachers' certification status, levels of education, and years of experience.

The goals of this study were to: (a) determine if National Board Certified teachers perceive they use more developmentally appropriate practices than Non-National Board certified teachers; (b) determine if National Board certified teachers perceive they have and use a greater knowledge of child development to plan instruction than Non-National Board certified teachers; (c) determine if National Board certified teachers perceive they use more developmentally appropriate teaching methods and classroom materials than Non-National Board certified teachers; (d) determine if National Board certified teachers perceive they are more adept at understanding the connection between teaching and learning and appropriate use of assessment to drive instruction than Non-National Board certified teachers; (e) determine if National Board certified teachers perceive they use instructional practices that are more developmentally appropriate than Non-National Board certified teachers; (f) determine if level of education is related to National Board certified teachers' perceived use of developmentally appropriate; and (g) determine if years of experiences is related to National Board certified teachers' perceived use of developmentally appropriate practices.

Framework for the Study

The framework for this study is built around the belief that successfully achieving National Board certification (NBPTS Process) in the area of Early Childhood Generalist impacts teachers' perceived use of developmentally appropriate practices. This is centered around the idea that knowledge of child development, methods and materials, teaching and learning, and instructional practices are interconnected and woven together to form a nexus where developmentally appropriate practices (DAP) occur. Through participation in the stringent requirements of National Board certification, early childhood teachers will perceive that they refine their knowledge, understanding and use of developmentally appropriate practices, resulting in a higher level of teacher quality in early childhood classrooms. The framework for this study is presented in Figure 1.

Figure 1.
Framework for the Study



Analysis of Research Questions

Research Question

The broad question for this study was stated as: What is the impact of attaining National Board certification on the attitudes, opinions and use of developmentally appropriate practices?

Instrumentation

The *Early Childhood Teachers' Inventory of Practices* (E-TIP; see Appendix A) was created by the researcher for the purpose of determining early childhood teachers' perceptions of their teaching practices as related to knowledge of child development, methods and materials, teaching and learning, and instructional practices. The survey was developed to determine if there are differences between National Board certified and Non-National Board certified teachers' perceived use of developmentally appropriate practices as they relate to (a) knowing and understanding how the young child learns; (b) selection and use of classroom materials and methods of teaching; (c) how teaching and learning interact in the classroom; and (d) the strategies and practices that guide instruction. The E-TIP is a 20-item survey divided into two parts. The first section pertains to participants' demographic and background information including level of certification, type of degree held, school setting, ethnicity, educational level, experience level, and current grade taught or position held. The second section of the E-TIP asks participants to rate their teaching practices on a 7-point Likert scale. The ratings are never, almost never, rarely, sometimes, often, almost always, and always.

Test of Hypotheses

Test of Hypothesis 1

Research hypothesis 1 stated that National Board certified teachers would score higher on the subscales of Knowledge of Child Development, Methods and Materials, Teaching and Learning, Instructional Practices, and the total of the subscales of the E-TIP than Non-National Board certified teachers. The null hypothesis anticipated no differences for the subscales and total of the subscales on the E-TIP between teachers with and without National Board certification. Means and standard deviations for NBCTs and Non-NBCTs on the subscales and total of the subscales of the E-TIP are shown in Table 16.

Table 16

Multivariate Analysis of Variance Means and Standard Deviations by Certification

Subscale	<u>NBCT</u>			<u>Non-NBCT</u>		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
Knowledge of Child Development	6.17	0.59	135	6.18	0.59	246
Methods and Materials	4.67	0.69	135	4.14	0.60	246
Teaching and Learning	5.18	0.94	135	4.80	0.85	246
Instructional Practices	2.86	0.54	135	2.60	0.48	246
Total Subscales and Total Scale	4.72	0.48	135	4.44	0.41	246

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the effect of National Board certification on teachers' perceived use of developmentally appropriate practices in the areas of Knowledge of Child Development, Methods and Materials, Teaching and Learning, Instructional Practices, and the Total of the Subscales. Significant differences were found between the two groups of teachers on the dependent measures, Wilks' λ

= .83, $F(1, 379) = 15.13, p < .05$. Although significant, the effect size of this relationship was small as indicated by partial $\eta^2 = .168$. The results for the MANOVA for Knowledge of Child Development were not significant, $F(1, 379) = .05, p = .83$, partial $\eta^2 = .00$. The MANOVA results for Methods and Materials was significant, $F(1, 379) = 61.34, p < .05$, partial $\eta^2 = .14$. The effect size was medium to large for Methods and Materials. The MANOVA results for Teaching and Learning was also significant, $F(1, 379) = 15.83, p < .05$, partial $\eta^2 = .04$, indicating a small effect size. Significant findings were also found for Instructional Practices, $F(1, 379) = 19.85, p < .05$, partial $\eta^2 = .51$. The effect size was large for Instructional Practices. The total of the subscales was significant, $F(1, 379) = 37.17, p < .05$, partial $\eta^2 = .09$. MANOVA results are displayed in Table 17.

Table 17
Multiple Analysis of Variance on Subscales and Total of Scales

	<u>NBCT</u>			<u>Non-NBCT</u>			<i>df</i>	<i>F</i>	<i>p</i>	<i>partial η^2</i>
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>				
Knowledge of Child Development	6.17	0.59	135	6.19	0.59	246	1	00.05	0.83	0.00
Methods and Materials	4.67	0.69	135	4.14	0.60	246	1	61.34	0.00	0.14
Teaching and Learning	5.18	0.94	135	4.80	0.85	246	1	15.83	0.00	0.04
Instructional Practices	2.86	0.54	135	2.60	0.48	246	1	19.85	0.00	0.51
Total of Subscales	4.72	0.48	135	4.44	0.41	246	1	37.17	0.00	0.09

Univariate analyses of variance (ANOVAs) for each dependent variable were conducted as follow-up tests to the MANOVA to see which dependent variables, contributed to the

significant multivariate F . Adjusted and unadjusted means and standard deviations are shown in Table 18. The ANOVA of Knowledge of Child Development was not significant, $F(1, 380) = .02, p = .89$, partial $\eta^2 = .00$. The ANOVA of Methods and Materials was significant, $F(1, 379) = 61.34, p < .05$, partial $\eta^2 = .14$. The ANOVA of Teaching and Learning was also significant, $F(1, 379) = 15.83, p < .05$, partial $\eta^2 = .04$. Significant findings were also found for Instructional Practices, $F(1, 380) = 17.32, p < .05$, partial $\eta^2 = .04$. The total of the subscales was significant, $F(1, 380) = 36.57, p < .05$, partial $\eta^2 = .09$. ANOVA results are shown in Table 19.

Table 18

Analysis of Variance Means and Standard Deviations for Subscales and Total of Subscales

				<u>95% Confidence Interval</u>	
	N	M	SD	Lower Bound	Upper Bound
<hr/>					
Knowledge of Child Development					
NBCT	135	6.17	0.59	6.07	6.27
Non-NBCT	247	6.18	0.59	6.11	6.26
Methods and Materials					
NBCT	135	4.67	0.69	4.56	4.78
Non-NBCT	246	4.14	0.60	4.06	4.23
Teaching and Learning					
NBCT	135	5.18	0.94	5.03	5.33
Non-NBCT	246	4.80	0.85	4.69	4.91
Instructional Practices					
NBCT	135	2.86	0.54	2.77	2.95
Non-NBCT	247	2.63	0.50	2.57	2.70
Total of Subscales					
NBCT	135	4.72	0.48	4.65	4.80
Non-NBCT	247	4.44	0.41	4.39	4.50

Table 19

Analyses of Variance for Subscales and Total of Subscales

	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>partial η²</i>
Knowledge of Child Development	1	0.01	0.02	0.89	0.00
Error	380	0.35			
Methods and Materials	1	24.62	61.34	0.00	0.14
Error	379	0.40			
Teaching and Learning	1	12.44	15.83	0.00	0.04
Error	379	0.79			
Instructional Practices	1	4.56	17.32	0.00	0.04
Error	380	0.26			
Total of Subscales	1	6.95	36.57	0.00	0.09
Error	380	0.19			

Comparisons of the two groups were conducted on the total of the subscales of the E-TIP, Knowledge of Child Development, Methods and Materials, Teaching and Learning, and Instructional Practices. This hypothesis was supported in this study. Although effect sizes were small, significant differences were found between NBCTs and Non-NBCTs in use and understanding of developmentally appropriate practices with National Board certified teachers scoring significantly higher on the three domains of Methods and Materials, Teaching and Learning, and Instructional Practices and on the Total of the Subscales than Non-National board certified teachers.

Test of Hypothesis 2

Research hypothesis 2 stated that National Board certified teachers would score higher on the clustered subscale 1 - Knowledge of Child Development of the E-TIP than Non-National Board certified teachers. Means and standard deviations were computed for NBCTs ($M=6.17$, $SD = .59$) and Non-NBCTs ($M=6.19$, $SD=.059$) on Knowledge of Child Development. Means and standard deviations for this analysis are shown in Table 20.

Table 20

Analysis of Variance Means and Standard Deviations for Knowledge of Child Development

	N	M	SD	95% Confidence Interval	
				Lower Bound	Upper Bound
NBCT	135	6.17	0.59	6.07	6.27
Non-NBCT	247	6.18	0.59	6.11	6.26

The null hypothesis anticipated no differences between the scores on subscale 1 – Knowledge of Child Development on the E-TIP for teachers with and without National Board certification. A one-way analysis of variance (ANOVA) was conducted to determine the effect of National Board certification on teachers’ perceived use of developmentally appropriate practices in the areas of Knowledge of Child Development. Data were collected from the results of questions 1, 9, 14, 18 and 20 of the E-TIP to compare the results of the total of these items between teachers who have National Board certification and teachers who do not have National Board certification. The ANOVA of Knowledge of Child Development was not significant, $F(1, 380) = .021$, $p = .885$, partial $\eta^2 = .00$. The null hypothesis was accepted because no significant differences were found between National Board certified teachers and Non-National Board

certified teachers in the area of Knowledge of Child Development. The results of the ANOVA are shown in Table 21.

Table 21
Analysis of Variance for Knowledge of Child Development

	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>partial η^2</i>
NBCT	1	0.01	0.02	0.89	0.00
Error	380	0.35			

For hypothesis 2, comparisons were conducted on the two groups of teachers on subscale 1 of the E-TIP, Knowledge of Child Development, as pertaining to classroom teaching practices. This hypothesis was not supported in this study. No significant differences were found between NBCTs and Non-NBCTs in use and understanding of child development to inform teaching practices.

Test of Hypothesis 3

Research hypothesis 3 stated that National Board certified teachers would score higher on the clustered subscale 2 - Methods and Materials of the E-TIP than Non-National Board certified teachers. The null hypothesis anticipated no differences between the scores on subscale 2 – Methods and Materials on the E-TIP for teachers with and without National Board certification. Means and standard deviations were computed for NBCTs ($M=4.67$, $SD = .69$) and Non-NBCTs ($M=4.14$, $SD=.60$) on Methods and Materials. Means and standard deviations for this analysis are shown in Table 22.

Table 22

Analysis of Variance Means and Standard Deviations for Methods and Materials

	N	M	SD	<u>95% Confidence Interval</u>	
				Lower Bound	Upper Bound
NBCT	135	4.67	0.69	4.56	4.78
Non-NBCT	246	4.14	0.60	4.06	4.23

A one-way analysis of variance (ANOVA) was conducted to determine the effect of National Board certification on teachers' perceived use of developmentally appropriate practices in the areas of Methods and Materials. Data for this hypothesis were gathered from questions 6, 7, 8, 10, and 19 of the E-TIP to compare the results of the total of these items between teachers who have National Board certification and teachers who do not have National Board certification. The ANOVA of Methods and Materials was significant, $F(1, 379) = 61.34$, $p < .05$, partial $\eta^2 = .14$. The effect size was medium to large. National Board certified teachers scored significantly higher in uses of teaching methods and materials for instruction than their peers without advanced certification. The results of the ANOVA are shown in Table 23.

Table 23

Analysis of Variance for Methods and Materials

	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>partial η^2</i>
NBCT	1	24.62	61.34	0.00	0.14
Error	379	0.40			

For hypothesis 3, comparisons were conducted on National Board certified teachers and Non-National Board certified teachers on subscale 2 of the E-TIP, Methods and Materials, as pertaining to classroom teaching practices. This hypothesis was supported in this study.

Significant differences were found between NBCTs and Non-NBCTs in the teaching methods and materials used by the two groups with National Board certified teachers scoring significantly higher than Non-National Board certified teachers.

Test of Hypothesis 4

Research hypothesis 4 stated that National Board certified teachers would score higher on the clustered subscale 3 – Teaching and Learning, than Non-National Board certified teachers. The null hypothesis anticipated no differences between the scores on subscale 3 – Teaching and Learning on the E-TIP for teachers with and without National Board certification. Means and standard deviations were computed for NBCTs ($M=5.18$, $SD=.94$) and Non-NBCTs ($M=4.80$, $SD=.85$). This is shown in Table 24.

Table 24
Analysis of Variance Means and Standard Deviations for Teaching and Learning

	N	M	SD	95% Confidence Interval	
				Lower Bound	Upper Bound
NBCT	135	5.18	0.94	5.03	5.33
Non-NBCT	246	4.80	0.85	4.69	4.91

A one-way analysis of variance (ANOVA) was conducted to determine the effect of National Board certification on teachers' perceived use of developmentally appropriate practices in the areas of Teaching and Learning. Data for this hypothesis were gathered from questions 11, 12, 13, 16 and 17 of the E-TIP to compare the results of the total of these items between teachers who have National Board certification and teachers who do not. The ANOVA of Teaching and Learning was significant, $F(1, 379) = 15.83$, $p < .05$, partial $\eta^2 = .04$. Although the

effect sizes were small, National Board certified teachers scored significantly higher than Non-National Board certified teachers in their use of teaching and learning to inform practices.

Results of the ANOVA are displayed in Table 25.

Table 25
Analysis of Variance for Teaching and Learning

	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>partial η^2</i>
NBCT	1	12.44	15.83	0.00	0.04
Error	379	0.79			

For hypothesis 4, comparisons of the two groups of teachers were conducted on subscale 3 of the E-TIP, Teaching and Learning, as pertaining to classroom teaching practices. This hypothesis was supported in this study. Significant differences were found between NBCTs and Non-NBCTs in teaching styles, type and use of assessment information, and activities chosen to support classroom learning with National Board certified teachers scoring significantly higher in this area of the instrument.

Test of Hypothesis 5

Research hypothesis 5 stated that National Board certified teachers will score higher on the clustered subscale 4 – Instructional Practices of the E-TIP than Non-National Board certified teachers. The null hypothesis anticipated no differences between the scores on subscale 4 – Instructional Practices on the E-TIP for teachers with and without National Board certification.

Means and standard deviations were computed for NBCTs ($M=2.86$, $SD=.54$) and Non-NBCTs ($M=2.60$, $SD=.48$) on Instructional Practices. Means and standard deviations for this analysis are shown in Table 26.

Table 26

Analysis of Variance Means and Standard Deviations for Instructional Practices

	N	M	SD	95% Confidence Interval	
				Lower Bound	Upper Bound
NBCT	135	2.86	0.54	2.77	2.95
Non-NBCT	247	2.63	0.50	2.57	2.70

A one-way analysis of variance (ANOVA) was conducted to determine the effect of National Board certification on teachers' perceived use of developmentally appropriate practices in the area of Instructional Practices. Data for this hypothesis were gathered from questions 2, 3, 4, 5, and 15 of the E-TIP to compare the results of the total of these items between teachers who have National Board certification and teachers who do not have National Board certification. The ANOVA of Instructional Practices was significant, $F(1, 380) = 17.32$, $p < .05$, partial $\eta^2 = .04$. Although effect sizes were small, National Board certified teachers scored significantly higher than Non-National Board certified teachers in their use of instructional practices that support developmentally appropriate practices. Results of the ANOVA are displayed in Table 27.

Table 27

Analysis of Variance for Instructional Practices

	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	<i>partial η^2</i>
NBCT	1	4.56	17.32	0.00	0.04
Error	380	0.26			

Comparisons of the two groups of teachers were conducted on subscale 4 of the E-TIP, Instructional Practices, as pertaining to classroom teaching practices for hypothesis 5. This hypothesis was supported in this study. Significant differences were found between NBCTs and Non-NBCTs in use of developmentally appropriate instructional practices with National Board certified teachers scoring significantly higher in this area.

Test of Hypothesis 6

Research hypothesis 6 stated that level of education is related to National Board certified teachers perceived use of developmentally appropriate practices. The null hypothesis anticipated no significant correlation between National Board certified teachers' perceived use of developmentally appropriate practices and their level of education. Means and standard deviations were computed for National Board certified teachers by degree level held. These are displayed in Table 28.

Table 28

Means and Standard Deviations for NBCTs by Degree Level on Total of Subscales

	<i>M</i>	<i>SD</i>	N
Bachelor's Degree	4.62	0.37	41
Master's Degree	4.74	0.50	57
Master's plus 30 and Specialist Degree	4.82	0.54	36

Note. Other is self-identified Bachelor's Degree plus 130 hours in Science. Since there was only one report of other, it is not included in these data.

A Pearson product-moment correlation coefficient was computed to assess the relationship between National Board certified teachers' levels of education and their scores on

the Total of the Subscales of the E-TIP. There was no significant correlation between the two variables, $r = .123$, $n = 135$, $p = .15$. Education level did not significantly relate to National Board certified teachers' perceived use of developmentally appropriate practices. The null hypothesis was accepted.

Test of Hypothesis 7

Research hypothesis 7 stated that years of experience would influence National Board certified teachers perceived use of developmentally appropriate practices. The null hypothesis anticipated no significant correlation between National Board certified teachers' perceived use of developmentally appropriate practices and their years of experience. Means, medians, and standard deviations were computed for National Board certified teachers by years of experience. These are displayed in Table 29.

Table 29
Means, Medians, and Standard Deviations for NBCTs by Years of Experience

	<i>M</i>	<i>Med</i>	<i>SD</i>	<i>N</i>
NBCT	18.93	18.00	7.63	134

A Pearson product-moment correlation coefficient was computed to assess the relationship between National Board certified teachers' years of experience and their scores on the Total of the Subscales of the E-TIP. There was significant positive correlation between the two variables, $r = .187$, $n = 134$, $p = .03$. Years of experience was significantly related to National Board certified teachers' perceived use of developmentally appropriate practices. The null hypothesis was rejected.

Instrumentation Reliability and Validity

Teachers' perceived use of developmentally appropriate practices was measured by the *Early Childhood Teachers' Inventory of Practices* (E-TIP), an instrument that I developed in my pilot study for use in this study. A 7-point Likert scale ranging from (1 = strongly disagree to 7 = strongly agree) was used. Reliability of the E-TIP was determined by computation of Cronbach's alpha. The standardized alpha for the 20 item scale was 0.74, indicating a high degree of internal consistency (Trochim, 2006). A Pearson product-moment correlation coefficient was computed to assess the relationship between the subscales of Knowledge of Child Development, Methods and Materials, Teaching and Learning, Instructional Practices, and the Total of the Subscales of the E-TIP. There were significant correlations between the subscales of the E-TIP. These findings suggest internal consistency of the E-TIP. This is shown in Table 30.

Table 30
Correlations on the Subscales of the E-TIP and the Total of the Subscales

	Knowledge of Child Development			Methods And Materials			Teaching and Learning			Instructional Practices			Total of Subscales		
	<i>r</i>	<i>p</i>	N	<i>r</i>	<i>p</i>	N	<i>R</i>	<i>p</i>	N	<i>r</i>	<i>P</i>	N	<i>r</i>	<i>p</i>	N
Knowledge of Child Development	1.00		382	0.19	0.00	381	0.46	0.00	381	-0.11	0.04	382	0.59	0.00	382
Methods and Materials	0.19	0.00	381	1.00		381	0.43	0.00	381	0.28	0.00	381	0.73	0.00	381
Teaching and Learning	0.46	0.00	382	0.43	0.00	381	1.00		381	0.11	0.03	382	0.84	0.00	382
Instructional Practices	-0.11	0.04	382	0.28	0.00	381	0.11	0.03	381	1.00		382	0.42	0.00	382
Total of the Subscales	0.59	0.00	382	0.73	0.00	381	0.84	0.00	381	0.42	0.00	382	1.00		382

Summary

This chapter presented the characteristics of the participants and the study's results. The first research hypothesis anticipated that teachers with National Board certification would perceive that they use more developmentally appropriate practices in their classrooms than teachers who are not National Board certified. In order to determine if National Board certified teachers use and incorporate more practices that are developmentally appropriate into the classrooms than Non-National Board certified teachers, the responses of all 382 participants were used to compare the two groups on the Total of the Subscales of the E-Tip, and on the individual subscales of Knowledge of Child Development, Methods and Materials, Teaching and Learning, and Instructional Practices. National Board certified and Non-National Board certified teachers scored very similarly on Knowledge of Child Development, with no significant differences found. On Methods and Materials, Teaching and Learning, Instructional Practices and the Total of the Subscales, National Board certified teachers scored significantly higher than Non-National Board teachers.

The second research hypothesis anticipated that teachers with National Board certification would perceive they have greater knowledge of child development and use that knowledge to inform their teaching practices than teachers who are not National Board certified. In order to determine if National Board certified teachers perceive they have and use a greater knowledge of child development to plan instruction than Non-National Board certified teachers, comparisons of the two groups of teachers were performed using information from the subscale Knowledge of Child Development of the E-TIP using the responses of all 382 participants. This hypothesis was not supported in the study as there were no significant differences found between

National Board and Non-National Board certified teachers in their use and understanding of child development to inform teaching practices.

The third research hypothesis anticipated that teachers with National Board certification would perceive that they used methods for teaching that support developmentally appropriate practices, and that they would select teaching materials along a developmental continuum more often than teachers who are not National Board certified. In order to determine if National Board certified teachers use more developmentally appropriate teaching methods and classroom materials than Non-National Board certified teachers, comparisons of the two groups of teachers were conducted on the Methods and Materials section of the E-TIP using the responses of all 382 participants. This hypothesis was supported in the study. National Board certified teachers scored significantly higher than teachers without the advanced certification status in selection of developmentally appropriate materials and the methods used to teach using those materials.

The fourth research hypothesis anticipated that teachers with advanced certification would perceive that they use teaching styles, learning activities and authentic assessments to inform practice more often than Non-National Board certified teachers. In order to determine if National Board certified teachers are more adept at understanding the connection between teaching and learning, types and use of assessment, and activities chosen to support instruction than Non-National Board certified teachers, comparisons were conducted on the responses of all 382 respondents on the subset Teaching and Learning of the E-TIP. This hypothesis was supported in the study. National Board certified teachers scored significantly higher in the area of Teaching and Learning than their Non-National Board certified peers.

The fifth research hypothesis anticipated that teachers with National Board certification would perceive they choose instructional practices according to the appropriate developmental

levels of their students more often than teachers who are not National Board certified. In order to determine if National Board certified teachers use instructional practices that are more developmentally appropriate than Non-National Board certified teachers, comparisons were conducted on the responses of all 382 participants on the fourth subscale of the E-TIP – Instructional Practices. This hypothesis was supported in this study. National Board certified teachers scored significantly higher in the area of Instructional Practices than Non-National Board certified teachers.

The sixth research hypothesis anticipated that education level is related to National Board certified teachers' use of developmentally appropriate practices. In order to determine if level of education is related to National Board certified teachers' perceived use of developmentally appropriate practices, correlation coefficients were computed to assess the relationship between their levels of education and their scores on the Total of the Subscales of the E-TIP. There was no significant correlation between the two variables. The hypothesis was not supported in this study. Education level did not significantly relate to National Board certified teachers' perceived use of developmentally appropriate practices. The null hypothesis was accepted.

The seventh research hypothesis anticipated that years of experience would be related to National Board certified teachers' perceived use of developmentally appropriate practices. In order to determine if level of education is related to National Board certified teachers' perceived use of developmentally appropriate practices, correlation coefficients were computed to assess the relationship between years of experience and their scores on the Total of the Subscales of the E-TIP. There was a significant correlation between the two variables. The hypothesis was supported in this study. Years of experience was significantly related to National Board certified teachers' perceived use of developmentally appropriate practices.

Chapter four presented the results of the research study. In chapter five, I will discuss the findings in this study, and the results in terms of prior research. I will also discuss limitations of the study, implications for early childhood teachers and the field of education. Further, I will include recommendations for future research in chapter five.

CHAPTER FIVE

DISCUSSION

Chapter five includes a summary and a discussion of the findings in this study. The results of the study are discussed in terms of prior research. Limitations of the study are listed and implications for the study for early childhood teachers and the field of education are provided. I also include recommendations for future research and conclude with a summary of the findings.

Purpose of the Study

The study examined the relationship between the National Board for Professional Standards Early Childhood Generalist certification and teachers' perception of classroom use of developmentally appropriate practices among early childhood educators. This study was designed to compare the perceived practices of early childhood educators with and without National Board certification, and therefore will provide much needed new knowledge about benefits of National Board certification.

In particular, this study examined the value of National Board certification in light of teachers' practices (Bohen, 2001; Galluzzo, 2005; Keiffer-Barone, Mulvaney, Hillman & Parker, 1999; Lustick & Sykes, 2006; Okpala, James & Hopson, 2005; Place & Coskie, 2006; and Tracz, Daughtry, Henderson-Sparks, Newman & Sienty, 2005). This included teachers' perceived understanding and use of knowledge of child development to design the classroom environment; the developmental appropriateness of the materials chosen for teaching and the methods by which those materials were used for instruction; the lessons, grouping, differentiation, and

assessment that informed teaching practices, and the strategies chosen for instruction that met the needs of a diverse group of learners along a developmental continuum.

Discussion of Findings

Teacher quality has been a focal point for decades. Researchers and experts in the field of education have attempted to identify the characteristics that contribute to the quality of classroom teachers, finding positive relationships between teacher performance and subject matter knowledge (Ashton & Crocker, 1987), coursework and education (Ferguson & Womack, 1993), teachers' intelligence or general academic ability (Schalock, 1979), years of teaching experience (Murnane & Phillips, 1981), verbal ability (Murnane, 1985), and certification level (Evertson, Hawley & Zlotnik, 1985). Zemelman, Daniels and Hyde (1998) found that effective teachers use practices that are experiential, expressive, holistic, authentic, reflective, social, cognitive, challenging, constructivist, collaborative, democratic, student-centered, and developmental (p. 8).

Educational reform movements have historically focused on improving teacher quality. The federal report, *A Nation at Risk: The Imperative of Educational Reform* (The National Commission on Excellence in Education, 1983), heightened public concern over the quality of American teachers, resulting in the creation of A Task Force on Teaching as a Profession (Carnegie, 1986). This task force examined the teaching profession and presented the American people with findings and recommendations to improve teacher quality. *A Nation Prepared: Teachers for the 21st Century* (Carnegie, 1986) suggested school reform that included a new view of teachers as specialized experts who would become agents of social change through education (Vandevoort, Amrein-Beardsley, & Berliner, 2004). Out of this report was the establishment of the National Board for Professional Teaching Standards (Vandevoort et al.). This board would

be responsible for creating a set of national teaching standards for accomplished teachers, and they would grant advanced certification to the teachers who measured up to those standards (Harman, 2001).

The original board was made up of teachers, professionals from the fields of business and higher education, and state department of education representatives as well as people from local school boards. The board began its mission by writing the bylaws of the National Board of Professional Teaching Standards (Vandevoort et al., 2004). In 1990, the National Board, with the help of a panel of experts in early childhood education, developed a set of advanced standards for teachers of students aged three to eight years (Sadowski, 2006). They used the National Association for the Education of Young Children (NAEYC) position statement on developmentally appropriate practice (DAP) and current research on how young children learn to define the standards that must be met in order to attain the rank of Early Childhood Generalist (Sadowski, 2006).

In order to earn national certification, early childhood candidates must exhibit that they:

- (1) have knowledge of child development and use this knowledge to understand and plan for the individual needs of children in order to help each child meet his or her full potential;
- (2) employ methods for teaching children from diverse backgrounds, calling for equity, fairness and diversity among students and instilling these dispositions in their students;
- (3) use multiple forms of assessment to paint a picture of the whole child as an individual learner and person;
- (4) know how to organize learning environments in ways that best facilitate learning and development, while providing a balance of teacher directed and child-initiated learning and using play as a vehicle for learning;
- (5) integrate the curriculum and learning that occurs through centers, project work and playful learning, all of which reflect the interests and needs of children;
- (6) find and

use resources and technologies to enhance student learning; (7) value and stress the value of families as allies in the child's education and make bonds with families; (8) engage in professional development and collaborate with colleagues; (9) reflect on their practices and continually learn from this reflection; and (10) view early childhood learning as a continuum from preschool through third grade, aligning instruction and learning expectations across grade levels (Sadowski, 2006, p.4).

The Early Childhood Generalist Standards are aligned with NAEYC's Standards for Advanced Programs (2002), which are based on the guidelines for developmentally appropriate practices. The NAEYC standards reflect the position statements issued on developmentally appropriate practices in early childhood programs (Bredekemp, 1987, Bredekamp & Copple, 1997; Copple & Bredekamp, 2009). The DAP position statements were issued in order to increase the quality of early education, support professionalism in early childhood education, connect teaching practices with knowledge about child development, assist advocates for early childhood education to negotiate with state, local and national school boards, and improve public understanding of the field of early childhood education (Novick, 1996, p. 4). According to NAEYC (2002), accomplished teachers promote child development and learning; build family and community relationships; observe, document and assess learning to support young children and families; use developmentally effective methods to promote teaching and learning; and participate in professional growth through continuous learning, collaboration and reflective practice.

Research supports the use of developmentally appropriate practices in the teaching of young children. Students in classrooms where developmentally appropriate practices are incorporated have higher scores on tests of basic skills (Marcon, 1999), develop stronger

language abilities (Dunn, Beach, & Kontos, 1994), develop a stronger view of their own self-competence (Jambunathan, Burts, & Pierce, 1999), and display fewer stress behaviors than children in developmentally inappropriate environments (Burts, Hart, Charlesworth, Fleege, Mosley, Thomasson, 1992). Despite these findings the majority of teachers, principals and school boards endorse teaching practices that are didactic, and rely on direct instruction (Dunn & Kontos, 1997). Researchers believe this reliance on developmentally inappropriate practices is due to lack of training, knowledge, and understanding of developmentally appropriate practices among teachers and principals (Zeng & Zeng, 2005).

I created The Early Childhood Teachers' Inventory of Practices (E-TIP) specifically for this study to: (a) determine if National Board Certified teachers perceive they use more developmentally appropriate practices than Non-National Board certified teachers; (b) determine if National Board certified teachers perceive they have and use a greater knowledge of child development to plan instruction than Non-National Board certified teachers; (c) determine if National Board certified teachers perceive they use more developmentally appropriate teaching methods and classroom materials than Non-National Board certified teachers; (d) determine if National Board certified teachers perceive they are more adept at understanding the connection between teaching and learning and appropriate use of assessment to drive instruction than Non-National Board certified teachers; (e) determine if National Board certified teachers perceive they use instructional practices that are more developmentally appropriate than Non-National Board certified teachers; (f) determine if level of education is related to National Board certified teachers' perceived use of developmentally appropriate; and (g) determine if years of experiences is related to National Board certified teachers' perceived use of developmentally appropriate practices.

Demographic Data of Participants in Study Sample

The first section of the E-TIP requested demographic data from respondents. The respondents were asked to identify their degree types. Shown in Table 31, the majority of NBCTs (59.3%) and Non-NBCTs (63.2%) had degrees in elementary education.

Table 31
Frequency Distribution of Participants by Degree Type

Degree Type	<u>NBCT</u>		<u>Non-NBCT</u>	
	F	%	F	%
Early Childhood Education	36	26.7	49	19.8
Elementary Education	80	59.3	156	63.2
Other	19	14.1	40	16.2
No Response	0	0	2	0.8
Total	135	100	247	100

Note. Other includes self-reported degrees in special education, home economics, administration, educational leadership, Journalism economics, gifted education, library studies, psychology, general studies, English, fine arts, English, middle school education, social work, interdisciplinary studies, social studies, political science, reading specialist, and educational technology.

Next, participants were asked to identify their race. Shown in Table 32, the majority of NBCTs (94.1%) and Non-NBCTs (83.8%) in this study identified themselves as Caucasian.

Table 32
Frequency Distribution of Participants by Race

Race	<u>NBCT</u>		<u>Non-NBCT</u>	
	F	%	F	%
Caucasian	127	94.1	207	83.8
African-American	4	3	24	9.7
Hispanic	2	1.5	3	1.2
Other	1	0.7	3	1.2
No Response	1	0.7	10	4
Total	135	100	247	100

Note. Other includes self-reported American Cypriot.

The respondents were also asked to provide information about their school setting based on the categories of urban, suburban or rural. The majority (48.9%) of the NBCTs in this study indicated that they worked in suburban school districts, and the majority of Non-NBCTs (48%) worked in rural districts. In my study, only 18 (13.3%) of the NBCTs indicated that they worked in urban school districts, as shown in Table 33.

Table 33
Frequency Distribution of Participants by School Setting

School Setting	<u>NBCT</u>		<u>Non-NBCT</u>	
	F	%	F	%
Urban	18	13.3	39	15.8
Suburban	66	48.9	85	34.4
Rural	47	34.8	119	48.2
No Response	4	3	4	1.6
Total	135	100	247	100

Participants were also asked to indicate their highest level of education. The majority (42.2%) of National Board certified teachers held master's degrees. The majority (67.2%) of Non-National Board certified teachers held bachelor's degrees. This is shown in Table 34.

Table 34
Frequency Distribution of Participants by Education Level

Education Level	<u>NBCT</u>		<u>Non-NBCT</u>	
	F	%	F	%
Bachelor's	41	30.4	166	67.2
Master's	57	42.2	55	22.3
Master's 30 and Specialist	36	26.7	22	8.9
PhD or EdD	1	0.7	3	1.2
No Response	0	0	1	0.4
Total	135	100	247	100

Participants were also asked to provide information about the grade they were teaching or the position they held at the time of the study. The majority of National Board teachers (22.2%) who responded were self-identified as kindergarten teachers. Similarly, the majority of Non-National Board certified teachers (28.3%) were also self-identified as kindergarten teachers. Eight of the National Board certified teachers studied had moved into leadership positions since achieving the advanced certification status. These results are shown in Table 35.

Table 35

Frequency Distribution of Participants by Grade Taught or Position Held

Grade or Position	<u>NBCT</u>		<u>Non-NBCT</u>	
	F	%	F	%
Kindergarten	30	22.2	70	28.3
First Grade	19	14.1	50	20.2
Second Grade	9	6.7	37	15
Third Grade	14	10.4	56	22.7
Pre-Kindergarten	26	19.3	12	4.9
Special Education	5	3.7	9	3.6
Reading Teacher	3	2.2	2	0.8
Literacy Coach	5	3.7	0	0
Teacher Leader	7	5.2	3	1.2
Administration	1	0.7	0	0
Other	16	11.9	8	3.2
Total	135	100	247	100

Note. Other includes self-reported administration, Teacher leader, literacy coach, curriculum coach, curriculum facilitator, instructional coach, and professional development resource teacher.

Teachers were also asked to provide their years of teaching experience. The National Board certified teachers in this study ranged from 4 to 38 years of teaching experience, and the Non-National Board certified teachers ranged from 4 to 45 years. Means, standard deviations and medians were calculated for the Board certified group ($M = 18.93$, $SD = 7.63$, $Med = 18$) and the Non-Board certified group ($M = 15.41$, $SD = 9.36$, $Med = 14$).

Discussion of Findings for Hypothesis 1

Hypothesis 1 stated that teachers with National Board certification would perceive that they use more developmentally appropriate practices in their classrooms than teachers who are not National Board certified. This hypothesis was supported in this study. Significant differences were found between National Board certified and Non-National Board certified teachers' perceived use and understanding of developmentally appropriate practices with National Board certified teachers scoring significantly higher on the Total of the Subscales of Knowledge of Child Development, Methods and Materials, Teaching and Learning, and Instructional Practices, of the E-TIP than Non-National Board certified teachers.

Indicators of DAP and Supporting Research on National Board Certification

In order to understand whether or not the National Board certified teachers in this study perceived they were using developmentally appropriate practices, I compared their responses to the DAP indicators for the Total of the Subscales of the E-TIP. The National Board certified teachers in this study perceived that they saw learning as connected to the emotional, physical and intellectual development of the whole child, all vital elements of developmentally appropriate practices (NAEYC, 2002). They also indicated they met standards for developmentally appropriate practice by setting up learning environments that were intellectually engaging, responsive, and that encouraged children to explore and investigate their worlds. They perceived based curricular choices on what is known about how young children learn and develop, and realized that children develop along a developmental continuum, another indicator of DAP (NAEYC, 2002).

The National Board certified teachers perceived that they used their knowledge of how children develop to design, implement, and evaluate meaningful, challenging, and relevant curriculum across the physical, social, emotional, linguistic, and cognitive domains. As outlined in the guidelines for developmentally appropriate practices (NAEYC, 2002), the National Board certified teachers in this study incorporated challenging, active learning activities into their planning. These findings are supported by Bond, Smith, Baker, and Hattie (2000), who observed through qualitative analysis that National Board certified teachers consistently performed better than Non-National Board certified teachers in their ability to create challenging and engaging lessons, and to meet individual needs through adapting instruction. Further support is provided by Tracz et al. (2005) who used qualitative analysis and found that teachers who go through the National Board certification process are reflective practitioners who use authentic and varied assessment techniques in order to plan meaningful lessons and activities.

The National Board certified teachers in my study perceived that they developed and used a wide variety of developmentally appropriate instructional strategies to support student learning. Support for this finding is provided in a study by Rotberg, Futrell and Lieberman (1998), who used qualitative analysis to find that teachers who achieved National Board certification were able to construct stronger lessons and curricula and successfully evaluate student learning. The National Board certified teachers in my study perceived that they balanced teacher-directed, whole group learning with child-directed, small group and independent learning, further meeting guidelines for developmentally appropriate practices (NAEYC, 2002). Hollandsworth and Meyer (2007) concluded that NBCTs consistently use best practices in classroom teaching as defined by Zemelman et al. (1998). According to Zemelman et al. (1998), the most effective teachers use practices that are reflective, experiential, expressive, holistic,

authentic, social, collaborative, cognitive, challenging, constructivist, democratic, student-centered, and developmental (p. 8). My finding also supports the work of Place and Coskie (2006), who observed through qualitative analysis that the certification process for the National Board for Professional Teaching Standards gave candidates opportunities to learn about their practice, and thus, positively impacted classroom teaching. Lustick and Sykes (2006) found that teachers who attempt certification, whether they achieve it or not, showed significant improvements in their teaching practices. Additionally, my finding supports the work of Cavaluzzo (2004), who determined that National Board certification is an effective indicator of teacher quality.

Discussion of Findings for Hypothesis 2

Hypothesis 2 stated that teachers with National Board certification would perceive they have greater knowledge of child development and use that knowledge to inform their teaching practices than teachers who are not National Board certified. No significant differences were found between National Board certified and Non-National Board certified teachers' perceived use and understanding of child development to inform teaching practices. The findings of the study did not support my hypothesis. National Board certified and Non-National Board certified teachers' scores were close to identical on their perceived knowledge of child development.

Indicators of DAP and Supporting Research on National Board Certification

In order to understand whether or not the National Board certified teachers in this study perceived they had greater knowledge of child development than their Non-National Board certified peers, I compared their responses to the DAP indicators for the subscale Knowledge of Child Development of the E-TIP. In developmentally appropriate classrooms, teachers

understand the developing child. Both groups of teachers in this study demonstrated their understanding of the importance of relationships in early childhood education and display skill in creating responsive relationships, an indicator of DAP (NAEYC, 2002).

The Non-National Board certified and National Board certified teachers in this study perceived that they also viewed the early childhood classroom as a community of learners where all participants are respected and contribute to each other's well being. Both groups of teachers perceived they provided opportunities for children to explore and question objects, materials, and events, another DAP indicator (NAEYC, 2002). The National Board certified and Non-National Board certified teachers in this study perceived that they valued partnerships with parents and the community, and they involved families and communities in many aspects of the child's development and learning, as is indicated in the DAP guidelines (NAEYC, 2002).

Both groups of teachers perceived that they understood children's backgrounds and incorporated learning experiences to meet the multiple intelligences of children. In this study, there were no significant differences between National Board certified teachers and Non-National Board certified teachers in their knowledge of child development. Non-National Board certified teachers perceived that they incorporate the same amount of developmentally appropriate practices in this area as National Board certified teachers.

Discussion of Findings for Hypothesis 3

Hypothesis 3 stated that teachers with National Board certification would perceive that they used methods for teaching that support developmentally appropriate practices, and that they would select teaching materials along a developmental continuum more often than teachers who are not National Board certified. This hypothesis was supported in this study. National Board certified teachers scored significantly higher than Non-National Board certified teachers in their

perceived use and selection of developmentally appropriate methods of instruction and materials for teaching.

Indicators of DAP and Supporting Research on National Board Certification

In order to understand whether or not the participants perceived they were using developmentally appropriate materials and methods for teaching, I compared their responses to the DAP indicators for the subscale Methods and Materials of the E-TIP. Next, I aligned my participants' responses with previous research on National Board certification.

The National Board certified teachers in this study perceived that they used a continuum of teaching strategies which ranged from child-initiated to adult-directed learning, important indicators of developmentally appropriate practices (NAEYC, 2002). This is supported by the research of Hollandsworth and Meyer (2007), who found that National Board certified teachers created student-centered classrooms more often than Non-National Board certified teachers.

In my study, the National Board certified teachers perceived that they recognized the developmental levels of individual students and employed teaching methods and materials targeted at the individual child's level of development, another DAP indicator (NAEYC, 2002). The National Board certified teachers in my study perceived that they adapted instruction to individual students and using flexible grouping strategies (NAEYC, 2002). Tracz et al. (2005) found that teachers changed their grouping practices as a result of becoming National Board certified. The National Board certified teachers in my study perceived that they developed curriculum to include planned and spontaneous experiences that were appropriate, meaningful and challenging for all students, all indicators of DAP (NAEYC, 2002). They claimed to incorporate student-centered, hands-on learning and active engagement with materials instead of relying strictly on worksheets to support learning. Supporting evidence is given by Bond et al.

(2000), who observed through qualitative analysis that National Board certified teachers use flexible and diverse strategies for instruction to plan challenging learning opportunities for students and engage their learning. Similarly, McColskey, Stronge, Ward, Tucker, Howard, Lewis, and Hindman (2005) found that NBCTs had significantly higher ratings in assigning challenging work than Non-NBCTs.

Discussion of Findings for Hypothesis 4

Hypothesis 4 stated that teachers with National Board certification would perceive that they employ developmentally appropriate teaching styles, learning activities and authentic assessments to inform practices more often than teachers who are not National Board certified. This hypothesis was supported in this study. Significant differences were found between the perceptions of National Board certified teachers and Non-National Board certified teachers in teaching styles, type and use of assessment information, and activities chosen to support classroom learning in developmentally appropriate ways with National Board certified teachers scoring significantly higher in this area.

Indicators of DAP and Supporting Research on National Board Certification

In order to understand whether or not the National Board certified teachers in this study perceived they were using developmentally appropriate teaching and assessment to support learning, I compared their responses to the DAP indicators for the subscale Teaching and Learning of the E-TIP. Next, I aligned my participants' responses with previous research on National Board certification.

The National Board certified teachers in my study perceived that they used a holistic approach to teaching by integrating academic disciplines with other areas in emergent or

thematic curriculum, and taught using themes and projects. This is supported by the research of Tracz et al. (2005), who found that teachers who became National Board certified believed the process helped them plan and design instruction that was more holistic. The National Board certified teachers in my study perceived that they provided multiple paths to literacy, an important indicator of DAP (NAEYC, 2002).

The National Board certified teachers also perceived that they used meaningful experiences to incorporate language and literacy into the curriculum to provide high-quality, meaningful language and literacy experiences across a developmental continuum. This is supported by Place and Coskie (2006), who observed through qualitative analysis that going through the National Board process had a major influence on how teachers started to view their teaching practices. The teachers they studied described changes in literacy instruction to include connecting reading and writing to student comprehension in more tangible ways as a result of National Board certification. They also became more aware of the role of oral language in literacy development in the young child.

In my study, the National Board certified teachers perceived that they used their understanding of teaching and assessment to guide their practices. NAEYC (2002) indicates that teachers use a variety of appropriate assessment tools to plan instruction and gather information about student performance from a variety of sources. The National Board certified teachers in my study perceived that they did not rely strictly on tests for assessment to insure student learning. The finding supports the research of Tracz et al. (2005). They found that the teachers they studied changed the amount and quality of their assessments, focused more on individual students when assessing, and used assessment results to plan instruction as a result of the National Board certification process.

Another DAP indicator met by the National Board certified teachers in my study was their perceived use of materials appropriate to the developmental level of the child to support learning through hands-on materials and manipulatives (NAEYC, 2002). They perceived that they incorporated activities to support the fine and gross motor development of their students. This is supported by the research of Hollandsworth and Meyer (2007), who found that National Board certified teachers use manipulatives and hands on learning when teaching, and incorporated active learning into their daily lessons.

Discussion of Findings for Hypothesis 5

Hypothesis 5 stated that teachers with National Board certification would perceive that they choose instructional practices according to the appropriate developmental level of their students more often than teachers who are not National Board certified. This hypothesis was supported in this study. Significant differences were found between National Board and Non-National Board certified teachers in perceived use of developmentally appropriate instructional practices with National Board teachers scoring significantly higher in this area.

Indicators of DAP and Supporting Research on National Board Certification

In order to understand whether or not the National Board certified teachers in this study perceived they were using developmentally appropriate instructional practices, I compared their responses to the DAP indicators for the subscale Instructional Practices of the E-TIP. Next, I aligned my participants' responses with previous research on National Board certification.

The National Board certified teachers in my study perceived that they utilized teaching strategies based on their knowledge of individual children, assessment results, and on their understanding of appropriate and challenging goals for teaching and learning, each of which is

an important aspect of developmentally appropriate practice (NAEYC, 2002). They perceived that they linked children's language and culture to classroom learning and adapted teaching practices to be culturally sensitive. These findings are supported by Hollandsworth and Meyer (2007), who found evidence of authentic instruction in each of the classrooms of the National Board certified teachers they studied. These National Board certified teachers integrated the students' lives into instruction through activities and class discussions.

In my study, the National Board certified teachers perceived that they did not rely on whole group, direct instruction to make sure all children are learning. In accordance with DAP standards (NAEYC, 2002), they perceived that they developed and used a variety of teaching strategies to help children grow in all developmental areas. This finding supports the work of Tracz et al. (2005), who found that going through the National Board certification process helped teachers become more aware of individual student's needs. It also lends support to Bond et al. (2000) and Place and Coskie (2006), who observed through qualitative analysis that NBCTs consistently performed better than Non-NBCTs in their ability to adapt instruction and individualize learning.

The National Board certified teachers in my study perceived that they rely on daily practice of academic skills and rote learning less often than Non-National Board certified teachers. Meeting the criteria for DAP (NAEYC, 2002), they perceived that they created meaningful lessons based on student interest and need. This is supported by Hollandsworth and Meyer (2007), who studied ten first and second grade classroom teachers in West Virginia; five with and five without National Board certification. Analyses revealed that National Board certified teachers created intellectually challenging learning environments where students learned in-depth material more often than Non-Board certified teachers.

Discussion of Findings for Hypothesis 6

Hypothesis 6 stated that National Board certified teachers with higher levels of education would perceive they used more developmentally appropriate practices than National Board certified teachers with less advanced degrees.

In order to determine if education level is related to National Board certified teachers' perceived use of developmentally appropriate practices, correlation coefficients were computed to assess the relationship between their levels of education and their scores on the Total of the Subscales of the E-TIP. There was no significant correlation between the two variables. The hypothesis was not supported in this study. Education level did not significantly relate to National Board certified teachers' perceived use of developmentally appropriate practices. The null hypothesis was accepted.

A possible explanation for this finding is that National Board certification is stated to be a powerful, professional development opportunity that helps teachers expand and refine their understanding of teaching (Bohen, 2001). My findings are supported by Rotberg et al. (1998), who interviewed 38 teachers who were seeking or had achieved National Board certification. They found that the majority of the National Board certified teachers they studied believed the process of achieving certification provided them access to deep professional development. Similarly, Place and Coskie (2006) claim that completion of the NBPTS process is an excellent professional development opportunity. Beth Edwards of the North Carolina Department of Education claims that teachers who have participated in the National Board certification process found it to be the "most powerful professional development experience of their careers. They say the experience changes them as professionals and that through the process they deepen their content knowledge and develop, master, and reflect on new approaches to working with their

students” (Edwards, n. d., p.1). It appears that National Board certified teachers’ use of developmentally appropriate practices is affected more by professional development through participation in National Board certification than by advanced coursework and higher level degrees.

Discussion of Findings for Hypothesis 7

Hypothesis 7 stated that National Board certified teachers with more years of experience would perceive they used more developmentally appropriate practices than National Board certified teachers with less years of experience. In order to determine if years of experience was related to National Board certified teachers’ perceived use of developmentally appropriate practices, correlation coefficients were computed to assess the relationship between years of experience and their scores on the Total of the Subscales of the E-TIP. There was a significant correlation between the two variables. The hypothesis was supported in this study. Years of experience was significantly related to National Board certified teachers’ perceived use of developmentally appropriate practices. According to the National Board for Professional Teaching Standards, a veteran teacher is one who has at least three years of successful teaching experience (NBPTS, 2009). The National Board certified teachers in my study had between four and 42 years of teaching experience, with a median of 18 years of experience. The more experienced National Board certified teachers in my study perceived that they instituted developmentally appropriate practices into classroom teaching in many areas and with more consistency than less experienced National Board certified teachers. This finding is supported by the research of Jones, Burts and Buchanan (2000) who found that experience was a support to successfully implementing developmentally appropriate practices. My finding supports research that has indicated a positive relationship between teaching experience and teacher effectiveness

(Murnane & Phillips, 1981). My finding also supports findings from research that indicates that teachers with substantial teaching experience are likely to be more successful teaching than those with less experience (ETS, 2004). Further, my findings further support the findings of Darling-Hammond (2002), who found that teaching experience positively impacts teacher effectiveness.

Limitations and Delimitations

The major limitation of the study is that findings are dependent on teachers' perceptions of their teaching practices. Other limitations of the study include data collection and instrumentation. The E-TIP probes teachers about the appropriateness of their teaching practices, thus respondents may have been less disposed to admit to practices that are deemed developmentally inappropriate. Social desirability is another concern due to the self-reporting nature of the questionnaire. Complete anonymity was used to help mitigate these issues.

The use of email is somewhat of a limitation to this study. Because the survey was delivered electronically, availability was limited to those who had access to email and the internet. Although emails were sent to every parish with school websites, some potential respondents were not given access to the E-TIP because there were no email addresses accessible. By using email as the sole means of contacting potential participants and collecting data, this reduced the number of potential participants. The sample was not necessarily representative of those who were not given the opportunity to participate because of a lack of an available email address.

Another limitation is that there may have been a lower number of responses from Non-NBCTs (35.3%) in comparison with NBCTs (64.7%) because many elementary school teachers are overwhelmed with work. They may not have had the time to respond to the survey.

A shortcoming of causal-comparative research design is that conclusions about causality are tentative (Gay, Mills & Airasian, 2006). Caution must be applied when making the conclusion that the process of achieving National Board certification will make teachers more effective in incorporating DAP in their practices.

Implications for Early Childhood Education

The intent of this study was to bring greater awareness about perceived benefits of National Board certification for early childhood teachers. My findings indicate that teachers who are certified as Early Childhood Generalists perceive they use a broader range of developmentally appropriate practices in their classroom teaching. Though the effect sizes are small for some of the areas of the E-TIP, overall, teachers who have achieved National Board certification perceived that they met the indicators for developmentally appropriate practices as outlined by the National Association for the Education of Young Children. Advanced certification through the National Board for professional teaching standards appears to be a good indicator of early childhood teacher quality.

My study extends the findings of other studies that indicate that National Board certification is an effective indicator of teacher quality to include the early childhood level. Early childhood teacher education programs should align their coursework with the Early Childhood Generalist standards set forth by the National Board in order to ensure that early childhood teachers leave college with the breadth and depth of knowledge to successfully teach in developmentally appropriate ways. Further, colleges and universities should incorporate a portfolio and assessment process that uses the National Board certification process as a model for their requirements. This would help novice teachers begin to understand the interconnectedness of what and how they teach their students.

The Louisiana Department of Education should use the Early Childhood Generalist standards to align their expectations of teachers with outcomes for students. The Louisiana Teacher Assistance and Assessment (LaTAAP) program should revise their assessment process using the more rigorous standards of the National Board, while giving support to teacher candidates through assistance with mentors who are National Board certified. This would help novice early childhood teachers find more success with developmentally appropriate instruction. The Louisiana Department of Education recently made a decision to cut money allocated for National Board certified teacher stipends, leaving local school boards responsible for making up the difference in funding teachers with the advanced certification (Glover, 2010). Similarly, in South Carolina, one of the states with the highest percentages of NBCTS, The Education Oversight Committee voted unanimously to cut National Board certified teacher stipends (Smith, 2009). Due to a lack of research that supports National Board certification as an indicator of teacher quality, state departments of education are eliminating the pay raise teachers receive for successfully achieving the advanced certification. My study provides evidence that the certification process of the National Board enhances teaching practices of early childhood teachers. It also provides support for continuing to provide the pay supplement to teachers with Early Childhood Generalist certification.

Implications for Future Research

In order to understand if National Board certified teachers' perceptions of classroom teaching match their practices, a follow up to this study should be performed. Data should be collected through observations, interviews and artifacts including lesson plans, student work samples, weekly overviews, classroom schedules, grouping charts, correspondence to parents,

and other indicators of teaching styles in order to determine if the National Board teachers' practices mirror their perceptions in regard to classroom practices.

This current study needs to be conducted at the National level to understand perceptions of teachers with National Board certification across a broader spectrum. It should be combined with observations, interviews and data collection through artifacts.

Additionally, research needs to be performed to understand the experiences of successful candidates who apply for and pass the National Board for Professional Teaching Standards process in the area of Early Childhood Generalist in order to understand the experiences and perceived impact on teaching practices of these participants. The research should focus on the following questions: What effect does the certification process have on teaching practices among early childhood teachers? How does National Board certification change teaching behavior? What does National Board certification mean in terms of values, beliefs, and opinions to early childhood teachers? What is the perceived impact of National Board Certification in the area of Early Childhood Generalist on early childhood teachers' use of developmentally appropriate practices? What effect does the certification process have on teaching practices among early childhood teachers? Data collection would be through one-to-one, semi-structured, open-ended, in-depth key informant interviews by using guiding questions to obtain data related to participants' meanings, with focus groups for follow up questions. Though my current study lends valuable information about National Board certified teachers' perceptions of the National Board certification process, qualitative data analysis would reveal much more in-depth information.

From the results of my study, attracting NBCTs to urban school settings appears to be more problematic in Louisiana than other states with high numbers of National Board certified

teachers. Researchers need to find out barriers to National Board certified teachers working in urban settings and determine ways to attract and retain these highly qualified teachers to these settings where students might benefit from having a National Board certified teacher.

The overwhelming majority of Early Childhood Generalists in Louisiana were self-reported as Caucasian. Studies should be conducted to find ways to include a diverse range of races in the National Board certification process. I would like to discover whether or not this is a national phenomenon. Further studies are needed to explore the supports and barriers to National Board certification and ways to attract minority participation.

Further research is needed in order to understand the distribution of National Board certified teachers in Louisiana parishes. The five parishes in Louisiana with the highest numbers of National Board certified teachers are Jefferson with 176 NBCTs, St. Tammany with 131 NBCTs, East Baton Rouge with 128 NBCTs, Caddo with 115 NBCTs, and finally Ascension with 73 NBCTs (Greer, 2009). I would like to understand what attracts National Board certified teachers to those parishes or what incentives those parishes offer to encourage teachers to seek advanced certification. More importantly, I would like to know what attracts National Board certified teachers to parishes where there are few incentives or no incentives at all.

I find it interesting that the performance scores of the top ranking districts appear to have little correlation to the number of National Board certified teachers in those districts. District Performance Scores (DPS) released by the Louisiana Department of Education identified the following parishes and districts with the highest performance scores on their DPS: Zachary Community School District earned the state's highest performance score, 112.6; West Feliciana Parish ranked second, scoring 105.9; coming in third was St. Tammany Parish, 105.7; the fourth highest scoring school district was Vernon who scored 103.4; and in fifth place was Jefferson

Davis Parish with a score of 102.9 (“Louisiana Education Department Releases”, 2008).

Research needs to be done to see if there is a correlation between parish rankings on DPS and number of NBCTs employed in the parish.

The Early Childhood Inventory of Practices (E-TIP) needs to be further refined. There are few instruments available to measure teacher use of developmentally appropriate practices, and those available are lengthy. Because of pressures from school sites, school board and state departments of education, combined with classroom demands, teachers do not have a lot of time to commit to taking a self-report data collection tool. Although the E-TIP proved to have good internal and construct validity, it would be beneficial to perform further parametric measures to make it stronger. Using the data from this current study, I plan to refine the E-TIP and make it available for other researchers to use. I plan to ask for more demographic information including socio-economic status of the school site where the teachers work, gender of the participants, questions concerning family and community involvement in the classroom, number of years teaching with National Board certification, and a section for short answers after each of the Likert scale items.

With the new emphasis on Response to Intervention (Wright & Wright, 2009) in elementary schools and assessments such as Dynamic Indicators of Basic Early Literacy Skills (DIBELS, University of Oregon, n. d.), it would be interesting to see a study of the ways National Board certified teachers differentiate instruction and match learning to student need in developmentally appropriate ways. Assessment results from DIBELS testing focus on discreet skill development, and teachers are required to provide interventions to students who may be at risk of falling behind in reading and language arts (University of Oregon, n. d.). The National Board certified teachers in my current study perceived that they differentiate instruction and

match lessons to student needs. Research needs to be done in order to find out how or if National Board certified teachers provide reading and language arts interventions for their learners in ways that are developmentally appropriate to the individual child and small groups of children.

Summary of Findings

This study examined the impact of National Board certification on early childhood teachers' perceived use of developmentally appropriate teaching practices. A summary of the findings for each of the research hypotheses is presented in Table 36.

Table 36
Summary of Findings

Hypothesis	Significance	Accepted/Rejected
1	Significant	Accepted
2	Not Significant	Rejected
3	Significant	Accepted
4	Significant	Accepted
5	Significant	Accepted
6	Not Significant	Rejected
7	Significant	Accepted

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Appendix A

E-TIP

Early Childhood Teachers Inventory of Practices (E-TIP)

1. I have state certification.

Yes No

2. I have National Board Certification.

Yes No

3. What type of degree do you hold?

Early Childhood Education Elementary Education Other (please specify)

4. What type of school are you in?

Urban Suburban Rural

5. What is your level of education?

Bachelors Masters Masters plus 30/Educational Specialist EdD or PhD

6. How many years have you been teaching?

7. What is your ethnicity?

8. In which parish do you teach?

9. What grade do you teach?

Please rate your teaching practices using the following scale:

1-never 2-almost never 3- rarely 4- sometimes 5- often 6- almost always 7-always

1. In my classroom, I create a caring community of learners.

1 2 3 4 5 6 7

2. In my classroom, the individual child's language and culture serve as springboards for planning.

1 2 3 4 5 6 7

3. In my classroom, I fill my students with important knowledge and information.

1 2 3 4 5 6 7

4. In my classroom, I use whole group direct instruction to ensure all children are exposed to important information.

1 2 3 4 5 6 7

5. In my practices, technology is used by individual children for discrete skill development.

1 2 3 4 5 6 7

6. In my planning, I choose materials and equipment to meet children's developmental levels.

1 2 3 4 5 6 7

7. In my teaching practices, I use worksheets to reinforce academic skills.

1 2 3 4 5 6 7

8. In my planning, I balance teacher directed and child initiated learning experiences.

1 2 3 4 5 6 7

9. In my teaching practices, I draw on children's curiosity and desire to make sense of their world.

1 2 3 4 5 6 7

10. In my classroom, I use stickers and rewards to promote good classroom behavior.

1 2 3 4 5 6 7

11. In my planning, I integrate curricular areas through themes and projects.

1 2 3 4 5 6 7

12. In my planning, I provide time daily for extended child initiated play.

1 2 3 4 5 6 7

13. In my planning, I provide daily opportunities to develop children's language and literacy skills through meaningful experiences.

1 2 3 4 5 6 7

14. In my teaching, I use a variety of strategies to help children develop concepts and skills in mathematics, science, social studies.

1 2 3 4 5 6 7

15. In my teaching, I provide daily practice of academic skills.

1 2 3 4 5 6 7

16. In my classroom, I provide opportunities for children to develop gross motor and fine motor skills using movement and hands on materials.

1 2 3 4 5 6 7

17. In my assessment, I use tests to ensure the children are learning.

1 2 3 4 5 6 7

18. In my practice, I form partnerships with parents, colleagues and the community.

1 2 3 4 5 6 7

19. In my planning, I group students according to ability level to assure all children learn.

1 2 3 4 5 6 7

20. In my classroom, I incorporate strategies to meet multiple intelligences.

1 2 3 4 5 6 7

Appendix B
IRB Approval Letter

***University Committee for the Protection
of Human Subjects in Research
University of New Orleans***

Campus Correspondence

Principal Investigator: P. Sheehan McHugh

Co-Investigator: Ellen Lowery

Date: October 26, 2009

Protocol Title: "The Relationship Between National Board Certification and Teachers' Perception of Use of Developmentally Appropriate Practice"

IRB#: 09Dec09

The IRB has deemed that the research and procedures described in this protocol application are exempt from federal regulations under 45 CFR 46.101 category 2, due to the fact that the information obtained is not recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects.

Exempt protocols do not have an expiration date; however, if there are any changes made to this protocol that may cause it to be no longer exempt from CFR 46, the IRB requires another standard application from the investigator(s) which should provide the same information that is in this application with changes that may have changed the exempt status.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best wishes on your project.

Sincerely,

Robert D. Laird, Ph.D., Chair

UNO Committee for the Protection of Human Subjects in Research

Appendix C

Electronic Messages, Faxes and Mailed Letters to Participants

First Electronic Message to All Participants

Dear Early Childhood Teacher:

I am a graduate student under the direction of Dr. P. Sheehan McHugh in the Department of Curriculum and Instruction College of Education at the University of New Orleans. I am conducting a research study to explore early childhood teacher practices.

I am requesting your participation, which will involve approximately fifteen minutes of your time. Your participation in this study is voluntary, and you may choose to withdraw from the study at any time. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous.

Completing this survey will make you eligible to win an IPOD nano. Other possible benefits of your participation are that you may enjoy participating in the study, and you may find the results of the study interesting in regard to your own teaching practices.

Please follow the link below to find the E-TIP survey and rate your teaching practices. Please be as honest as possible when answering the questions to ensure proper results.

http://www.surveymonkey.com/s.aspx?sm=7JyqZP2wCj4VpVRj6MuQxQ_3d_3d

Completion of the questionnaire will be your consent to participate. Upon completion of the survey, you are eligible to be in a drawing for a chance to win an IPOD nano. Please send your name under separate cover to enlowery@uno.edu, and your name will be included in the drawing.

If you have any questions concerning the research study, please email me at enlowery@uno.edu or call Dr. McHugh at (504) 280-5556. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. P. Sheehan McHugh at (504) 280-5556 or Dr. Ann O'Hanlon at the University of New Orleans (504) 280-6501.

Thank you very much for your time and help.

Ellen Nancy Lowery, M.Ed.
Doctoral Candidate
University of New Orleans

Second Electronic Message to Participants

Dear Early Childhood Teacher:

Thank you to those of you who have already participated in my study! I would like to provide another opportunity for involvement for those of you who have not yet participated.

I am a graduate student under the direction of Dr. P. Sheehan McHugh in the Department of Curriculum and Instruction College of Education at the University of New Orleans. I am conducting a research study to explore early childhood teacher practices.

I am requesting your participation, which will involve approximately fifteen minutes of your time. Your participation in this study is voluntary, and you may choose to withdraw from the study at any time. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous.

Completing this survey will make you eligible to win an IPOD nano. Other possible benefits of your participation are that you may enjoy participating in the study, and you may find the results of the study interesting in regard to your own teaching practices.

Please follow the link below to find the E-TIP survey and rate your teaching practices. Please be as honest as possible when answering the questions to ensure proper results.

http://www.surveymonkey.com/s.aspx?sm=7JyqZP2wCj4VpVRj6MuQxQ_3d_3d

Completion of the questionnaire will be your consent to participate. Upon completion of the survey, you are eligible to be in a drawing for a chance to win an IPOD nano. Please send your name under separate cover to enlowery@uno.edu, and your name will be included in the drawing.

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Thank you very much for your time and help.

Ellen Nancy Lowery, M.Ed.
Doctoral Candidate
University of New Orleans

Second Electronic Message to National Board Certified Teachers

Dear National Board Certified Educator:

Your expertise as an Early Childhood Generalist is requested. Thank you to those of you who have already completed my survey. Because the survey is anonymous, I have no way of knowing who has completed it, so if you have already participated, please delete this email.

I am a graduate student under the direction of Dr. P. Sheehan McHugh in the Department of Curriculum and Instruction College of Education at the University of New Orleans. I am conducting a research study to explore early childhood teacher practices.

I am requesting your participation, which will involve approximately fifteen minutes of your time. Your participation in this study is voluntary, and you may choose to withdraw from the study at any time. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous.

Completing this survey will make you eligible to win an IPOD nano. Other possible benefits of your participation are that you may enjoy participating in the study, and you may find the results of the study interesting in regard to your own teaching practices.

Please follow the link below to find the E-TIP survey and rate your teaching practices. Please be as honest as possible when answering the questions to ensure proper results.
<http://www.surveymonkey.com/s/2RTWK5>

Completion of the questionnaire will be your consent to participate. Upon completion of the survey, you are eligible to be in a drawing for a chance to win an IPOD nano. Please send your name under separate cover to enlowery@uno.edu, and your name will be included in the drawing.

If you have any questions concerning the research study, please email me at enlowery@uno.edu or call Dr. McHugh at (504) 280-5556. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. P. Sheehan McHugh at (504) 280-5556 or Dr. Ann O'Hanlon at the University of New Orleans (504) 280-6501.

Thank you very much for your time and help.

Ellen Nancy Lowery, M.Ed.

Doctoral Candidate

University of New Orleans

Fax Message Sent to National Board Certified Teachers

To:

Fax #:

Dear National Board Certified Teacher:

Thank you to those of you who have already participated in my study! I would like to provide another opportunity for involvement for those of you who have not yet participated.

I am a graduate student under the direction of Dr. P. Sheehan McHugh in the Department of Curriculum and Instruction College of Education at the University of New Orleans. I am conducting a research study to explore early childhood teacher practices.

I am requesting your participation, which will involve approximately fifteen minutes of your time. Your participation in this study is voluntary, and you may choose to withdraw from the study at any time. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous.

Completing this survey will make you eligible to win an IPOD nano. Other possible benefits of your participation are that you may enjoy participating in the study, and you may find the results of the study interesting in regard to your own teaching practices.

Please follow the link below to find the E-TIP survey and rate your teaching practices. Please be as honest as possible when answering the questions to ensure proper results.

http://www.surveymonkey.com/s.aspx?sm=7JyqZP2wCj4VpVRj6MuQxQ_3d_3d

Completion of the questionnaire will be your consent to participate. Upon completion of the survey, you are eligible to be in a drawing for a chance to win an IPOD nano. Please send your name under separate cover to enlowery@uno.edu, and your name will be included in the drawing.

If you have any questions concerning the research study, please email me at enlowery@uno.edu or call Dr. McHugh at (504) 280-5556. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. P. Sheehan McHugh at (504) 280-5556 or Dr. Ann O'Hanlon at the University of New Orleans (504) 280-6501.

Thank you very much for your time and help.

Ellen Nancy Lowery, M.Ed.
Doctoral Candidate
University of New Orleans

Mailed Letter Send to National Board Certified Teachers

To:

Address:

Dear National Board Certified Teacher:

Thank you to those of you who have already participated in my study! I would like to provide another opportunity for involvement for those of you who have not yet participated.

I am a graduate student under the direction of Dr. P. Sheehan McHugh in the Department of Curriculum and Instruction College of Education at the University of New Orleans. I am conducting a research study to explore early childhood teacher practices.

I am requesting your participation, which will involve approximately fifteen minutes of your time. Your participation in this study is voluntary, and you may choose to withdraw from the study at any time. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous.

Completing this survey will make you eligible to win an IPOD nano. Other possible benefits of your participation are that you may enjoy participating in the study, and you may find the results of the study interesting in regard to your own teaching practices.

Please follow the link below to find the E-TIP survey and rate your teaching practices. Please be as honest as possible when answering the questions to ensure proper results.

http://www.surveymonkey.com/s.aspx?sm=7JyqZP2wCj4VpVRj6MuQxQ_3d_3d

Completion of the questionnaire will be your consent to participate. Upon completion of the survey, you are eligible to be in a drawing for a chance to win an IPOD nano. Please send your name under separate cover to enlowery@uno.edu, and your name will be included in the drawing.

If you have any questions concerning the research study, please email me at enlowery@uno.edu or call Dr. McHugh at (504) 280-5556. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. P. Sheehan McHugh at (504) 280-5556 or Dr. Ann O'Hanlon at the University of New Orleans (504) 280-6501.

Thank you very much for your time and help.

Ellen Nancy Lowery, M.Ed.
Doctoral Candidate
University of New Orleans

Electronic Message Sent to Newly Certified Teachers

Congratulations on earning National Board Certification!

Your expertise as an Early Childhood Generalist is requested. I am a graduate student under the direction of Dr. P. Sheehan McHugh in the Department of Curriculum and Instruction College of Education at the University of New Orleans. I am conducting a research study to explore early childhood teacher practices.

I am requesting your participation, which will involve approximately fifteen minutes of your time. Your participation in this study is voluntary, and you may choose to withdraw from the study at any time. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous.

Completing this survey will make you eligible to win an IPOD nano. Other possible benefits of your participation are that you may enjoy participating in the study, and you may find the results of the study interesting in regard to your own teaching practices.

Please follow the link below to find the E-TIP survey and rate your teaching practices. Please be as honest as possible when answering the questions to ensure proper results.

<http://www.surveymonkey.com/s/2RTWK5>

Completion of the questionnaire will be your consent to participate. Upon completion of the survey, you are eligible to be in a drawing for a chance to win an IPOD nano. Please send your name under separate cover to enlowery@uno.edu, and your name will be included in the drawing.

If you have any questions concerning the research study, please email me at enlowery@uno.edu or call Dr. McHugh at (504) 280-5556. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. P. Sheehan McHugh at (504) 280-5556 or Dr. Ann O'Hanlon at the University of New Orleans (504) 280-6501.

Thank you very much for your time and help.

Ellen Nancy Lowery, M.Ed.

Doctoral Candidate

University of New Orleans

VITA

Ellen Nancy McKenzie earned a Bachelor of Science in Early Childhood Education and certification in Early Childhood Education in 1981 from the University of South Alabama. She earned a Master of Education degree in Curriculum and Instruction in 2005 from the University of New Orleans and completed the Doctor of Philosophy degree in Curriculum and Instruction at the University of New Orleans in May 2010.

She is a National Board certified teacher in the area of Early Childhood Generalist. Ellen is a member of the National Association of Young Children, Louisiana Association for the Education of Young Children, National Education Association, International Reading Association, Southern Early Childhood Association, National Association of Early Childhood Teacher Educators, and the Louisiana Educational Research Association.

Ellen has experience as an early childhood teacher, having taught pre-kindergarten and kindergarten. She has presented at local and state conferences on a variety of educational topics including integrating technology into lessons, integrating curricular areas, and using manipulatives to facilitate learning. Ellen has also published an article on teaching young children in developmentally appropriate ways after disasters.