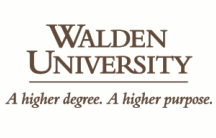

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The effects of a high quality teaching professional development program on fourth grade student achievement

Ethel J. Hasty
Walden University

ABSTRACT

The Effects of a High Quality Teaching Professional Development Program on Fourth Grade Student Achievement

by

Ethel J. Hasty

M.A. Rowan University, 1983
BA Livingstone College, 1971

Doctoral Study Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Education
Administrative Leadership for Teaching and Learning

Walden University
August 2010

ABSTRACT

In many states, local school systems are under pressure to implement educational programs to help students pass the statewide Assessment of Skills and Knowledge (ASK) in science, mathematics, and language arts literacy. The school district in which this study was conducted implemented a high quality teaching professional development (HQTPD) program for grade four teachers in 2008. The research problem was that, at the data site, fourth grade students were not making academic progress, and elementary schools were failing to make adequate yearly progress (AYP). The HQTPD program intervention was grounded in social learning theory. The main research question that guided this quantitative study was whether or not HQTPD affected fourth grade students' science, mathematics, and language arts literacy ASK scores. ASK test scores in science, mathematics, and language arts literacy were collected for 1,185 grade four students. The data were analyzed using a *nonequivalent quasi-experimental pretest and posttest control group design,* which involved two cohorts of fourth grade students before and after the implementation of the HQTPD program. Empirical evidence revealed that the HQTPD program had a positive impact on fourth grade students' science, mathematics, and language arts literacy ASK scores. The local school district and the surrounding institutes of higher education and professional development providers in this state may benefit from having an awareness of the effectiveness of HQTPD on student achievement. Implications for social change include including more programs like HQTPD that have the potential to increase student academic achievement.

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COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Ethel J. Hasty

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Peter Kiriakidis, Committee Chairperson, Education Faculty
Dr. Anthony Chan, Committee Member, Education Faculty
Dr. Mary Rozendal, University Reviewer, Education Faculty

Chief Academic Officer
David Clinefelter, Ph.D.

Walden University
2010

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

DEDICATION

This study is dedicated to my family. Thank you for your support.

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I would like to express sincere appreciation to Dr. Peter Kiriakidis, PhD who assisted in the completion of this study. Special thanks are reserved for Mr. George Hasty, my spouse, and Ms Laura Davion, my daughter, who provided support throughout this all so lengthy endeavor. After I married George, I changed my name from Ethel W. Davion to Ethel J. Hasty. A special thanks to the school leaders who provided me with the quantitative data. To my family, thanks for understanding and giving up quality time so that my study could be conducted.

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Introduction

Fourth grade students in the state of New Jersey were not passing the science, mathematics, and language arts literacy New Jersey Assessment of Skills and Knowledge ([NJASK] New Jersey Department of Education, 2008/2009). Local school systems were under pressure to implement educational programs to help these students pass the NJASK in science, mathematics, and language arts literacy. The school district in which I conducted a data analysis had implemented a high quality teaching professional development (HQTPD) program for elementary teachers in 2008.

The research problem suggested that, at the data site, fourth grade students were not meeting the required standards of proficiency in their NJASK scores in science, mathematics, and language arts literacy, and that elementary schools were failing to make adequate yearly progress (AYP) as mandated by the NCLB Act of 2002. At the data site, no research had been conducted to examine whether or not a HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores. The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between the groups of fourth grade students taught by elementary teachers before the implementation of the HQTPD program and fourth grade students taught by elementary teachers after the implementation of the HQTPD program. An extensive review of the literature revealed that research findings were very limited in addressing HQTPD programs for fourth grade students. The focus of this study was to determine if

a significant difference existed in the NJASK science, mathematics, and language arts literacy scores of fourth grade students before and after the implementation of the high quality teaching professional development program.

At the data site, fourth grade students took the NJASK in science, mathematics, and language arts literacy. The language arts literacy section of the NJASK measured students' achievements in reading and writing. The mathematics section measured students' abilities to solve problems by applying mathematical concepts in number sense and numerical operations, geometry and measurement, patterns and algebra, data analysis, and so forth. The science section of NJASK measured students' abilities to recall information and to solve problems by using science concepts.

This researcher employed the *nonequivalent quasi-experimental pretest and posttest control group design* which involved two groups of fourth grade students (one group was taught by elementary teachers before the implementation of the high quality teaching professional development program and the other group was taught by elementary teachers after the implementation of the high quality teaching professional development program), both of which were pretested and post-tested utilizing the fourth grade NJASK scores between the academic years 2007-2008 and 2008-2009. Thus, the main research question that guided this study was: what was the effect of a high quality teaching professional development program on fourth grade student achievement as measured by the NJASK testing in science, mathematics, and language arts literacy?

Review of the current literature revealed limited sources on the effects of a high quality teaching professional development program on elementary student achievement.

The differences in instructional practices may have an impact on narrowing the academic achievement gap (Taylor, 2006). The academic proficiency of the teaching staff was usually at least part of the reason for the achievement gap and when curriculum and instruction were skillfully tailored to fit students' current proficiencies, students learned more (Ferguson, 2001, p. 35). Quality instruction made a difference in terms of closing the achievement gap when teachers utilized a variety of instructional strategies and assessments such as direct instruction, experiential learning, and integrated assessment (DiMartino & Miles, 2005, p. 101).

A growing body of research linked high quality teaching to student academic success (Koppich, 2006). Research-based practices existed about what works in the classroom (Singleton & Linton, 2006, pp. 4-6). Students tended to believe that effort increased competencies, although task engagement and performance-approach goals were important (Berger, 2009, p. 167).

Research Problem

At the data site, which was located in the northern state of New Jersey, the research problem was threefold. Specifically, (a) fourth grade students were not meeting required standards of proficiency on the NJASK scores in science, mathematics, and language arts literacy, (b) elementary schools were failing to make adequate yearly progress (AYP), and (c) no research was conducted at the data site to examine whether or not a high quality teaching professional development program HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores. Review of the current literature revealed no simple explanation for the differences

in state standardized test scores. I hypothesized that a high quality teaching professional development program may have an effect on narrowing the academic achievement gap because additional educational professional development experiences of elementary teachers may assist fourth grade students in NJASK testing in science, mathematics, and language arts literacy.

On January 8, 2002, President George W. Bush signed into law the No Child Left Behind Act of 2001 (NCLB), which reauthorized the Elementary and Secondary Education Act (ESEA). NCLB significantly raised expectations for states, local school districts, and schools, in that all students were expected to meet or exceed state standards in reading and mathematics by the year 2014 (GADOE, 2009). The state of New Jersey, along with all other states in the United States, established state academic standards and a state testing system (NJASK) that met the federal requirements of NCLB. Adequate yearly progress (AYP), a measure of year-to-year student achievement on statewide assessments, was one of the foundations of the federal NCLB Act (NJDOE, 2009). Thus, the issue of narrowing the academic achievement gap was a national issue and the standards based reform had made the academic achievement gap a highly visible issue, as too many students lacked the academic skills to meet NCLB standards. The state of New Jersey was one of many states that developed targeted performance standards for attaining AYP. However, the performance record on these standards had not necessarily indicated that the schools were improving. In New Jersey, many schools had not met AYP.

The relatively new focus on core curriculum content standards, high stakes

testing, and NCLB (2002) had prominently placed the issue of the achievement gap in the spotlight. Narrowing the academic achievement gap was one of the greatest challenges educators faced, as it had been a source of controversy for more than 30 years (Downey, Frase, Paston, & Steffy, 2003). Education stakeholders had the moral responsibility to ensure equity.

One of the issues that led to this study was the need to concentrate on the effects of a teaching professional development program on elementary student achievement. School leaders at the data site, in collaboration with elementary teachers, had implemented a teaching professional development program to narrow the academic achievement in NJASK testing.

The research problem involved the performance of students on NJASK testing. Students at the data site lacked the academic skills needed to pass NJASK testing. At the data site, educational stakeholders needed to focus on high standards and a challenging curriculum and, thus, I felt the need to conduct this study to determine the effect of a professional development intervention program on NJASK scores. This was the first step in addressing questions about closing the achievement gap.

The educational stakeholders at this data site were aware of this urgent issue and, as a result, had implemented a professional development intervention program between the academic years 2007-2008 and 2008-2009. These stakeholders needed research-based findings on the effects of the high quality teaching professional development program for elementary teachers on NJASK scores in science, mathematics, and language arts literacy. The high quality professional development program had been

developed to help teachers prepare students to demonstrate higher level thinking and analytical and problem-solving skills, as measured by NJASK.

At the data site, the findings of this study had implications for educational stakeholders at both elementary and high schools including curriculum developers interested in raising the level of student proficiency on NJASK scores. Educational stakeholders used the findings of this study to foster and to reframe teaching and learning.

The findings of this study will help school districts focus on increasing student achievement through a comprehensive plan of school and district improvement through a high quality teaching professional development program. Additionally, district leaders, program developers, and school leaders may use the findings of this study to help teachers to prepare students to maximize their potential to achieve higher levels of proficiency on NJASK scores. Further, the findings led to an understanding of what constitutes a *high quality teaching* professional program that may lead to raising the level of academic proficiency on NJASK scores. Clearly, understandings of how to reframe teaching and learning in a third grade through seventh grade classroom will better prepare students to compete in a global economy. To this end, I examined whether or not a high quality teaching professional development program has had an impact on fourth grade students' science, mathematics, and language arts literacy scores, as measured by NJASK testing. The aim of this study was to examine whether or not there was a change in fourth grade NJASK scores from one year to another year based on teachers' participation in the district's HQTPD program.

Nature of the Study

This researcher conducted a quantitative study using a quasi-experimental nonequivalent (pretest and posttest) control group design in order to analyze the effectiveness of the high quality teaching professional development (HQTPD) program on fourth grade students' science, mathematics, and language arts literacy NJASK scores. This HQTPD program was designed for elementary teachers at an urban northern New Jersey public school district. This HQTPD program was offered to elementary school teachers during the academic year 2007-2008 to help students pass the NJASK test. The NJASK test assessed student academic achievement in science, mathematics, and language arts literacy in New Jersey. This HQTPD program was neither a one-on-one mentoring program for elementary school teachers nor a program based on a specific model of school intervention program. Rather, the HQTPD program was designed to assist students in raising the level of academic proficiency. Notwithstanding the program's emphasis on teaching practices, the main focus was lifting academic achievement to a level that demonstrated a narrowing of the academic achievement gap.

The HQTPD program was a comprehensive staff development program designed for teachers to improve instructional practices in order to help students increase their performance on NJASK scores. Teachers who participated in the HQTPD program learned how to help students develop higher critical and analytical thinking, problem solving, and writing skills. The local school district required all elementary teachers to participate in the HQTPD program in the academic year 2007-2008 based on a district-wide needs assessment.

The participants in this study were two cohorts of fourth grade students. The first cohort was in fourth grade during the academic year 2007-2008 before the implementation of the HQTPD program. The second cohort was in fourth grade during the academic school year 2008-2009 after the implementation of the HQTPD program. The second cohort of fourth grade students participated in the NJASK Spring term testing cycle in science, mathematics, and language arts literacy for the academic year 2009.

I collected the NJASK test scores in science, mathematics, and language arts literacy for approximately 1,200 students who were in fourth grade between the academic years 2007-2008 and 2008-2009. Of the 1,200 potential participants, 600 were in fourth grade during the academic year 2007-2008 and 600 during the academic year 2008-2009. I compared the NJASK science, mathematics, and language arts literacy scores between these two cohorts of fourth grade students before the implementation of the HQTPD program, during the academic year 2007-2008, and after the implementation of the HQTPD program, during the academic year 2007-2008. A quasi-experimental nonequivalent control group design was used to determine if gains were made in the areas of science, mathematics, and language arts literacy as measured quantitatively by the NJASK testing

I had worked as an educator in the state of New Jersey and had been a district administrator for over 20 years. This researcher collected archived data from the local school district upon receipt of Institutional Review Board (IRB) approval from Walden University (IRB # 05-10-10-0328888) and the administrator responsible for research at the data site. Data were collected from the students' NJASK scores between the academic

years 2007-2008 and 2008-2009. These data were archived and were available through the local school district's data and assessment office.

I entered all of the NJASK archived data records in SPSS 17.0 for Windows using a quasi-experimental nonequivalent (pretest and posttest) control group design. This researcher employed the *nonequivalent quasi-experimental pretest and posttest control group design,* which involved two cohorts of fourth grade students (one cohort in fourth grade before the implementation of the HQTPD program, during the academic year 2007-2008, and another cohort in fourth grade after the implementation of the HQTPD program, during the academic year 2008-2009). The first cohort of fourth grade students was pretested before the implementation of the HQTPD program during the academic year 2007-2008. The second cohort of fourth grade students was post tested before the implementation of the HQTPD program during the academic year 2008-2009.
The quasi-experimental quantitative methods for investigating the data were chosen rather than qualitative methods because the NJASK test scores involved science, mathematics, and language arts literacy that were quantitative measures. I was not (a) focusing on the interaction between the two cohorts of fourth grade students and (b) examining the actual instruction that influenced the NJASK scores.

A research assistant worked with this researcher in order to ensure that all data entries and analyses were accurate and to ensure that all researcher biases were nullified. The research assistant signed a letter of confidentiality before being enlisted as an assistant. The main research question that guided this study was whether or not there was

an effect of a high quality teaching professional development program (HQTPD) on fourth grade students' science, mathematics, and language arts literacy NJASK scores.

Research Question 1

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There was significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There was no significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants was NJASK tested in science during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in science during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the science scores of the first cohort were the pretest scores and the science scores of the second cohort were the posttest scores. I collected NJASK science scores and used an independent *t-test* for paired samples to determine whether there was a significant difference in the student academic performance in science as measured by the New Jersey NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group (first cohort), and the control group (second cohort), were selected without random assignment. Gravetter and Wallnau's (2005) decision map for choosing parametric tests was utilized for the rationale for employing the independent paired *t* test for the parametric, numerical items collected from the NJASK data. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK science scores between the two cohorts of students. The level of significance was set at .05. Upon determining the level of significance, a standard t value table was used to determine if the independent *t*-test value exceeded the critical *t*-value, indicating that a result was considered statistically significant.

Research Question 2

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is no significant difference in the student academic performance in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants was NJASK tested in mathematics during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in mathematics during

the 2008-2009 academic year after the implementation of the HQTPD program. Thus, the mathematics scores of the first cohort were the pretest scores and the mathematic scores of the second cohort were the posttest scores. I collected NJASK mathematic scores and used an independent *t-test* for paired samples to determine whether there was a significant difference in the student academic performance in mathematics as measured by the New Jersey NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group (first cohort), and the control group (second cohort), were selected without random assignment. Gravetter and Wallnau's (2005) decision map for choosing parametric tests was utilized for the rationale for employing the independent paired samples *t* test for the parametric, numerical items collected from the NJASK data. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK mathematic scores between the two cohorts of students. The level of significance was set at .05. Upon determining the level of significance, a standard t value table was used to determine if the independent *t*-test value exceeded the critical *t*-value, indicating that a result was considered statistically significant.

Research Question 3

What was the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade

students in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There was significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There was no significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program. The first cohort of fourth grade participants was NJASK tested in language arts literacy during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in language arts literacy during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the language arts literacy scores of the first cohort was the pretest scores and the language arts literacy scores of the second cohort was the posttest scores. I

collected NJASK language arts literacy scores and used an independent *t-test* for paired samples to determine whether there was a significant difference in the student academic performance in language arts literacy as measured by the New Jersey NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group (first cohort), and the control group (second cohort), were selected without random assignment. Gravetter and Wallnau's (2005) decision map for choosing parametric tests was utilized for the rationale for employing the independent paired samples *t*-test for the parametric, numerical items collected from the NJASK data. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK language arts literacy scores between the two cohorts of students. The level of significance was set at .05. Upon determining the level of significance, a standard *t*-value table was used to determine if the independent *t*-test value exceeded the critical *t*-value, indicating that a result was considered statistically significant.

Purpose Statement

The school district where this study was conducted implemented a high quality teaching professional development (HQTPD) program for elementary teachers in 2008. The research problem was that fourth grade students at the data site were not making academic progress, elementary schools were failing to make adequate yearly progress (AYP), and current literature review had not revealed whether or not a HQTPD program

had an effect on fourth grade students' science, mathematics, and language arts literacy NJASK scores. The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between fourth grade students taught by elementary teachers before the implementation of the HQTPD program and fourth grade students taught by elementary teachers after the implementation of the HQTPD program. The focus of this study was to determine if there was a significant difference in the NJASK science, mathematics, and language arts literacy scores of fourth grade students before and after the implementation of the high quality teaching professional development program. At the data site, fourth grade students were required to take the NJASK in science, mathematics, and language arts literacy. The main research question that guided this study was: what was the effect of a high quality teaching professional development program on fourth grade student achievement as measured by the NJASK testing in science, mathematics, and language arts literacy?

Theoretical Framework

As school and district leaders moved toward the initiative of creating effective learning and teaching communities to provide continuity for students, these leaders were experiencing challenges with standardized testing. These leaders needed research-based findings in order to support the HQTPD program and to guide their district's policies and procedures to help them make sound decisions.

In this theoretical framework for the research study, I explain why a high quality teaching professional development program for elementary teachers may have had an

effect on student performance by helping teachers and school administrators make adequate yearly progress (AYP). I used an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between one cohort of fourth grade students taught by elementary teachers before the implementation of the HQTPD program and another cohort of fourth grade students taught by the same elementary teachers after the implementation of the HQTPD program. At the data site, school leaders believed that the school environment had a direct impact on the decisions that a leader or teacher made on a daily basis. All schools, at the data site, had implemented the HQTPD program in accordance with social learning theory (Kearsley, 1994). Actively engaged teachers in professional development programs using support-based learning enhanced their proficiency (Gordon, 2004). Based on Vygotsky's theory (1978), when teachers are engaged in activities within a supportive learning environment and when they received appropriate guidance, then learning could occur (Kearsley, 1994). By applying the multiplicity of the support-based learning and the experiential learning theories, teachers were able to help students pass NJASK testing.

The HQTPD program was developed for teachers to help their students to improve their standardized NJASK test scores. The successful implementation of the HQTPD program helped elementary school teachers provide structure for fourth grade students in terms of passing NJASK testing.

The HQTPD program was a model program that consisted of research-based findings that supported the premise that each school contributed to student achievement

and included opportunities for the development of learning communities. The stakeholders involved in this program were expected to work together collaboratively to find solutions relative to individual learning issues. Likewise, school engagement caused an increase in overall student achievement. Students benefited from the HQTPD program in terms of feeling more positive about standardized testing.

The HQTPD program was a district-wide mandatory comprehensive staff development program where elementary teachers needed to participate in 10 professional development sessions within the district throughout one academic year. The district provided support for teachers to participate in the program via instructional resource coaches whose responsibilities were to follow up by observing teaching and modeling instructional practices. The instructional resource coaches modeled the social learning theory during the professional development sessions. Resource materials were provided to all teachers who participated in this program. District administrators provided support to all teachers by modeling lessons and practices and provided feedback to help teachers improve instructional practices in order to help students increase their performance on NJASK scores. Teachers who participated in the HQTPD program learned how to help students develop higher critical and analytical thinking, problem solving, and writing skills.

The academic achievement gap needs to be narrowed in order to move students from one grade to the next (Price, 2005). The HQTPD program focused on encouraging students to interact with the content in a way that is purposeful. An example was that of a teacher who required all students to depict their observations of the experiment they had

conducted during the class in writing, and those students who were having difficulty were allowed to demonstrate their understanding through a drawing or sketch. This is an example of a teacher who ensured that all students gained access to the learning by accommodating the different levels of her students.

Learning cannot be forced, but student motivation takes place if teachers present effective classroom instruction. Well-structured cooperative learning classrooms, hands on inquiry based instruction, and challenging curricula are needed to support learning (Mano, 2005). Another way used to describe this aspect of quality teaching is that students must be actively engaged, because this is an effective practice which increased learning. Collaboration cultures turn individual learning into shared learning (Taylor, 2006). Education stakeholders need to build into the educational system more opportunities for professional learning that impacted quality learning (Fullan, 1991).

Definition of Terms

A high quality teaching professional development (HQTPD) program for elementary teachers and the dynamics therein are associated with several concepts and terms that are defined as follows:

Academic achievement gap: The achievement gap refers to the gap in academic achievement between and among groups (Davis, 2003). The achievement gap reflects large percentages of low-income African American, Latino, and Native American students at the low end of the achievement ladder and large percentages of middle and high income white and Asian students at the top of the academic achievement ladder (Johnson, 2002). Further, the achievement gap persists regardless of economic status.

For the purposes of this study, student achievement refers to the standardized test scores which were achieved on the NJASK 4 in Language Arts Literacy. This variable is differentiated by labels of *proficient*, *partially proficient,* and *advanced proficient* as measured by NJASK

High quality teaching: High quality teaching included core ideas of the content academic areas. High quality learning involves problem solving, which causes learning to be retained. Active thinking is a hallmark in high quality instruction environments and this form of thinking happens best in learning-centered groups as students shared ideas, worked together, and helped each other (Taylor, 2006). "Students talk about teachers who do not know their subject matter, counselors who underestimate student potential, and curriculum and expectations that are so low that students are bored" (Haycock, 2001, p. 7). All students achieve at high levels, if they are taught at high levels (Johnson, 2002).

NJASK tests: NJASK, which stands for the New Jersey Assessment of Skills and Knowledge, were given in language arts literacy and mathematics. New Jersey Department of Education (2005) reported that the NJASK tests have been developed to meet state and national initiatives to measure the achievement of elementary school students in the public schools. At the federal level, the No Child Left Behind Act of 2001 called for annual testing of all public school students in grades three through eight, inclusive, in the content areas of science, mathematics, and language arts literacy.

Adequate yearly progress (AYP): According to the State of New Jersey News report (2003), AYP results are based on year-to-year comparisons of schools' scores administered to NJASK three to seven (New Jersey Assessment of Skills and

Knowledge), administered to students in Grades three to seven. The Department of Education (2003) reported that in order to achieve AYP, a school or district's students met both the proficiency targets and a 95% participation rate in mathematics and language arts for each of 10 subgroups and each of three grade spans (Grades three to five, Grades six to eight and Grade 11), which included the total school population, students with disabilities, limited English proficiency (LEP) students, economically disadvantaged students, white, Hispanic, African American, Asian/Pacific Islander and American Indian/Native American students.

Assumptions, Limitations, Scope, and Delimitations

I assumed that the successful implementation of a high quality teaching professional development had an effect on student performance on NJASK testing. I assumed that the participating schools reported higher NJASK scores after the implementation of the HQTPD program where the same teachers taught the two cohorts of fourth grade students. I assumed that the Office of Mathematics, Data Management and Assessment provided accurate data to the researcher. I assumed that other similar professional development programs were not implemented simultaneously with the HQTPD program, such that the effect could not be attributed to these other programs.

I did not include the perceptions of the parents or guardians, and students of the HQTPD program. Likewise, the perspectives of the school and district administrators were not taken into consideration for this study. The findings apply directly to New Jersey school districts' local problem.

The study was bounded by eight elementary schools available for inclusion in this study within one school district in the state of New Jersey. Students at the data site were not separated based upon achievement, race, gender, or economic status. The HQTPD program was implemented in 2008.

The research was limited to fourth grade NJASK scores from elementary schools in Northern New Jersey within one school district. The research was limited to three subjects: fourth grade science, mathematics, language arts literacy. The research was limited by the accuracy of the data that was provided by the participating school district. The research was limited to the implementation of the HQTPD program.

The scope of this study was specific to the participants and the schools at the data site. Fourth grade students were the focus of this study. The sample size limited the opportunity to generalize the findings to the larger and like school student populations in other school districts or states.

A research assistant collected the data from the district data office on behalf of the researcher. A research assistant assisted in the data input.

Significance of the Study

No research was conducted in the participating school district at a district-wide level to examine the effect of the HQTPD program on NJASK scores. Elementary teachers at the data site used the findings of this study to prepare students to pass NJASK testing. School and district administrators at the data site used the findings of this study to support elementary teachers by successfully implementing the HQTPD program to increase NJASK scores in science, mathematics, and language arts literacy. This study

focused on the effects of the HQTPD program on NJASK scores and its findings may enrich the field of educational research.

The findings of this study provided a sound basis for district decisions about educational reform. Evidence reflected that the information being amassed would allow the researcher, as superintendent, to lead the district in the direction of excellence. It was important for me to focus on increasing student achievement through a comprehensive plan of improvement.

The researcher's goal was to provide evidence to maximize each student's potential to achieve at high levels, thereby narrowing the achievement gap. By targeting identified areas of need, and focusing on the usage of data to guide decision making, the systemic improvement process was expected. The significance of this study was that stakeholders at the data site were made aware of best practices that made a difference in student performance.

Implications for Social Change

As school and district leaders struggled with ways to provide structure for elementary teachers to help students pass NJASK, the HQTPD program was implemented across the elementary schools in the participating district. The successful implementation of the HQTPD program could have an effect on NJASK scores. This study provided educators, researchers, school and district administrators, and other school leaders with empirical evidence regarding the effect of the HQTPD program on science, mathematics, and language arts literacy scores, as measured by NJASK. This empirical evidence served to inform other school leaders of the benefits of the HQTPD program for

improving the educational performance of students on NJASK testing. The HQTPD program had the potential to provide teachers with a structure to help their students to have a more positive experience in their NJASK testing. With more positive experiences in NJASK, students passed NJASK and schools met AYP and, as a result, students became more productive members of society.

Summary

At the data site, some New Jersey state fourth grade students were not passing the science, mathematics, and language arts literacy NJASK. The school district where this study was conducted implemented a high quality teaching professional development (HQTPD) program for elementary teachers in the academic year 2007-2008. The research problem was that fourth grade students at the data site were not making academic progress, elementary schools were failing to make AYP, and a current literature review did not reveal whether or not a HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores.

The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between the groups of fourth grade students taught by elementary teachers before the implementation of the HQTPD program and fourth grade students taught by elementary teachers after the implementation of the HQTPD program. An extensive review of the literature revealed that research findings were very limited in addressing HQTPD programs for fourth grade students. The focus of this study was to determine if there was a significant difference in the NJASK science, mathematics, and language arts

literacy scores of fourth grade students before and after the implementation of the high quality teaching professional development program.

I employed the *nonequivalent quasi-experimental pretest and posttest control group design* involving two groups of fourth grade students (one group was taught by elementary teachers before the implementation of the high quality teaching professional development program and the other group was taught by elementary teachers after the implementation of the high quality teaching professional development program), both of which were pretested and post tested utilizing the fourth grade NJASK scores between the academic years 2007-2008 and 2008-2009. Thus, the main research question that guided this study was: what was the effect of a high quality teaching professional development program on fourth grade student achievement as measured by the NJASK testing in science, mathematics, and language arts literacy?

This study was conducted in the state of New Jersey in an urban school district. The student academic achievement gap was an educational concern in the school district where this study was conducted. The research problem was the performance of students on NJASK testing.

The findings of this study had implications for educational stakeholders interested in high quality instructional practices and coherence. The findings also helped this school district faced with inconsistencies in student achievement in NJASK and AYP schools within the school district.

In section 2, a thorough review of the literature, I address the published information in an organizational pattern, which combines summary and synthesis of the

problem. In section 3, I focus on the research methodology selected and identify the participants, instruments and measures, data collection procedures, and finally provide an analysis of the hypothesis. In section 4, I present and analyze the methods used to collect data. Finally, in section 5, I summarize the findings and provide a strong conclusion with respect to implications for social change in the education field.

SECTION 2: LITERATURE REVIEW

Introduction

In this literature review, several topics will be discussed related to high quality teaching professional development programs for elementary teachers, standardized testing, student achievement, NCLB, and instructional models. The review also includes an exploration into the types of high quality instructional models.

The research databases used to collect the information in the review of literature were retrieved through the Walden Library and Reference Center. The primary sources of information included the Dissertations and Thesis, Academic Search Premier, ProQuest, and Eric-Educational Resource Information Center. In order to find information regarding high quality instructional models, the following topics were utilized in the database searches: (a) high quality teaching, (b) high quality instructional methods, (c) high quality learning, (d) academic achievement, (e) professional development for elementary teachers, (f) narrowing the academic achievement gap, and (g) New Jersey Assessment of Skills and Knowledge (NJASK).

Strategy for Searching the Literature

The state of New Jersey established academic standards and a testing system that met the federal requirements of NCLB Act of 2002. The state of New Jersey developed targeted performance standards for attaining AYP. However, the performance record on these standards did not indicate that the schools were improving. In New Jersey, many schools did not meet AYP. Narrowing the academic achievement gap was a challenge, as there were differences in teacher qualifications and quality instructional practices.

The state of New Jersey fourth grade students were not passing the science, mathematics, and language arts literacy New Jersey Assessment of Skills and Knowledge (NJASK) and the school district where this study was conducted implemented a high quality teaching professional development (HQTPD) program for elementary teachers in 2008. The research problem was that fourth grade students, at the data site, were not making academic progress, elementary schools were failing to make AYP, and current literature review did not reveal whether or not a HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores.

The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between the groups of fourth grade students taught by elementary teachers before the implementation of the HQTPD program and fourth grade students taught by elementary teachers after the implementation of the HQTPD program. The focus of this study was to determine if there was a significant difference in the NJASK science, mathematics, and language arts literacy scores of fourth grade students before and after the implementation of the high quality teaching professional development program. I hypothesized that a high quality teaching professional development program had an effect on narrowing the academic achievement gap because additional educational professional development experiences of elementary teachers may assist fourth grade students in NJASK testing in science, mathematics, and language arts literacy. An exhaustive review of the literature between 2005 and 2010 in the aforementioned databases using the aforementioned keywords revealed limited research studies on the

impact of high quality instruction of fourth grade teachers on the academic achievement gap of fourth grade students as measured by the New Jersey Assessment of Skills and Knowledge state testing in reading and writing. The database searches revealed no scholarly articles on NJASK. This review of the literature took a chronological stare at the disparity in the academic achievement gap and focused its lens on how to narrow the gap with high quality instruction. Additionally, different points of view were presented to predict the relationship of the present study and previous research on narrowing the disparity in the academic achievement gap.

Introduction

> In a single generation they [missionaries] put thirty thousand black teachers in the South; they wiped out the illiteracy of the majority of the black people of the land, and they made Tuskegee possible. (William Edward Burkhardt Du Bois, 1903)

The achievement gap has existed since the 1800s. This literature review revealed a wide-array of reasons and factors that influenced student performance and the achievement gap. National Assessments of Educational Progress (NAEP) reflected a widening of the achievement gap in the 1970s and 1980s. The pattern continued to widen in the 1990s (Blink & Giebel, 1995; Haycock, 1998). Scholars have reflected on the causes for gaps in student achievement (Goodlack & Keating, 1994).

The academic achievement gap is defined as disparity in school success between students of different races, ethnicities, and socioeconomic levels. Some students fail to succeed at the level and to the extent expected academically. The academic achievement gap exists as a result of many variables such as racial inequality, socioeconomic

differences, and cultural bias (Rothstein, 2002, p. 123).

A variety of theorists' works reveals numerous constructs and research about narrowing academic disparity. Additionally, evidence revealed that racial and socioeconomic educational segregation contributes to the academic achievement gap (Rothstein, 2004, p. 199). The issue of the widening academic achievement gap is a concern and among the greatest challenges facing educators today.

Narrowing the achievement gap is a major concern in the education community. In its education of African Americans, American society has violated fundamental principles of its domestic tradition. According to Cox (1948), "Race prejudice in the United States is the social attitudinal matrix supporting calculated and determined effort of a white ruling class to keep some people or peoples of color and their resources exploitable" (p. 131). The roots of America's racial divide usually lie in economic inequality. However, Marables (1991) argued, "Inequality is rooted in the structure of exploitation, power, and privilege with minority students being separated from the socio-economic order" (p. 155). Hacker (1997) asserted, "White Americans do not move in social circles in which racial equality wins much moral social credit" (p. 68). Educational inequality in the United States is clearly a by-product of social inequality (Traub, 2000, p. 111). Public education mirrors the social and economic hierarchies of society and it is not a surprise that inequality is reflective of the discrimination that separates racial classes in our social structure.

Narrowing the academic achievement gap could begin in early childhood since some children start their educational journey behind other students. Studies revealed a

wide array of factors that contribute and influence the academic achievement gap. Effectual change within an organization contributes to narrowing the academic achievement gap when leaders ensured that the vision was supported by all stakeholders. Leaders should draw upon all the stakeholders in the learning community to collaborate (Haycock, 2002, p. 202; Lambert, 2002). Minority students lose ground during the summer when students generally read less, write less, and reduce participation in organized activities like camp and athletics. Differences in out-of school activities and opportunities exacerbate the achievement gap, asserted that schools did make a difference, as academic achievement is the product of schools, social institutions, and families; schools are part of the solution, but not the only part.

In order to narrow the academic achievement gap, teachers should maintain high standards and demonstrate high achievement expectations for all ethnically, culturally, and linguistically diverse students, which include offering challenging and advanced coursework. When teachers presented a challenging curriculum rather than focusing exclusively on rote memory and learning, the students' coursework was actually accelerated.

Impact of District Leadership

The district leadership has had some responsibility in narrowing the academic achievement gap. Reading and writing topped the list as having the most impact on student achievement. Because of the NCLB (2002), the resulting call for school districts was more testing and greater accountability (Russonello & Stewart, 2005). Students benefited when effective leaders encouraged teachers to be effective. Research

has shown that teachers significantly narrowed the academic achievement gap when they had high expectations for their students and believed that the students were capable of academic success. Clear communication and appropriately paced lessons, which involved students in making decisions and asking questions, constituted high quality instruction.

Teacher Contribution to Academic Achievement

Decades of research had focused on classroom level practices to narrow the academic achievement gap. However, few studies have examined the school level instructional strategies that narrowed the academic achievement gap. There is a wide array of studies that revealed a range of factors that influenced the academic performance of students in school. Interestingly enough, there are varying definitions of the achievement gap that included race, ethnicity, and socio-economic status. Some educators have agreed, "The gap is widening and accounts for other inequities in society" (Price, 1999, p. 152). Teachers who used curricula in teaching strategies promoted continuity that narrowed the academic achievement gap (Mano, 2005, p. 256). Reform strategies contribute to narrowing the academic achievement gap in reading and writing.

The academic achievement gap is smaller for reading than for mathematics or science, and summer loss is greater in mathematics than in reading (Ogbu, 2003, p. 6). The remaining research question is how to close the academic achievement gap in science, reading, and language arts literacy scores of students who were not yet at the level of competence to experience the benefits of a high level of instruction. A growing body of research linked high quality teaching to student academic success (Koppich,

2006). Teachers have a cumulative effect on student achievement (Sanders & Rivers, 1996). Specifically, after three years of ineffective teachers, Sanders and Rivers (1996) concluded that students scored at levels that were less than half of those of their peers who had benefited from more effective teachers. High caliber experienced teachers often were in short supply in low performing schools. As research had shown, the chasm between well-qualified and less qualified teachers in low-performing schools can be vast.

Factors Impacting the Achievement Gap

Three factors impact the academic achievement gap. First, persistence involves the time and energy that schools dedicated despite slow results, political pressure, new ideas, systemic inertia, or resistance to change. Educators remain focused on equity and narrowing the academic achievement gap. Secondly, passion is defined as the level of connectedness educators brought for transforming the classroom into a place of learning for all students regardless of race, ethnicity, or socioeconomic strata. Furthermore, passion is required to confront resistance to change, institutional inertia, and the system's resilience or its desire to maintain status quo. Thirdly, practice refers to the essential individual and institutional actions taken to effectively educate every student to his or her full potential. Substantial knowledge and research-based practices exist about what works in the classroom (Singleton & Linton, 2006, pp. 4-6).

Literature further reveals classroom teachers passed their own values and attitudes on to children. Teachers are models who provide experiences through which students could begin to develop their own value system. The ultimate goal for schools and administrators is to ensure high quality instruction from high quality teachers who

received results by producing quality learning (Glatthorn, 2006, p. 45). High quality instruction is "directly tied to results that narrow the academic achievement gap" (Au, 2006, p.57). Effective teachers use test data to make informed decisions about what to teach and how to improve classroom practice to better serve their students. Good teaching means that teachers had the "ability to discern which students are learning and which students are not learning, and then to tailor high quality instruction to meet individual learning needs" (U.S. Department of Education, 2004, p. 45). Testing is how teachers know what the students were learning and "high quality teaching entails raising test scores because what was measured got accomplished" (Spellings, 2006, p. 371). Overall effective teachers and teaching strategies obtain results (Reeves, 2003). Assessment with collaboration and consistent instructional practices is vital to the continued success of these schools. This collaboration in determining what strategies are effective enables teachers to overcome many of the academic deficits that are often observed in children from low performing schools.

Current literature review on the approaches to measure the impact of classroom level factors upon student achievement revealed very few findings on fourth grade science, mathematics, and language arts literacy state testing. A multidimensional approach to measure the impact of classroom level factors upon student achievement using a dynamic model of five dimensions such as frequency, focus, stage, quality, and differentiation were examined by Kyriakides and Creemers (2008); specifically, teacher effectiveness in mathematics, language, and religious education (Kyriakides & Creemers, 2008). One of the biggest criticisms of educational effectiveness research (EER) is that

there is shortage of rational models from which researchers could build a theory. The problem is aggravated by infrequent use of whatever models that existed; however, in the 1990's researchers attempted to integrate school effectiveness with teacher effectiveness. However, none of these models explicitly referred to the measurement of each effectiveness factor. Although these factors often represent one-dimensional constructs, considering effectiveness factors as multidimensional provide a better picture of what made teachers and schools effective and could help to develop specific strategies for improving educational practice.

Teaching is a complex activity that was influenced by the many elements of teacher quality. Most of the research did not seek to capture interactions among the multiple dimensions of teacher quality, and as a result, there is major gap in the research needed to be explored. Nor did the research fully address evidence about teacher quality at the elementary and middle school levels, in subjects other than mathematics, or among different populations of students (such as high poverty, English language learners, special education). The importance of evaluation worked to do a better job of realizing the objective of promoting construction through evaluation was important (Kai, 2009). The teaching profession defines good teaching in all the specialist fields of teaching (Haycock, 2004). The capacity to develop core curriculum standards and credible methods for assessing teacher performance is growing; however, more capital and human resources were for teachers' advanced certification. State policies aimed at improving teachers' salaries, lifting the attractiveness of teaching as a career, the quality of teacher

education and the effectiveness of professional learning amounted to little without guarantees that they are linked to valid and reliable measures of better-quality teaching.

At the data site, both teacher quality and quality of teaching were of paramount importance due to the socioeconomic levels of the elementary school students. Elementary teachers are the most valuable resource available to schools (Hughes, 2007; Masters, 2004); however, at the school district there was a crucial need for a substantive and methodological refocus of teacher-quality professional development programs and student achievement based on research-based findings to devise policies and procedures to focus on the need for capacity building in teacher professionalism. Measures of teacher quality through a professional development program needed to be evaluated in order to make district-wide decisions on student academic achievement. At the data site, such a professional development program was in need of evaluation in order for school and district administrators to base their evaluation criteria for the creation of defensible teaching foundations for teachers' evaluations.

There is a no systematic relationship between educational inputs such as professional development program evaluation and student performance, such as elementary student academic achievement (Hanushel, 1997/1996/1987/1986). Hanushek (1997) identified 171 estimates related to the impact of *teacher education* on student academic performance. There were various approaches to conceptualizing teacher quality. Research on the characteristics of effective teachers and teaching have been conducted over the past 100 years and was well documented in a series of handbooks of research on teaching and on teacher education (Richardson, 2001). Researchers have

conceptualized teacher quality in diverse ways, including personality characteristics, teacher behaviors (e.g., process-product research) (Berliner, 1992; Shulman, 1987). Recent research programs such as Shulman's Teacher Assessment Program (Shulman, 1991) have paved the way for new approaches to defining quality teaching and developing teaching standards. These findings have drawn attention to the complexity of what effective teachers knew about what they taught and how they helped students to learn. At the data site, the district developed the professional development program to assess teacher performance and student achievement.

Quality teaching is to be used for high-stakes decisions by the school district where this study was conducted (Fenstermacher & Richardson, 2005). Quality teaching is about more than whether something was taught and how it was taught ((Fenstermacher & Richardson, 2005, p. 189). Successful teaching in the former sense may not be good teaching in the latter sense. Teaching is undeniably a moral enterprise. Similarly, what counted as teacher *performance* varies. The main indicators of teacher performance should be measures of student outcomes, based on standardized tests of student achievement refereed to *successful teaching* (Fenstermacher & Richardson, 2005). Successful teaching refers to the learner acquiring to some reasonable and acceptable level of proficiency what the teacher was engaged in teaching (Fenstermacher & Richardson, 2005, p. 191). The evidence of a teacher's performance should be based on classroom observations by a school administrator of the quality of opportunities teachers provide for student learning in their classrooms.

Defining excellence in teaching is both arduous and an imprecise task that had traditionally focused on the observable and technical aspects of the profession. There have been a long standing belief among educators that within the profession there existed distinguishable qualities between teachers who were considered to be "good" and teachers who were not. Educators have suggested that dispositions are an important component of teacher competency and that there was a need to include them as part of the final evaluation. Learning and teaching styles extend far beyond the confines of the overt curriculum. Few administrative evaluations placed emphasis on the intangible aspects of teaching, choosing instead to accentuate the importance of clearly measurable and observable behaviors that were more easily construed as self-evident. Although theoretical values are placed on the importance of such attributes as curiosity, imagination, empathy, innovation, interest, and compassion, few, if any, manifested themselves in the evaluation of what are construed as significant indicators of teacher competence.

High Quality Classrooms

High quality instruction means effective teachers focused on students' weaknesses or areas where they lacked the proper skills to become successful students (Paige, 2004, p. 54). The NCLB of 2001 consistently portrayed high quality instruction as a means to highlight weak areas, raise the test scores for underachieving students, and narrow the academic achievement gap. In order to narrow the academic achievement gap, teachers need to perform more high quality instruction and to spend more time on learning tasks (Ferguson, 2004, p. 67). Educators and administrators achieve the task of narrowing the

academic achievement gap by: (a) increasing the quality of what was done with children and (b) increasing the amount of time allocated to teach children on academic activities or both. Review of the current literature revealed, "Students learn in different ways at different rates of speed" (Davis, 2003, p. 120). The more expansive notions have to do with what is happening in a classroom where teachers were actually teaching (Ladson-Billings, 2006, p. 97).

One of the most important features in a high quality instructional classroom is the lessons presented in terms of being both significant and worthwhile (Weiss & Pasley, 2004, p. 216). Researchers refer to the extent that students identified with and valued schooling outcomes as well as participated in academic activities when they encourage students to engage and interact with the content in a purposeful way (Shernoff, 2002, p. 64). Student engagement referred to the state of mind brought on by an intense involvement of students in an activity that promoted growth as students exercised and developed skills (Shernoff, 2002, p. 76). Three facets of engagement included "concentration on specific problems, interest for new knowledge, and enjoyment for the process of learning" (Shernoff, 2002, p. 97). Teachers who use high quality instructional strategies for three consecutive years were more successful than teachers who used less effective teaching methods (Sanders, 1998, p. 167). Students scored an average of 49 percentile points or higher on a state's standardized reading assessment as a result of quality teaching (Sanders, 1998, p. 167). Teachers are grouped into five quintiles wherein teachers with the lowest degree of effectiveness were placed in the first quintile and each succeeding level of teaching effectiveness was placed in the following quintile, resulting

into the highest degree of teaching effectiveness in the fifth quintile (Sanders & Rivers, 1996). There is a puissant connection between teachers and student academic achievement.

Differences in student achievement of 50 percentile points are noted for those students who have had a highly effective teacher (in the fifth quintile). The framework for understanding that high quality instruction impacts academic achievement (Sanders & Rivers, 1996). In summary, cognitive development consists of a constant effort to significantly narrow the student academic gap for minority children offered identical educational opportunities. A theoretical framework stemmed from those who said that intelligence was malleable. Quality could be increased through nurturing as opposed to the entity theorist like Dewey (1966) who believed that intelligence was fixed. Educators should have engaged and enlarged a student's experience. However, at the data site, teacher quality remained a district problem as state testing scores did not remain at state expected levels.

Within the realm of academic context, human development must be considered in narrowing the academic achievement gap and broader knowledge of learning processes had to be introduced (Williams, 2003, p. 211). A fundamental role in developing cognition is social interaction. Whether it is at the social level or the individual level, all the higher functions originated as relationships alter the atmosphere to reflect accommodation and assimilation (Vygotsky, 1999, p. 195). In examining the issue of narrowing the academic achievement gap, the premise is that teachers who presented high quality instruction positively affected learners. Then the basis for teaching must be a

consideration of cognitive development facilitated by activities and situated learning that engaged learners (Bybee & Sand, 1982, p. 112).

Teacher engagement is an effective strategy for narrowing the academic achievement gap because teachers were demonstrating engagement with students when they led classes in ways that acknowledged and responded to students' thoughts and knowledge (Williams, 2003, p. 244). Examples of this may include formal and informal coaching, sponsoring, mentoring, and counseling activities that were all considered to be engagement with students. Ineffective teachers were oftentimes described by students as teachers who simply went through the text book page-by-page, day-by-day, and year-by-year. Teacher engagement was vital and it must be present if teaching was to be considered effective by all students (Williams, 2003, p. 256).

Teachers with student centered classrooms connected learning to students' lives using the students' own culture, strengths, interests, goals, and dreams as a beginning point for learning. Successful learning experiences were designed to meet as many needs as possible. Teachers should have taught all students to high academic standards (Williams, 2003, p. 118). A pedagogy that narrowed the academic achievement gap in urban schools provided for challenging curriculum that included attention to developing high level cognitive skills, instruction with focus on creating meaning about the content area in a collaborative learning environment, and scaffolding to link an inclusive curriculum to cultural resources (Williams. 2003, p. 67).

Well-structured cooperative learning classrooms with hands on inquiry-based instruction and challenging curriculum supported students and effectively narrowed the

academic achievement gap between all students (Mano, 2005, p. 111). In a high quality instructional arena, students are actively engaged in order to increase learning. Collaborative cultures produce shared learning (Taylor, 2006, p. 23). This is accomplished with more opportunities for learning that favorably impacted high quality learning. However, teacher expectations contribute to the rise or fall of the academic achievement gap.

Some research theorists (Ferguson, 1999; Price, 2002; Williams, 2003) predicted that the low academic achievement in conjunction with the teacher expectations of students contributed to the large academic achievement gap. Teachers must not use economic and social conditions as grounds for low expectations; however, an effective teacher should assist the student to improve educational experiences and academic performances when the student's cultural perspectives were considered (Lipman, 1995, p. 89). High quality instruction focuses on curriculum alignment with national standards, daily instruction and curriculum for state assessments, students who were present and prepared for daily learning, in a school dedicated to instruction, and a defined approach to meet the needs of the English language learner (Weiss, 2004, p. 154).

The Learner

Student learning engendered the ultimate ability to solve problems, make decisions, and critically analyze their environments. Additionally, successful teachers treat students with instructional scaffolding, provided focus on instruction with a sacrosanct reading period, extended student thinking and abilities, and possessed in-depth knowledge of both subject matter and the students (Ladson-Billings, 2006, p. 123). High

and low achieving students could benefit in school districts where a high quality instruction model was used to link new learning with prior knowledge (Jossey, 1985, p. 86). Further, challenging as well as advanced coursework, high teacher standards, and high achievement expectations for an ethnically, culturally, and linguistically diverse student population significantly narrowed the academic achievement gap (Cole, 1995, p. 153). Constructivist principles essentially reached the levels of student learning and proposed using standards of good performance, challenging curriculum, extra help and assistance for students, and effective preparation and ongoing staff development to assist educators in narrowing the academic achievement gap (Haycock, 2001, p. 10).

Data driven decision making could have significantly narrowed the academic achievement gap. This reporting mechanism makes visible the discrepancy between groups and highlighted the fact that, generally, students qualifying for free and reduced lunch, scored low on state assessments (Mano, 2005, p. 101). Federal law mandated that all schools must disaggregate data and use the data to make decisions about what to teach. To disaggregate data means that the test items are identified by skill through a deconstruction and then the data were linked to curriculum objectives based on content. Linking the results with the district and school curriculum objectives was critical to best inform curriculum decision making (Downey, Frase, & Steffy, 2003, p. 161). Gimbert, Bol, Wallace (2007) asserted that with the passage of 2001 (U.S. Congress, 2002), the teaching force working in public school districts of the United States were receiving close scrutiny.

In an effort to maintain standard level accountability, NCLB requires that a

teacher instructs students in only the particular curriculum for which the teacher was certified. By the first day of the school year 2006 and 2007, each classroom in the United States had to offer students a *highly qualified* teacher as their instructor. In order to be considered a highly qualified teacher, an educator must hold a minimum of a bachelor's degree, pass state tests of competency in the subjects that he or she is teaching, and hold state licensure or certification.

The physical environment is one of the most important aspects of learning. This is one feature of high quality classroom (Jankowska & Atlay, 2008). With the increasingly diverse student body, there is a growing need to provide spaces that satisfy various needs. Physical spaces accommodate different learning styles, influence students' attention, and provide motivation to learn and their way of thinking. Students need to become more active, self-directed, autonomous learners, responsible for the development of their knowledge and skills. Teachers, on the other hand, become partners, facilitators, and often co-learners in a lifelong learning process. One of the informants recognized that the space was a very challenging one because it changed the perspective of teaching. The teacher is no more a *distant* lecturer, but a mentor who is part of the system in a continuous and dynamic feedback loop of learning. The C-space bridged the gap between a traditional classroom, often ill-suited for modern learning purposes, and the space required by the *new* kind of learners, which gives the impression that everyone is teaching as well as learning.

Interactivity and the ability to work at participants' own pace is another highly appreciated feature. With the use of technology, writable walls and multimedia, the

students are able to focus on particular things that interested them and were able to later discuss the issues with others. As one of the students underlined, the space gave a chance to share views anonymously yet still be able to have a conversation and spark-off each other. The students also expressed their feelings of increased participation, inclusion, and involvement as important elements of their experience in the space. In working with the teachers, Yelland, et al. (2008) emphasized the power of learning environments that: (a) offered and encouraged multimodal expressions of meaning: linguistic, visual, audio, gestural and spatial; (b) used varied and appropriate higher order thinking skills and knowledge processes: experiencing, conceptualizing, hypothesizing, analyzing and applying; and (c) focused on diversity amongst learners and growing knowledge as a process of belonging and transformation (p. 201).

Much of the focus on testing is a result of the NCLB (2002), which has forced states to implement statewide accountability systems that required annual testing in grades three through eight. Furthermore, NCLB requires that those test results be subdivided by poverty, race ethnicity, disability, and LEP to ensure that none of these groups were left behind (U.S. Department of Education, 2001). This subdivision of test scores placed a focus on the differences between groups of students, including the large gap in achievement scores. The widely held negative stereotypes relate to the intellectual performance of African Americans and the increased reliance on standardized tests as a means of measuring student progress created a set of conditions that appeared conducive to African Americans' experiencing a stereotype threat during testing (Kellow, 2008, p. 94).

The extent that relationships are vital underpinning of student motivation, engagement, and achievement, those teachers who framed practice in relational terms were more likely to foster motivated, engaged, and achieving students (Martin & Dowson, 2009). Specifically, research supports the following points: (a) Students' sense of support (e.g. being liked, respected, and valued by the teacher) predicted their expectancies for success and valuing of subject matter. Indeed, support from the teacher is a consistently influential factor in motivation and achievement (Martin & Dowson, 2009); (b) Students who believed that their teacher was caring also believed they learned more (Martin & Dowson, 2009); (c) Students' feelings of acceptance by teachers were associated with emotional, cognitive, and behavioral engagement in class (Martin & Dowson, 2009); (d) Teachers who supported a student's autonomy tended to facilitate greater motivation, curiosity, and desire for challenge (Martin & Dowson, 2009); and (e) Teachers higher in warmth tended to develop greater confidence in students (Martin & Dowson, 2009).

Relations between motivational or affective variables and learning processes are of great importance in educational psychology (Berger, 2009). Mastery oriented students believed in a strong link between effort and outcome. These students tended to believe that effort increased competencies through task engagement (Berger, 2009, p. 167). Performance-approach goals were generally related neither to self-efficacy beliefs nor to interest in the material (Berger, 2009, p. 167). Performance avoidance goals were negatively correlated to both perceptions of self-efficacy and interest (Berger, 2009). Students adopting this type of goal doubted their capacities and did not value tasks that

may have revealed those deficiencies. These tasks were perceived as a threat, and elicited worry, anxiety, and negative affect.

Observing others teach, whether that teaching is considered to be done well or poorly, is itself an important source of knowledge about teaching, noting that knowledge of how to teach comes from interactive experiences or collaboration with others (Fives & Buehl, 2009). There are three traditional components of the instructional environment: subject matter, instructional methodology, and the learner (Parrish, 2007, p. 512). Learning experience describes the transaction that takes place between individual learners and the instructional environment.

Learning experiences are different for each learner, depending on the connection made to the other components of the situation and depending on what the learner brings to the situation and draws from it for future situations. Experience in this sense describes more than a passive event, which is a transaction with the environment in which learning is an outcome. The word experience is rooted in the same Indo-European words as experiment and peril. Meaningful experiences contain qualities suggested in each of these terms. Viewing learning as experience broadened the concerns of instructional designers because necessitates consideration of the quality of that experience and not just its goals and mechanics. For example, this viewpoint raised learner engagement in status: only when learners considered the experience worth attending to, and reflecting upon, will the transaction of experience have had its full impact (Parrish, 2007, p. 512). Parrish (2009) offered these principles of learning: (a) learning experiences had beginnings, middles, and endings, (b) learners were the protagonists of their own learning experiences, and (c)

learning activity, not subject matter, established the theme of the instruction concept and contributed to immersion in the instructional situation.

In Piaget's theory of cognitive development there were two periods of operational thinking as concrete and operational thinking. If cognitive development was accepted as an equilibrium process, it was possible to say the maximum balance could be reached by acquiring the operational thinking ability in adolescence period. In this process, individuals could form hypotheses without manipulating concrete objects and test the hypotheses cognitively. Individuals who think concrete operational, can generalize real objects to different objects or abstract ideas, can easily learn to solve problems requiring higher mathematical thinking ability and can use those acquisitions while solving those types of problems in the solution of new problems. Methodically, the individual made plans to solve the problems, thought about the probabilities, and made generalizations for many probabilities (Yagan, 2009, p. 419).

Socioeconomic Status

Socioeconomic status (SES) is the most widely used contextual variable in education research (Sirin, 2005). Increasingly, researchers examine educational processes, including academic achievement, in relation to socioeconomic background. Sirin (2005) carried out the first meta-analytic study that reviewed the literature on this subject by focusing on studies published before 1980 examining the relations between socioeconomic status and academic achievement and showed that the relation varies significantly with a number of factors such as the types of SES and academic achievement measures.

A number of factors are suggested to explain the lower academic achievement of minority students. Research indicated three main factors: (a) minorities are more likely to live in low income households or in single parent families; (b) their parents are likely to have less education; and (c) they often attend under-funded schools. All these factors are components of SES and linked to academic achievement (National Commission on Children, 1991).

Interestingly enough, as students became older, the correlation between socioeconomic status and school achievement diminished. Although socioeconomic status is at the core of a very active field of research, there seems to be an ongoing dispute about its conceptual meaning and empirical measurement in studies conducted with children and adolescents.

Socioeconomic status is a widening gender gap with regard to educational achievement and attainment in public education which had become an international issue in the past decade (White, 1982). Male students, as a group, are lagging behind female students on a number of important indicators of school success. At the data site, statistics indicated that boys were achieving at lower levels across most school subjects as a group than were girls; they earned lower grades and exhibited higher dropout rates. Boys were much more frequently diagnosed with attention deficit disorder (ADHD) and were also more frequently placed in special education programs. They were reported to have significantly more behavioral issues and school discipline referrals than do girls (Clar, 2008, p. 111). The research literature on grouping unequivocally confirmed its positive academic and socio-affective impacts, so long as this administrative decision led to a

truly enriched curriculum (Gagne, 2007, p. 111).

There were criticisms of the public education system and, correspondingly, a plethora of attempts to remedy the purported problems. This dynamic had been well documented (Brown, Wang, & Jenkins, 2006, p. 7). Two key issues were appropriate goals for the system and effectiveness in achieving those goals. Particularly in the last decade, some critics had questioned whether, even with the provision of additional resources, public education was flexible enough to evolve over time to meet increased demands, including better serving all students (Brown, Wang, & Jenkins, 2006, p. 7).

NCLB

NCLB requires the measurement of adequate yearly progress (AYP) to identify schools in need of improvement, a practice with concerns for professional organizations, academics, and the general public as well (AYP status, 2004; National Education Association, 2004; Policy implications, 2004; Popham, 2004; Weaver, 2004). The arbitrary, unyielding nature of the index and its reliance on simplistic, single-measure notions of performance with varying technical adequacy created disillusionment, discomfort, and dilemmas that were difficult to overcome. When indicators are influenced by disproportionate numbers of students with special needs (e.g., at-risk, limited English proficiency, or disabilities) and special considerations or exemptions were needed but not forthcoming, concerns were justified. When consequences grounded in these concerns are punitive and powerful (e.g., negative media publicity, threat of outside assistance teams, administrative "reassignment), concerns are justified (Lyons, 2006, p. 7).

Central to NCLB mandates is that states establish student performance benchmarks and identify schools not making AYP, with proficiency judged through state specific assessments. Those students failing to do so for four consecutive years may be referred for various corrective actions. After five years of not making AYP, schools may be converted into a charter school, a private company may take over the school, or the state may assume responsibility for running the school (U.S. Dept. of Education, 2002). Given these NCLB mandates in combination with trends in AYP data, it was virtually certain that state interventions in low-performing schools increased nationwide.

There is a wide gap between the academic achievement of minority students and white students (Brown, 2009; Douglas, 2007). Minority students attend schools that offer few or no Advanced Placement courses, which limit their opportunities to gain admission to elite colleges or universities. During the late 1980s and early 1990s, an education summit for the nation's governors was held by the first President Bush (Hunter, 2009). The summit resulted in the *standards movement* and the development of comprehensive statewide systems of accountability. Most state accountability models developed during this period includ the following: (a) Standards identifying what students were supposed to know and be able to do in all major areas of the curriculum; (b) Annual administrators of statewide assessments designed to determine whether students met state expectations on curriculum standards; and (c) State report cards on each school presenting student achievement on state-wide assessments.

The NCLB legislation is intended to set high standards for the nation's schools and to compel schools to improve their curriculum and instruction (Heubert & Hauser,

1999; Katz, 2008). However, the use of tests to determine performance levels has spurred much debate. Supporters lauded the use of objective measures as a means to raise academic standards, hold schools accountable for their curriculum and instruction, and provide parents with evidence of their children's academic performance. High-stakes decisions about school performance solely on a limited set of test results often placed schools serving immigrant and minority students at a disadvantage (Kim & Sunderman, 2005). Such tests may also not serve the very populations they were designed to support.

One ongoing controversy has been the usage of standardized achievement tests written in English to assess the academic performance of English Language Learners (ELLs) (Abedi, Leo, & Mirocha, 2000; La Celle-Peterson & Rivera, 1994). With limited English proficiency, students may not understand test items or even how to answer questions. The issue at the data site became critical when testing results were used for high-stakes decisions impacting individual students. At the data site, students would not receive their high school graduation diploma if they did not pass the HSPA – High School Proficiency Assessment.

Pathways to predicting academic achievement among African Americans were complex. "Taken as a whole, theories on African American achievement suggest that a combination of demographic, individual, and contextual variables may predict academic outcomes, all of which have found some support in the empirical literature" (Coley, 2001, p. 353). At the data site, data suggested that academic achievement was multi-dimensional and contextually driven. A recent study of the relations of both family and school context on students' academic achievement found that for white students, their

perceptions of parenting style, parental involvement, teaching style, and school atmosphere significantly predicted school achievement. Brown (2009) asserted, "There is a wide gap between the academic achievement of minority students and White students" (Douglas, 2007). Also, more minority students attended schools that offered few or no advanced placement courses, which limited their opportunities to gain admission to elite colleges or universities (Douglas, 2007, p. 524). The issue became critical when testing results were used for high-stakes decisions impacting individual students. At the data site, students could not receive their high school graduation diploma if they did not pass the high school proficiency assessment.

Best practices for supporting positive behavior were incorporated into the management system and included (a) clearly defined expectations with instruction, feedback, and reinforcement to assist students in meeting those expectations; and (b) clear directions and task-analyzed information with frequent review; and consistent responses to and consequences for classroom behaviors (Downing, 2009). The approach provided students with opportunities to develop and demonstrate increasing responsibility and offered the teacher an efficient way to monitor progress toward academic independence.

American education policy has attempted to clear achievement gaps between advantaged and disadvantaged groups (Jennings & Beveridge, 2009). Despite these efforts, significant gaps persist between poor and privileged, special education and general education, and English language learners (ELLs) and native speakers. Most recently, the NCLB (2002) sought to narrow these gaps by requiring states to test

students in grades three through eight annually and to disaggregate scores by raw, ethnicity, poverty, special education, and English proficiency status. Schools were held accountable for improving the performance of students in each of these sub groups so that all students reach proficiency in math and reading by 2014.

The impracticality of NCLB was greatly exacerbated when schools, districts, and state departments of education did not have the capacity to meet the performance demands of the accountability system. This situation, of course, was more likely in state systems with more rigorous and cognitively complex performance demands. Capacity building is not only about direct material support for lagging schools and districts but also about the creation of a school improvement infrastructure that is adequate to the urgency and demands of the system.

High-stakes accountability systems seemed to intensify a two-tier structure of high and low capacity schools and districts. Research has found that high capacity schools often already possessed the capacity and resources needed to perform at high levels and were thus able to use the additional impetus and guidance from the accountability system to respond as expected and improve instruction and curriculum (Diamond & Spillane, 2004; Elmore, 2004; Sunderman, 2001). They were, therefore more likely than low capacity schools to avoid the negative repercussions of the sanctions.

In contrast, many poorly performing schools lack the resources and capacity to respond, on their own, to sanctions in ways that would improve curriculum and instruction (Mintrop, 2009). Pressure through sanctions would not result in

improvements, but in further rigidity, fragmentation, and deterioration (Mintrop, 2004). Low capacity schools were predestined to bank on short-term strategies that required little added capacity (Sunderman, et al., 2004). Common strategies are test preparation activities, content alignment, and concentration on tested subjects, benchmark grades, and students near proficiency. In some low performing schools, this could amount to a parallel test-remediation curriculum that was different from the regular curriculum taught in less pressured schools, with the result that students were excluded from intellectually challenging content and learning. In low rigor, low demand accountability systems, these strategies might actually have worked to keep a school from facing corrective action, but it is unlikely that they sufficed in more rigorous accountability systems (Elmore, 2004; Mintrop, 2009; Sunderman, et al., 2004).

Schools using educational frameworks, based on a response to intervention models, were increasingly required to use screening measures obtained on all students in educational decisions (Feinberg & Shapiro, 2009). With an increased reliance on student data, teacher reports alone became less influential in the identification of students for review by student-support teams. However, teachers remain as the educational professional with the closest positions for observing and reporting actual student performance. Thus, their input maintained its importance in validating data obtained through screening or progress monitoring. Although research on achievement inequalities between rural and non-rural schools (the rural and non-rural gap) has produced mixed findings, it was noteworthy that many rural schools faced unfavorable challenges such as

difficulties in recruiting and keeping quality teachers, shortage of funding sources, and geographical isolation, all of which were detrimental to student achievement.

High Stakes Testing and Student Achievement

All states have established testing programs that meet the NCLB mandate (Marchant, et al., 2006). Although NCLB's implementation varied greatly from state to state, the ultimate goal of accountability systems established by NCLB is to increase student achievement (such that every child would reach "proficiency" on state-determined achievement tests by the academic year 2014 to 2015). The purpose of high stakes testing continues to be called into question. In addition to the series of studies, other recent research had failed to support the contention that accountability policies resulted in a decrease in the achievement gaps related to race and socioeconomic status (Marchant, et al., 2006, p. 104).

In addition to the aforementioned urban-suburban and rural and non-rural dichotomies, recent research had also identified considerable achievement disparities among schools within the same geographic locale such as urban or suburban (Ferguson 2002; Zhang 2007). While suburban schools are generally considered better performing than their inner city counterparts, Ferguson (2002) raised the issue of low achievement of some poor, racially segregated suburban schools similar to their urban counterparts. Zhang (2007) found evidence of enrollment losses in some poor-performing suburban schools while some inner city schools had undergone enrollment increases because of high quality, indicating the variation in academic achievement within each category or geographical locales. Therefore, simply checking the difference between urban,

suburban, and rural schools may have masked the complexity of the spatial inequalities in academic achievement. School academic achievement may have varied largely from school to school, district to district, and state to state and the magnitude of achievement disparities also may have changed as the tests, subjects and grade span of students being tested.

Another important perspective of the spatial analysis of academic achievement was to investigate the contextual effects of neighborhood socioeconomic characteristics. A growing body of educational research has addressed the impact of neighborhood socioeconomic status on academic achievement. This approach is reasonable because public schools were funded by the federal government.

The educational research has explored the importance of the link between effective instruction and student outcomes, and this had been well documented. Simply stated, in an examination of variables affecting student achievement outcomes, Sanders and Horn (1998) indicated, "The single biggest factor affecting the academic growth of any population of youngsters is the effectiveness of the individual classroom" (p. 2). In an international review of student outcomes, Scheerens (1993) found that while school in the United States accounted for only nine percent of the variance among student outcomes compared to other nations, effective teachers accounted for more than four percent of the variance in student achievement.

The reference to effective instruction was especially prominent with regard to the prevention of mild disabilities and support of those students who was currently receiving special education. For example, Lyons, et al., (2001) reported that up to 70% of students

who had currently received special education under the learning disabilities label would not have been labeled as such if effective reading instruction were in place with a strong emphasis on early intervention among at-risk students. Stichter (2009) proclaimed that in addition to effective instruction as prevention, effective differentiated instruction to meet the needs of diverse learners including those with disabilities, were essential if schools were to meet annual achievement targets (Kauffman, et. al, 2005).

Underlying the NCLB Act of 2001 was the expectation that educators would channel more time, resources, and attention to minority students, poor students, and students with special educational needs when their performance was made public and schools were held accountable for results. A number of recent studies have shown that teacher qualifications had a significantly positive relationship with academic achievement. Using data across grade level disaggregated at state level, Darling Hammond (2000) found that before and after controlling for poverty and language status, teacher certification had a stronger correlation with reading achievement than did class size, teacher salaries, or school spending.

Teacher characteristics are more predictive of student achievement than were school characteristics (Easton-Brooks, 2009). Using data for Texas-Hanuskel et al. (2002) found that the teacher differences accounted for a minimum of four percent of the variance in achievement. Using data from Tennessee, Sanders and Rivers (1996) found that the norm referenced test scores of students with the most *effective* teacher increased 36 percentile points more than students with the least effective teachers (i.e., as defined by their measure of student growth).

Research findings on teacher degrees and the achievement of elementary students were inconsistent. Hanushel and Greenwald (1996) used meta-analysis and found that more than half of the studies examined showed a positive relationship between advanced teaching degrees and student achievement. Since the Coleman Report (Coleman, et al., 1966) brought the achievement gap between students of African American ancestry and European ancestry to widespread attention more than 40 years ago, the problem had been widely described and studied. The magnitude and persistence of the black-white achievement gap remained an important obstacle to the policy goals of equal educational and economic opportunity in the United States (Easton-Brooks & Davis, 2007; Fryer & Levitt, 2004).

The presence of certified teachers has a greater impact on the growth in reading for African American students than for European Americans given that the overall effect of certification on the growth of the combined sample was positive. The findings of this study may have helped the school district administrators at the data site to better understand the effects of teaching on student achievement. Further research was needed on the instructional practices of teachers who were successful or effective in improving the achievement of African American students, and the implications of these practices for teacher training and certification. The examination of the effects of teachers on reducing the academic achievement gap can serve as a tool for implementing effective teacher and school strategies directed at strengthening the academic performance of African American students and other students in positions of disadvantage in early elementary school settings.

The presence of a certified teacher is associated with higher growth in reading for both African American and European American students but is marginally more important for African American students (Brooks, 2009). Brooks (2009) conducted a study on teacher goals and the achievement gap in early grades. This study was contrary to previous studies and the findings implied that teacher qualifications were meaningful but far from sufficient as a policy tool for reducing the achievement gap. Certification itself was meaningful only to the extent that it was associated with differences in the instructional practices of teachers, practices that in turn reflected the pedagogical and content knowledge of teachers and their ability to draw on that knowledge in moment-to-moment interactions in the classroom (Darling-Hammond, 2000).

The school-level correlation between SES and achievement was weaker among smaller schools than among larger schools. Coladarci (2006) found less of the variance in school achievement among smaller schools than it does among larger schools. Smaller schools *mitigate* the effect that SES had on student achievement (Huang & Cho, 2009). Small schools had been shown to cut poverty's power over student achievement (Tomplins, 2006). Small schools were an antidote to the impact of poverty on school achievement (Butler, et al., 2005, p. 9).

A way of measuring an achievement gap between two groups was to define the gap as the difference in their mean test scores (Reardon & Galindo, 2009). Comparing the magnitude of achievement gap in this way; however, required a test that measured cognitive skill in an interval-scaled metric, so that a difference of one point in mean scores between two groups had the same meaning as a difference of one point in mean

scores between two other groups or between the same two groups at another time (i.e., corresponds to the same size gap in cognitive skills)

Standardized Tests

Although NAEP data were useful for examining trends, data did not provide a detailed description of how gaps develop as students progress through school because such data were available for only a few grade levels and because the data were based on repeated cross-sections of grade cohorts (as opposed to longitudinal data on cohorts). Sunderman and Mintrop (2009) asserted that raising the overall achievement of a whole national educational system and closing the achievement gap was obviously an enormously complex problem. NCLB was the simple policy answer to that complex problem that currently held sway. Evidence has accumulated that federal goal setting in terms of AYP toward proficiency had created much movement around the cutoff points (Sunderman & Mintrop (2009). AYP was the measure used to hold schools and districts accountable. Schools that made AYP were assumed to be functioning well. As it turned out, AYP is not very good at differentiating schools that were making progress from those that were not. There are a number of technical reasons for this, most notable the fact that AYP compared the current proficiency status of a school or district to a fixed annual target.

School administrators report the percentage of students who are performing at or above the proficiency target for a given year. Thus, AYP, as currently defined and used in most states, is not a measure that captured improvement or gains in student achievement from one year to the next (Linn, 2008). Because students in schools

identified for improvement, for the most part, began with lower average test scores, they could continue to make substantial improvements while failing to reach the fixed AYP performance targets. As a result, overall student achievement gains are often similar in schools that were identified for improvement and schools that met the federal AYP goals (Linn, 2008, p. 354). Low performing schools must have received adequate and high quality assistance that would enable them to improve (Finnigan, 2009). The support provided to some low performing schools in most cases was not sufficiently targeted, coherent, or intensive enough to influence instruction and student learning in a meaningful way. Most schools realized, at most, a minimal benefit from this support. In light of the expense and unintended negative consequences being identified in the research, the bottom-line question concerning high stakes testing must have been, was high stakes testing worth it as a general approach to educational reform.

The educational literature was replete with journal articles and textbooks extolling the academic benefits of student choices (Mizener & Williams, 2009). This robust literature implied that students could benefit in multiple ways from being permitted to make academic choices: (a) greater completion of academic assignments; (b) higher quality of academic work, and (c) more favorable attitudes toward their academic work. Many studies supported the notion that students were more on task when permitted to make choices about academic work, but the evidence for increased pace, magnitude and quality of work may be less promising.

Instructional Practices

Although various instructional models (e.g., direct instruction, discovery learning, and whole language) had advocated varying levels of student choices in academic activities, claims about the nature and efficacy of student academic choices could be better addressed empirically than ideologically. In keeping with this assumption, several review and/or meta-analyses had empirically examined the role of choice in promoting a variety of process and product behaviors (Stichter, et al., 2009, p. 110). The importance of the link between effective instruction and student outcomes had been well documented. In an examination of variables affecting student achievement outcomes, Sanders and Horn (1998) indicated, "The single biggest factor affecting the academic growth of any population of youngsters is the effectiveness of the individual classroom" (p. 2).

In an international review of student outcomes, Stichter (2009) found that while school was in session the U.S. accounted for only nine percent of the variance among student outcomes compared to other nations, effective teachers accounted for more than four percent of the variance in student achievement.

In addition to effective instruction as prevention, students labeled as learning disabled may not had been if effective reading instruction had been in place with a strong emphasis in early intervention among at-risk students. Effective differentiated instruction to meet the needs of diverse learners was essential if schools were to meet annual achievement targets (Stichter, 2009, p. 69).

Approximately half of instructional time spent in instructional talk was considered optional (Stichter, 2009, p. 69). Verbal praise or encouragement was typically described as feedback that was intended to be reinforcing. Brophy (1981) encouraged an emphasis on the quality of praising rather than on the frequency. Praise that was used infrequently, contingently, with specificity and credibility, and that remains in the range of a 3:1 or 4:1 ration of praise to correction appeared to be the most effective.

Two of the most consistently purported instructional practices for the classroom environment thought to positively impact the effects of instruction as measured by student outcomes were strong classroom management and an increase in the number of student opportunities to reason (Brophy & Good, 1986; Kern & Clemens, 2007; Southerland, Adler, & Gunter, 2003; Sutherland, Wehby, & Yoder, 2002). Within this literature base, effective classroom management was defined as those general environmental and instructional variables that promoted consistent classroom-wide procedures and setup.

Instructional talk, or "active teaching," encompassed the presentation of academic information and the development of concepts through lecture and demonstration, coupled with elaboration in the form of discussions and practice examples (Brophy & Good, 1986). Good, Gouws, and Ebmeier (1983) conducted four experimental studies regarding teacher-led concept development in fourth grade general education mathematics classes and found that in the classrooms of effective teachers (i.e., those that had high rates of student achievement), on average, 50% of the allocated time was spent on demonstration and guided practice (Stichter, 2009, p. 69).

According to Podhajski and Mather (2009) at least 20% of children had some difficulty in mastering the skills necessary for fluent reading (Lyon, 1995a), or about 10 million children (National Institute of Child Health and Human Development, 1998). In addition, despite increased funding and resources devoted to reading, results from a national assessment of reading achievement indicated that little progress had been made in improving the reading performance of fourth graders since 1996, with just a small increase, 29% to 31%, of students performing reading tasks at or above the *proficient* level (National Center for Education Statistics, 2003).

Longitudinal research confirmed that many of these early reading problems persisted. Students who struggled to learn to read in the primary grades were likely to struggle with reading throughout their schooling (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Juel, 1988; Vaughn, et al., 2003). What often began as a problem learning phoneme-grapheme relationships evolved into a more generalized problem affecting all aspects of reading. Because poor readers could not pronounce words with ease, they struggled to comprehend and gain conceptual knowledge (Beck & Juel, 1995; Shaywitz, Fletcher, & Shaywitz, 1994). In essence, these unresolved reading problems threatened children's entire education as well as their futures (Hall & Moats, 1999, p. 404; Ravitch, 2000; Tjadk & Cuban, 1995). Two key issues were appropriate goals for the system and effectiveness in achieving those goals. Particularly in the last decade, some critics had questioned whether, even with the provision of additional resources, public education was flexible enough to evolve over time to meet increased demands, including better serving all students.

Taken as a whole, the most troublesome component of accountability as directed by NCLB requirements was measuring AYP to identify schools in need of improvement, a practice with concerns for professional organizations, academics, and the general public as well (AYP status, 2004; National Education Association, 2004; Policy implications, 2004; Popham, 2004; Weaver, 2004). The arbitrary, unyielding nature of the index and its reliance on simplistic, single-measure notions of performance with varying technical adequacy created disillusionment, discomfort, and dilemmas that were difficult to overcome. When schools failed to meet AYP by trivial degrees (e.g., one-tenth of a point), concerns were justified. When indicators are influenced by disproportionate numbers of students with special needs (e.g., at-risk, limited English proficiency, or disabilities) and special considerations or exemptions are needed but not forthcoming, concerns are justified. When consequences grounded in these concerns are punitive and powerful (e.g., negative media publicity, threat of outside assistance teams, administrative "reassignment), concerns are justified.

The NCLB legislation is intended to set high standards for the nation's schools and to compel schools to focus and improve their curriculum and instruction (Heubert & Hauser, 1999). However, the use of tests to determine performance levels had spurred much debate. Supporters lauded the use of objective measures as a means to raise academic standards, held schools accountable for their curriculum and instruction, and provided parents with evidence of their children's academic performance. Others argued that basing high-stakes decisions about school performance solely on a limited set of test

results often placed schools serving immigrant and minority students at a disadvantage (Kim & Sunderman, 2005).

Such tests may also not serve the very populations they were designed to support. One ongoing controversy had been the use of standardized achievement tests written in English to assess the academic performance of English Language Learners (ELLs). Critics have argued that such tests did not provide an accurate estimate of these students' academic achievement because their limited proficiency in English interfered with their performance on the tests. With limited English proficiency, students may not have understood test items or even how to answer questions. The issue became critical when testing results were used for high-stakes decisions impacting individual students. For example, New Jersey students could not receive their high school graduation diploma if they did not pass the High School Proficiency Assessment (HSPA).

In light of the high-stakes and consequential nature of testing, some educators had suggested banning testing altogether. However, this practice is limited since all students need to be included in school accountability plans, and test results do provide us with information on students' performance, albeit through the filter of their limited English proficiency. Such test results could be used as part of a total portfolio of data to guide the improvement of curriculum and instruction.

During the late 1980s and early 1990s, an education summit for the nation's governors was held by the first President Bush. The summit resulted in the *standards movement* and the development of comprehensive statewide systems of accountability. Most state accountability models developed during this period included the following: (a)

Standards identifying what students were supposed to know and be able to do in all major areas of the curriculum; (b) Annual administrations of statewide assessments designed to determine whether students met state expectations on curriculum standards; and (c) State report cards on each school presenting student achievement on state-wide assessments;

Academic Achievement and School Choice

The literature review on academic achievement and school choice indicated that substantial educational research had confirmed a persistent achievement disparity between low-income or minority students and their more privileged peers or whites in American's public schools (Ladson-Billings, 2006; Zang & Cowen, 2009). However, the geographical aspects of educational inequalities have long been overlooked by scholars (Roscigno, et al., 2006; Zhang, 2006).

A most commonly perceived spatial inequality is that inner city schools often performed lower than their counterparts in suburban communities, which is referred to as the urban-suburban dichotomy. While a variety of factors (e.g. student, families, teachers, peers, classes and schools, and so forth) are related to this achievement gap, research has identified that the poor performance of inner city schools was primarily associated with the under-privileged socioeconomic backgrounds of their student population (Acevedo-Garcia, 2007; Noguera 2003). Another type of spatial inequality, which had been largely neglected by educational research and policies, was that many rural schools were inferior in academic achievement than schools in non-rural areas.

Teacher Effectiveness

More recently, Hanustieth, et al. (2003), and other scholars have analyzed the effect that certain in school factors had on student achievement. While it was difficult to isolate the variables that directly impacted student achievement, research had shown that good teaching matters (The Teaching Commision, 2004; Hanushek, Kain, & Rivkin, 1998). The Education Trust, a Washington-based research and advocacy organization, found many minority students attend inner city schools, which were often underfunded.

As a result, those students tended to receive poor quality instruction, had fewer caliber teachers, and had access to fewer resources (The Education Trust, 2002). There are several ways to measure the achievement gap. One common method is to compare academic performance among African American, Hispanic, white students on standardized assessments. Murnane, et al. (2007) argued that if the U.S. was to equip its young people with the skills essential in the new economy, high quality teachers were more important than ever.

In recent years, the demand for effective teachers had increased. Effective teachers, Murnane, et al. (2007) defined as those who were skilled at raising the achievement levels of their students. They further posited, "Effective teachers were a single, homogeneous category, with no differences by subject specialty, years of experience, or educational credentials" (Murnane & Steele, 2009, p. 27). Effective teachers had high expectations for all students and helped students learn, and measured by value added or other test band growth measure or by all methods (Goe, 2008, p. 8).

A contrary view is that most teacher quality variables did not show strong ability to predict students' achievement gains, with few noble exceptions (Goe, 2007).
Rivkin, et al., (2005) examined the relationship between value added scores and observable teacher characteristics and concluded most could not be explained by observable behaviors. The value added measures alone could not provide what effective teachers did that makes them effective. Clearly, Goe, et al., (2007), were correct extrapolating that there were many different conceptions of teacher effectiveness, and defining it was complex and sometimes generated controversy. Teacher effectiveness was often defined as the ability to produce gains in student achievement scores. Unequivocally, this was the definition being utilized in this doctoral study.

Quality teaching or teacher effectiveness referred to a teacher's ability to improve student learning as measured by student gains on standardized achievement tests. This was not a comprehensive and robust view of teacher effectiveness.
A main strength of formal observation protocols is that they are often perceived as credible by multiple stakeholders. Observations have been used with both formative and summative evaluations suggesting that the same instrument serve multiple purposes for districts (Goe, 2008).

Although the examination of teacher lesson plans or student work was often included in teacher evaluation procedures, by analyzing classroom artifacts, evaluators can glean a better understanding of how a teacher created learning opportunities for student on a day-to day basis. Depending on the goals and priorities of the evaluation artifacts, students could be judged on a wide variety of criteria including rigor,

authenticity, intellectual demand, alignment to standards, clarity, and comprehensiveness. Analyzing classroom artifacts was practical and feasible because the artifacts had already been created by teachers, and the procedures did not appear to place unreasonable burdens on teachers (Stecher, et al., 2005).

When reviewing the literature presented by Schacter, et al. (2006) consideration was being made as to whether teachers fostered creativity in their classrooms and correlated observation scores with value added achievement scores. They found that when teachers employed strategies to encourage student creativity, the result was improved student achievement. The implications of this were clear, and pointed to further need for teachers to allow students the opportunity for more hands on activities leading to creativities. This was truly indicative of a teacher's effectiveness.

For a measure of teachers effectiveness to be valid, evidence supported the argument that the measure actually assessed the dimension of teacher effectiveness it claimed to measure and not something else. It is also essential to have had evidence that the measure is valid for the purposes for which it could be used. Instruments could not be valid in and of themselves; an instrument or assessment had to be validated for particular purposes (Kane 2006; Messuch, 1989).

The research synthesis focused on processes inside the classroom and student outcomes related to gains in student achievement because these were topics that were prevalent. In the current education policy landscape, and areas in which states had indicated a need for more information and assistance, this synthesis was limited to measuring teachers and did not address methods measuring school effects, the curriculum

or staff development (unless it included measures specific to teachers, though important and related, they were beyond the scope of this synthesis). Heneman, et al. (2006) found positive relationships between teacher evaluation scores and student achievement gains. This was precisely the connection between the researcher's study and the study conducted by Heneman, et al. (2006).

Rivkin (2005) attempted to correlate observable teacher characteristics, such as education and experience and unobservable components to student achievement gains in Texas. Rivkin (2005) determined that observable teacher characteristics had small, but significant effects on student achievement gains, but found that the majority of teacher effectiveness could not be explained by its observable characteristics. Teachers vary in their contribution to students' achievement score gains, but they could not explain what caused the variation (Rivkin, 2005). Again, this study pointed out a key problem with value added measures. Implications of this study pointed to a need for further study in this regard.

Kati Haycock (2005) president of the Education Trust noted that young people had expressed their views on why the achievement gap exists. She reported that young people talked about teachers who often did not know the subjects they were teaching. Young people talked about counselors who consistently underestimated their potential and programmed them into lower-level courses. Young people talked about principals who dismissed their concerns about these things when they raised them. Young people talked, in particular, about a curriculum and set of expectations that felt so miserably low-level that they were literally bored right out the school door.

One of The Education Trust's key findings in a 2005 report was that in high-impact schools, which were schools that produced unusually large growth in achievement for students who had entered significantly behind, and students were encouraged to take on academic challenges. High-impact schools had consistently higher expectations for all students, regardless of students' prior academic performance. The implications of this study were clear in that a basic review had consistently been performed to determine whether students were truly being challenged, whether a sufficient amount of support time was dedicated to students who were struggling, or whether any level of communication existed between the teacher and students. The Education Trust asserted: (a) teaching that improves student learning was highly effective teaching and (b) to produce gains in test scores (student achievement scores). This is a concept which was far too narrow a definition of teacher effectiveness. However, Goe, et al. (2008) presented an exterior definition of teacher effectiveness (i.e., a five-point definition developed through an analysis of research, policy, and standards that addressed teacher effectiveness.

After the definition had been developed, the authors consulted a number of experts and strengthened the definition based on their feedback is that the five-point definition of teacher effectiveness consists of the following: (a) effective teachers had high expectations for all students and helped students learn, as measured by value-added or other test-based growth measures, or by alternative measures; (b) effective teachers contributed to positive academic, attitudinal, and social outcomes for students such as regular attendance, on-time promotion to the next grade, on-time graduation, self-

efficacy, and cooperative behavior; (c) effective teachers used diverse resources to plan and structure engaging learning opportunities; monitor student progress formatively, adapting instruction as needed; and evaluate learning using multiple sources of evidence; (d) effective teachers contributed to the development of classrooms and schools that value diversity and civic-mindedness; and (e) effective teachers collaborated with other teachers, administrators, parents, and education professionals to ensure student success, particularly the success of students with special needs and those at high risk for failure (Goe et al., 2008, p. 8). The growing interest in teacher quality and accountability was not a new theme in the educational arena even though one might assume that it was based on the highly debated topic among policy makers and the general public today. Schools were expected to increase student achievement for all students, and the implementation of the NCLB Act of (2001) mandated compounds this school reform.

Although the examination of teacher lesson plans or student work was often included in teacher evaluation procedures, by analyzing classroom artifacts, evaluators could glean a better understanding of how a teacher created learning opportunities for students on a day-to-day basis (McClemon, 2005). Depending on the goals and priorities of the evaluation artifacts could be judged on a wide variety of criteria including rigor, authenticity, intellectual demand, alignment to standards, clarity, and comprehensiveness. Another indication of quality teaching rested with analyzing classroom artifacts as a practical and feasible way because the artifacts had already been created by teachers and the procedures did not appear to place unreasonable burdens on teachers. There was evidence that teachers had discernable differential effects on student achievement and

that these effects appeared to persist in the future. Clearly, the focus on attributing gains and standardized test scores to teachers and test score gains had strengths. One could have certainly used the test data, but most would have agreed that an effective teacher should have helped all students learn more than was expected.

Learning on the part of the student was indeed a direct result of actions by a teacher (Fenstermacher & Richardson, 2005). Yet, we all knew that learners were not passive receptors of information directed at them. Learning did not arise solely on the basis of teacher activity. Assuming that the formulation offered above had merit, then the success at learning required a combination of circumstances well beyond the actions of a teacher (Lernmaster & Richardson, 2005, pp. 190-191). Sonifie and Wenzel (2006) cited a number of successes among school districts around the country, and recommended a human resources management approach to improving instruction, wherein vertical and horizontal alignment of practices enabled school leaders to carry out instructional objectives. Approaches to improving instruction may have involved professional development, individualized work with a curriculum specialist and study teams, maybe even a college work. The implications of this study were that even with effective teaching, there must have been other approaches used in concert with the quality of instruction.

As students in the U.S. continued to lag behind their international counterparts, researchers continued to examine a number of variables that played a role in promoting student success. Darling-Hammond (2007) asserted that a great deal of valuable research examined what teachers should have done to create successful learning environments,

yet too little attention was paid to the teachers themselves. As Darling-Hammond (1996) noted, “If a caring qualified teacher for every child is the most important ingredient in educational reform, then it should no longer be the factor most frequently overlooked” (p. 194).

Although teachers were introduced to the foundational learner-centered theories in educational preparation programs, many teachers still engaged in one size fits all teacher-centered practices. Perhaps one possible explanation for the lack of connection between theory and practice could be framed through conceptual change theory. Learner Centered education reflected a paradigm shift from the traditional teacher centered classroom format in which teachers lectured and students sat passively in rows while taking notes and tests. Instead, quality teaching incorporates strategies that support success for all learners within and beyond the classroom. For example, learner-centered teachers provided time for critical reflection and allowed students to have input into the selection of classroom activities. In learner centered classrooms, students were encouraged to question not only the subject matter, but also why they were expected to learn the material that was being taught.

Effective teachers understood their content and their students, by considering their pupils’ thinking and behavior; this led them to create innovative examples and explanations when the learners were confused by being challenged to think critically. An innate quality of effective teachers was the unique ability to explain the abstract concepts lucidly and vividly.

Computer applications helped accomplish course goals and at the same time created a relaxed, inquisitive milieu for learners (Woolfolk, 2006). To effective teachers, planning was paramount, and teaching followed fundamental principles of living and learning in the classroom. Instruction was interactive; therefore, motivational planning had to be systematic. By continuing research about the efforts of motivation on student achievement, more educational weapons were added to teachers' arsenal in their daily battle to educate and motivate students. By their early elementary years, children spontaneously exhibited effective rehearsal strategies, and by around fourth grade, (the grade level under investigation), they also employed more sophisticated organizational strategies. The implication was clear from the research that effective instruction helped contribute positively to academic achievement.

Consistent with the central role of social relatedness in students' academic motivation and performance, early elementary students gained more in achievement when they and their parents experienced supportive relationships with a teacher (Noguera, 2003). The findings demonstrated that student-teacher and parent-teacher relationships and quality made unique contributions to children's enjoyment and achievement in the early grades. This researcher's study was the first to use a prospective design to test the effects of a quality professional development program on student achievement in the early grades.

Skinner (2008) noted that testing promotes conformity. At the data site, the curriculum was driven by the core curriculum content standards, which indicated what students should know. High stakes tests were linked to school sanctions. Skinner (2008)

also posited, grade promotion was the intended carrot for students to pass state mandated testing.

Some researchers had argued a sharp distinction between Professional Content Knowledge and subject matter knowledge. However, Kaya (2008) showed that there was a significant interrelationship between the subject matter and pedagogical knowledge of science teachers as it related to a high quality professional development program. Further, professional knowledge and experience acquired as students within the school system had been used in many teacher education programs as a context for teachers to examine their own views and to evaluate those views in terms of best practices, theories of learning, and educational philosophies underpinning professional development programs (Jiao, 2008; Rodgriquez, 2009; Witcher, 2008).

Effective Classroom Strategies

Relations between motivational or affective variables and learning processes were of great importance in educational psychology (Berger, 2009). Mastery oriented students believed in a strong link between effort and outcome. These students tended to believe that effort increased competencies through task engagement (Berger, 2009, p. 167). Performance-approach goals were generally related neither to self-efficacy beliefs nor to interest in the material (Berger, 2009, p. 167). Interestingly enough, Berger (2009) asserted that performance avoidance goals were negatively correlated to both perceptions of self-efficacy and interest. The implications of this study revealed that students adopting this type of goal, and doubt their capacities and did not value tasks that may

have revealed those deficiencies. These tasks are perceived as a threat, eliciting worry, anxiety, and negative affect (Berger, 2009, p. 167).

Expert teachers developed and applied knowledge about the complex sub-skills that must have been taught to ensure that their students reach mastery (Stotsky, 2009). Knowledgeable teachers knew that spelling and writing instruction were critical to reading achievement and the use of reading concepts in the real world, and they knew how to integrate written language instruction into their lessons. Skilled teachers knew that struggling readers required explicit and systematic instruction to experience improvement in their reading abilities. Proficient teachers also knew that instruction must reflect attention to individual differences, not only in essential reading skills, but in the influence of culture and ethnicity on the selection of reading content and materials. In addition, expert teachers knew that even the best reading instruction, per se, could not help the student improve if lack of motivation was also a factor. Thus, knowledge of content and pedagogy must have been melded with engaging, vibrant materials and meaningful, instructional interactions.

Most importantly, expert reading teachers were data-based problem solvers and knew that one instructional approach was not equally beneficial for all students. Knowledgeable teachers assessed their students' oral language and reading abilities on a continuous basis. Teachers employed findings from these assessment data to inform the selection of instructional approaches and strategies, to guide adjustments and modifications to materials and instructional tactics, and for grouping decisions to address the needs of individual students.

Knowledgeable teachers assessed their students' oral language and reading abilities on a continuous basis and differentiated instruction on the basis of the assessment data (Stotsky, 2009). They employed findings from these assessments to inform the selection of instructional approaches and strategies, to guide adjustments and modifications to materials and instructional tactics, and for grouping decisions to address the needs of individual students.

An impressive body of research supported the complementary view of achievement and positive peer relationships (Powell, 2008). For example, within the academic achievement domain, research on school climate showed students' feelings of support and connection with others co-vary positively with student engagement. Positive student relationships were also associated with school competence, classroom grades, standardized test scores, involvement in the classroom, self-esteem, and lower levels of negative behavior. Rejection by peers, in contrast, was linked to lower levels of academic engagement, increased absenteeism, grade retention, dropping out of school, greater frequency of behavioral problems, and increased risk of depression.

Some peer relationships actually obstruct achievement levels (Juvonen, 2006). There were theories postulating a conflicting relation between achievement and peer relationships, on the other hand. Randler (2009) indicated that pupils who expressed higher interest and higher well being during the lesson performed better in a subsequent achievement test, while pupils who rated anxiety and boredom performed worse. More information from Randler (2009) in his research on the association between achievement and emotion, noted that emotional variables included four constructs: interest, well-

being, anxiety and boredom as it related to achievement variables generally, prior knowledge significantly influenced learning and instruction and often, prior knowledge explained most of the variance in subsequent test.

Appropriate homework assignments were beneficial to students' academic achievement. In a meta-analysis, Cooper, et al. (2006) found that students who completed homework assignments had higher academic grades than students who do not. More specifically, in studies that purposively had some students do homework and others not, the average student doing homework had a higher unit test score than 73% of students not doing homework. Although the importance of homework completion became more evident as students moved on to higher grade levels (Zimmerson & Kitsantas, 2005), Cooper's (2006) findings demonstrated that homework completion was also vital to student achievement in the elementary and middle school grades. Muhlenbruck, Cooper, Nye, and Lindsay (2000) suggested that teachers in the early grades assigned homework to develop students' work habits, while teachers in the higher grades used homework to enrich, and prepare students for class lessons. Zimmerson and Kitsantas (2005) further claimed that homework completion improved student self-efficacy, thus leading to improved academic outcomes (Huang & Cho, 2009, p. 382). Heck (2007) examined the relationship between teacher quality and reported on classroom effectiveness.

Past research suggested differences between teachers impact on student learning (Bembry & Schumacker, 2002; Cohen & Hill, 2000; Good & Brophy, 1986; Hanushek, 997; Rivkin et al., 2000; Rowan, et al., 2002; Rowe & Hill, 1998; Sanders & Horn, 1998;

Wright, Horn, & Sanders, 1997). Various internal school structures and processes such as classroom organization and grouping strategies, student composition, and social relations intersected with teachers' instructional strategies and behavior to affect student learning as well as the extent to which teacher effects persisted over time (McCaffrey, et al., 2003). For example, researchers had described some differences in teacher classroom practices (e.g., content, time on task, discipline procedures) between high-producing and low-producing schools (Teddlie, Kirby, & Stringfield, 1989).

Teacher effectiveness likely varies considerably within a school to the extent that over several years students were likely to have teachers of varied effectiveness (Bressoux & Bianco, 2004). Bressoux and Bianco (2004) suggested accumulation of positive or negative teacher effects over time led to differences that generated any real future academic advantage or disadvantage. McCaffrey, et al. (2003) concluded that the number of empirical studies that stood up to methodological scrutiny regarding the size and sustainability of teacher effectiveness on student learning was limited. This information was vital to this study because I sought to determine whether high quality teaching impacted the narrowing of the academic achievement gap.

A major limitation of this initial classroom-level research on teachers was that most studies did not measure quality separately (McCaffrey, et al., 2003). Instead, researchers merely inferred teacher quality and hence, effectiveness from a residual estimate of students' test scores, that was, an adjusted score after removing other known classroom sources (student composition, previous achievement) that affected the score. The challenge of disentangling teacher strategies and behaviors from student composition

had made describing the actual linkage between classroom teaching and student achievement difficult. Despite initial claims of large teacher impacts on student learning, more research was needed to identify factors that actually comprised and contributed to differences in teacher quality in the classroom and to determine whether teaching effectiveness persisted over time (Hamilton, Klein, & McCaffrey, 2001; Kupermintz, 2003; McCaffrey, et al., 2003, p. 402).

The influence of content knowledge was the lesson preparation method followed by interviews. Ozden (2008) described content knowledge as "the concepts, principles, relationships, processes, and applications a student should know within a given academic subject, appropriate for his/her organization of knowledge" (p. 634). Ozden (2008) emphasized that content knowledge had positive influence on pedagogical content knowledge and effective teaching as reported. Content knowledge also influenced effective teaching practice. Ozden's (2008) study was limited to science student teachers' understanding levels of concepts examined as a relationship between content knowledge and pedagogical content knowledge.

Teaching was a complex process with multiple dimensions (such as teacher communication and interaction with students, students' engagement and knowledge of the subject and so forth). Therefore, reflection of this multidimensionality was a challenging task. Student perceptions at best were only one data point of many that were needed to judge quality of teaching. Potential bases were evaluated critically in different contexts and in relation to multiple criteria on effective teaching (Al-Saghir, 2008, p. 634).

The many changes taking place in our society required graduating students who were able to compete in college and in a skilled work force. High quality education provision was crucial- especially as it relates to high quality teaching. Although we had heard the repeated promise to raise the level of academic achievement for all learners, this goal would not become a reality unless all learners received high quality teaching. Ingvarson (2008) disputed the emphasis placed on the importance of teacher-quality and quality teaching as well as similar emphasis underlying the 2001 NCLB Act. The size of international scholarly discourse concerned with educational effectiveness had largely ignored the importance of specifying standards of instructional effectiveness and their evaluation for teacher registration, accreditation and ongoing professional development.

The literature review, with few exceptions did not focus on constituent elements of teacher quality in terms of what teachers knew and should be able to do (i.e. instructional effectiveness or the what and how of quality teaching) were conspicuous by their absence, except with (Bond, et al., 2000); Darling Hammond & Baratz-Snowden, 2005; Darling-Hammond & Bransford, 2005; Fenstermacher & Richardson, 2005; Ingvarson, et al., 2006; Rowe, 2002). There was a gap in the literature in that the dominant emphasis continued to be characterized by offerings advocating structural changes for systemic reform, including curriculum reconstruction, class size, single sex schooling (Hattie, 2005) and so on. The point to be made was that there was a long and not so distinguished history of rarely presenting the classroom door (Ingvarson & Rowe, 2008, p. 7).

The review in literature noted limitations which were well established. There was an extensive body of knowledge that indicated methodological limitations endemic to econometric research focusing on the link between teacher quality and student performance (Hanuskek, 1971/2004; Goldstein, 1997/2008; Hill & Rowe, 1996; Raudenbush & Bryk, 1988; Rowe, 2000/2004/2006/2007). Failure to account for the hierarchical structure of the data such as data for students, classes and teacher, and school levels, had an impact on the evaluation of teacher quality in terms of what quality teachers should know and be able to do. The literature supported the idea that the gap is in need of valid methods of assessing teacher quality.

The purposes for defining and measuring teacher quality above all relate to high stakes decisions. As in other professions, legal issues surfaced when teachers believed that measures of their professional performance did not have a sound basis (Hopkins, 2007). Research on the characteristics of effective teachers and teaching had been concluded over the past 100 years. Teacher quality had been conceptualized by researchers in diverse ways including personality characteristics, teacher behaviors, and more recently in terms of what effective teachers knew and did, where the guiding research questions included what knowledge was essential for teaching (Berliner, 1992). Schulman's Teacher Assessment Program had also paved the way for new approaches to defining quality teaching and developing teaching standards. These had drawn attention to the complexity of what effective teachers knew about what they taught, and how they helped students to learn. As a consequence of this research, standards were emerging as

a sound basis for defining levels of expertise in teaching and assessing teacher performance.

The evidence of a teacher's performance could be based on observations of the quality of opportunities they provided for student learning in their classrooms in relation to teaching standards. This is what Fenstermacher and Richardson (2005) call good teaching. By good teaching we meant that the methods employed were age appropriate, morally defensible, and undertaken with the intention of enhancing the learner's competence with respect to the content studied (Fenstermacher & Richardson, 2005). This distinction points to two different approached to conceptualizing teacher quality and two different views on what teachers could be held accountable for: (a) one in terms of student achievement on standardized tests, and (b) the quality of opportunities for learning that teachers established in their classrooms. The purpose of teaching standards was to capture what was meant by good teaching and to explicate what teachers need to know and be able to do, to establish quality opportunities for student learning. Researchers had conceptualized teacher quality in diverse ways over time (e.g., personality). Teacher quality, for purposes such as those outlined in the Introduction to this article, was more appropriately conceived in terms of Fenstermacher and Richardshon's (2005) concept of good teaching.

There was currently a considerable focus on quality teaching, much of it rooted in the presumption that the improvement of teaching was a key element in improving student learning. Policy should have focused on the relationship between teaching and learning. This conception treated the relationship as a straightforward causal connection,

such that if it could be perfected, it could then be sustained under almost any conditions, including poverty, vast linguistic, racial or cultural differences, and massive differences in the opportunity factors of time, facilities, and resources (Fenstermacher & Richardson, 2005, p. 205). "Presumption of simple casualty was more than naive; it was wrong" (Fenstermacher & Richardson, 2005, p. 205)

I summarized that appraisal of quality teaching was strongly interpretative and required high levels of discernment on the part of the evaluators. The vital insight was that when making judgments of quality, one was always engaged in an interpretation in a selection of one set of factors or indices over another, in attention to some dimensions of the phenomenon over other possible dimensions, in desiring and valuing some features of the task or the achievement more than other features (Fenstermacher & Richardson, 2005, p. 206).

The major implication of this discussion for the measurement of teaching quality was that measures of quality should have focused on the quality of the opportunities for learning that teachers were providing for their students. One of the main aims of developers of teaching standards was to articulate 'sound principles of instructional practice' and what teachers should have known and be able to do, to provide quality of the opportunities for learning (Fenstermacher & Richardson, 2005, p. 15).

The implications of this work were that specific standards were needed for measures of teacher quality. Witcher, et al. (2008) presented a study on pre-service teachers' perceptions of characteristics of an effective teacher as a function of discipline orientation. This mixed study investigated the extent to which pre-service teachers'

discipline orientations were consistent with their perceptions of what makes and effective teacher. The purpose of Witcher's (2008) study was to determine whether pre-service teachers possessed a predominant discipline style. A phenomenological study was conducted and the analysis revealed seven characteristics that many teachers considered to reflect effective teaching: student-centered, effective classroom and behavior manager, competent instructor, ethnical, enthusiastic about teaching, knowledgeable about subject, and professional. The pre-service teachers viewed effective teachers as those with characteristics such as caring, empathetic, respectful, observant, sensitive and supportive (Witcher, 2008, p. 350).

Interestingly enough, in this study approximately one-third of the present sample endorsed effective classroom and behavior managers as a characteristic of effective teachers. However, knowledge of subjects seemed to be at odds with the curricula at many teacher institutions that emphasize subject matter expertise more highly than having disciplinary strategies. There was a gap in the literature because of its limitations. We must bear in mind that the participants in this study were only in the second week of their teacher education course.

Furtak and Primo (2008) believed that it was important for researchers to accompany their studies with evaluations of the fidelity of implementation of the experimental treatments. Furtak and Primo (2008) compared the form and extent of an experimental treatment to student learning. The study involved six middle school physical education teachers and their students. Results identified a correlation between teachers enactment of formative assessment and student learning. The case of the

effectiveness of embedded formative assessments for improving students' learning, depended upon implementation. The implication was that a model to guide teachers' quality of delivery helped explicate instructions to cluster student ideas. The actions of the projects ideas were only as good as their ability to help teachers enact them in the classroom. The sample of the study of Furtak and Primo (2008) was conducted with middle science teachers as an experimental treatment to student learning.

Regarding student achievement, Kyriakidis and Creemers (2008) used a multidimensional approach to measure the impact of classroom level factors upon student achievement. This study tested the validity of the dynamic model. The relationship of this study to others was that the paper referred to the methods and results of a study conducted in Cyprus, which investigated the validity of the model at the classroom level by measuring teacher effectiveness in mathematics, language, and religious education. The authors assumed, however, that each factor could be measured using similar dimensions. One of the main differences of the dynamic model from the current models of educational effectiveness factors was that the research variables in this study were as follows: dependent variables were student achievement in mathematics, language, and religious education. The eight factors dealing with teacher behavior in the classroom were measured by both on dependent observers and students. The findings reflected the criticism of the complexity of the model and the difficulties of testing the model empirically. However, the implication was that all five dimensions could be used to identify factors associated with student achievement. The most important aspects of the theory that was examined were the link between effectiveness research with educational

practice, specifically the presence of effective factors in the classroom. Further research testing generalizations of the findings for this study did not only provide support for the validity of the dynamic model but also helped teachers and other stakeholders develop specific strategies to improve their teaching practice (Kyriakidis & Creemers, 2008, p. 202).

The evaluation of observed lessons has been the subject of much debate in the field of teacher training. Teacher trainers have attempted to define quality in relation to teaching and had attempted to measure effective teaching in a reliable way. Leshem and Bour-Hame (2008) believed, "In order to construct a more comprehensive view of the issue, it is pertinent to collaborate with trainees and to provide some space for their voices" (p. 12). Previous research may be lacking in this regard. However, evidence from a small scale practitioner-based research project revealed that trainees needed explicit criteria for effective teaching in order to identify their strengths and weaknesses and to use them as guidelines for improvement. The most important aspect examined was the criteria for effective teaching in order to identify the areas of need in order to help teachers improve.

Another piece of related literature along the same theme of teaching effectiveness was seen via a study conducted by Al-Saghir (2008). Students' evaluations of teaching (SET) effectiveness were collected in Northern America Universities and used in universities at the worldwide level. Al-Saghir (2008) asserted, "Teaching is a complex process with multiple dimensions" (such as teacher communication and interaction with students, students' engagement and knowledge of the subject and so forth) (p. 3).

Therefore, reflection of this multidimensionality was a challenging task. The implications of Al-Saghir's (2008) study were that SET effectiveness could be used because they were systematically supported by research findings. There were few other indicators of teaching effectiveness other than SET effectiveness whose use was systematically supported by research findings.

This research study centered on quality professional development. The relationship to the researcher's work is that it relates to narrowing the academic achievement. Therefore, the literature review compared with other pieces of literature which defined the most important aspects of the study. As part of the study, the performance of the students on NJASK was considered as an attempt was made to answer the research questions. Rosemarin (2009) conducted a study in Australia investigating the qualities of effective teachers from the perspective of gifted students. The personal/social qualities of the teachers were more highly valued than intellectual qualities of the teacher (Rosemarin, 2009, p. 53). Valle (1998) used semi-structured interviews and found that gifted children, regarded personal qualities as highly as academic ones. Understanding and helpfulness were rated as the key qualities in their ideal teacher. A sense of humor, creativity, and curiosity were highly valued. The results of the present study, like those of the Australian and American studies, showed that students preferred the social qualities of their teachers to the academic ones. Rosemarin (2009) asserted that today, the basic role of the teacher was not to transmit knowledge, but rather to provide the optional conditions for learning.

Rinaldo et al. (2009) presented a study that dealt with how a college of education developed and implemented a self-administered instrument to measure the degree to which its candidates believed their dispositions of good teaching changed over the course of their program. Interestingly, enough Rinaldo et al. (2009) said, "Although there does exist some agreement on what constitutes dispositions of good teaching" there was no canon of attributable observable behaviors. Therefore, at this time, it appeared that colleges of education must establish their own operational definitions.

A review of the literature reminded us that defining excellence in teaching was not only an arduous, but an imprecise task that had usually focused on the observable and technical aspects of teaching. Clearly, Rinaldo (2009) asserted, the goal of the professional educator was to transform his or her students, to inspire them to think, to feel, and to experience citizenship as active members in a democratic society. The implication for this study was that as colleges of education move toward renewing or gaining program accreditation, they faced the task of gathering valid and reliable data on both tangible and intangible elements of their program.

Most people, especially educators, had long understood that there was a link between the organization of schools, the work of teachers, and student learning. However, a degree of uneasiness existed when one tried to identify a clear cut link between student learning and the quality of schools and teaching. Can one assume that quality teaching in an urban setting was the same as quality teaching in a suburban district?

Rodriguez's study (2009) provided evidence of academic self concept and outcome expectations on the selection of learning strategies conducive to academic achievement in undergraduate business education. Raising students' level of 'complicated understanding', connecting a critical perspective to content required the development of critical thinking skills, namely creative thinking, problem solving, visualization, knowing how to learn and reasoning (Rodriguez, 2009, p. 523). This study evaluated two critical self-regulation components: academic self concept and outcome expectations. Several conclusions were drawn from the model tested in the study. Overall, the findings in this study extended our theoretical understanding of the role that academic self concept beliefs and expectations had in promoting learning. Limitations in the study existed because it dealt exclusively with undergraduate business education students. Also while prior studies had stated the urgency of developing critical thinking skills in college business students, no research had focused on understanding business students' effective cognitive and behavioral strategies to critical learning and how self-regulatory abilities monitored those processes while completing learning tasks. This study attempted to fill this gap by focusing on two critical self regulation components as they shape students' choices of learning approaches conducive to academic achievement. Getch, et al. (2009) posited, research on the effects of group work with African Americans suggested that these opportunities had the potential to increase hope, decrease feelings of alienation, and increase positive coping social skills. Throughout history, African-American communities had long found strength and survival in their connectedness to family and extended family. Thus, the very nature of group work

provided a sensible choice for work with African-American students. Group participation allowed members to bond and feel safe sharing personal issues while simultaneously working toward a shared goal. Group counseling also provided a way to address the developmental needs for social acceptance and belonging among adolescents.

As schools continued to struggle to meet the accountability measures required under NCLB and as school counselors sought to define how students were different as a result of school counselor practice, it became increasingly important for schools and school counselors to examine achievement data and evaluate how well schools were serving all student groups. School officials, including school counselors could become powerful agents of change by examining disparities that existed in achievement among different student subgroups. As school counselors had begun to more closely scrutinize the achievement data available, we can begin to develop and implement programs that focused on narrowing the achievement gaps that existed in our schools and providing more equitable educational opportunities. School counselors were uniquely positioned and qualified to provide interventions that promoted overall student development in nontraditional ways. By using data to develop targeted programs such as the intervention presented in this article, school counselors could become important agents of change at the student, school, district, and national accountability levels (Bruce, et al., 2009, p. 452).

The process of how we get informed and we get conscious had been discussed by philosophers, psychologists and educators for a long time (Berger, 2009). The effects of this process over learning and behavior were one of the main issues of cognitive

psychology. Cognitive psychology studied many kinds of intellectual activities related to data processing and problem solving abilities such as perception. Also cognitive psychology, even in today's world, represented one of the main tendencies of thinking and learning in psychology and pedagogy.

The developments that came out in the thinking and cognition system could be described as cognitive development. Berger (2009) explained that meta-cognition experiences were subjective feelings and judgments relative to the learner's current cognitive enterprise. The most notable metacognitive experiences studied were the feelings of difficulty, familiarity, liking, satisfaction, confidence, and effort expenditure. Metacognitive control was defined as decisions made (Berger, 2009, p. 453). Mastery goals were associated with the beliefs that effort exertion could lead to success, while performance goals were associated with the beliefs that success depended more on ability (Berger, 2009, p. 177).

Over the elementary school years, classroom performance was evaluated increasingly with regard to normative progress and pre-established standards of excellence. Hence it was normal that students' status varied as a function of their performance. Within this context, attention was drawn to these status variations via competition and social comparison.

The idea that learners bring group and individual histories into the classroom was not a new concept. Berger (2009) noted that the individual characteristics that learners bring to a task may have set the stage for further learning and performance. Every learner brought to the task a prior history of learning and ways of doing. African

American children who did well in school tended to have parents who were responsive to their parent's help and parent's who encouraged an active coping style. Students worked through activities without the immediate support of the teacher, rather than students determining their own learning goals and designing their own learning activities (self directed learning).

There was new evidence that three kinds of conventional resources made a difference: small class sizes, teacher experience, and teacher knowledge (Raudenbush, 2008). Taken as a whole, a reasonably coherent picture emerged: the conventional resources that appeared to matter most were those proximally linked to instructional quality. In reviewing this evidence, one immediately saw that although instructional quality matter, schools were not currently organized well to mobilize effective instruction. This insight implied that educators needed to propose ways in which changes in school organization might be reframed to support ambitious instruction.
"It is ineffective instruction that dooms children to a lifetime of reading failure" (Weiser, 2009, p. 476). Clearly, the impact of both effective and ineffective teaching on student achievement had been reported for more than a decade. For example, Marzano, Pickering, and Pollack (2001) and others (Sanders & Horn, 1998; Sanders & Rivers, 1996; Wright, Horn, & Sanders, 1997) concluded from their meta-analytic and value added studies that teacher effectiveness was the most important factor in the growth of student achievement, not only in reading but in mathematics and other content areas as well. Specifically, Sanders and Rivers (1996) reported that the effect of unsuccessful

teaching could not be readily compensated for by effective teachers in subsequent years. School administrators needed to ensure that students were taught by skilled teachers.

Expert teachers developed and applied knowledge about the complex sub-skills that must be taught to ensure that their students reach mastery. Knowledgeable teachers know that spelling and writing instruction were critical to reading achievement and the use of reading concepts in the real world, and they knew how to integrate written language instruction into their lessons. Skilled teachers knew that struggling readers required explicit and systematic instruction to experience improvement in their reading abilities. Proficient teachers also knew that instruction must reflect attention to individual differences, not only in essential reading skills, but in the influence of culture and ethnicity on the selection of reading content and materials. In addition, expert teachers knew that even the best reading instruction, per se, will not help the student improve if lack of motivation was also a factor. Thus, knowledge of content and pedagogy must have been melded with engaging, vibrant materials, and meaningful instructional interactions. Most important, expert reading teachers were data-based problem solvers and knew that one instructional approach was not equally beneficial for all students.

With the No Child Left Behind Act of 2001, schools, administrators, and teachers were accountable for the academic success of their students. Although administrators were interested in the best practices associated with student achievement, Pascopella (2006) suggested that teachers made the difference for students living in poverty and highlighted the need to better educate teachers about poverty and student achievement

(Burch et al., 2001). Grissmer et al. (2000) noted that the achievement gap could be addressed by targeting resources to disadvantaged families and schools, lowering class size in early grades, strengthening early childhood and early intervention programming, and improving teacher education and professional development. Schools, teachers, and families working together could create strong academic gains for all students.

School Environment

The school environment is an essential component to the success of the school and its students. Reeves (2003) conducted a study of what he called 90/90/90 schools with 90% minority, 90% free or reduced lunch, and 90% of their learning outcomes met. Six strategies emerged from his research on these successful schools; these strategies were repeated in other literature on school improvement.

The first and perhaps most important strategy is to hire and retain teachers who believe in their students (Center for Public Education [CPE], 2005; Danielson, 2002; Reeves, 2003). Reeves (2003) found that these teachers went beyond just believing that all students could learn by taking responsibility for their learning and by expecting results from students regardless of their background. The potential themes and perceptions explored in this study were academic achievement culture of poverty, and instructional strategies.

The second strategy is to focus on academic achievement (CPE, 2005; Marzano, 2003; Reeves, 2003; Schomoker, 2001). In the schools in which these researchers conducted their studies, the curriculum was specifically defined by narrowing the focus to small achievable goals, particularly in mathematics and reading (Marzano, 2003).

Although little time is spent teaching other subjects, test scores in these areas increased, revealing the importance of reading ability in assessment outcomes (Reeves, 2003).

The third strategy was to give assessment a prominent role in the daily activities of students and teachers (CPE, 2005; Marzano, 2003; Reeves, 2003; Schomoker, 2001). Faculty members assessed students daily, weekly, and yearly (Marzano), and when reviewing test scores, the focus was on where they ended the year, not where they began. Yearly test scores were deemphasized, and daily or weekly test scores were highlighted as a form of continuous feedback to the students. Teachers used daily and weekly assessments to create academic interactions that closely resembled active coaching by the teachers (Reeves).

In addition, faculty members who are within the successful high-poverty schools worked together on their assessments. Students submit answers to questions from all content areas, requiring them to process the information and to write to think. By providing answers that document their understanding, teachers are able to get better diagnostic picture of the student's grasp on the content. Through this process, students also worked on creating good nonfiction writing and a rubric was used to evaluate the students' writing (Reeves, 2003).

Another strategy that successful schools use is creating common assessments for each grade level, establishing consistency in teacher expectations. For this strategy to work, teachers must discuss curriculum outcomes and expectations for each assignment. Following discussions, teachers were better equipped to grade work equitably (Reeves, 2003).

The fourth strategy is to increase collaboration through-out the school (CPE, 2005; Marzano, 2003; Reeves, 2003). In this case, the collaborative assessment was taken one step further by having teachers and principals regularly exchanged and graded student work. After faculty members discussed expectations for each common assignment, collaboration was extended throughout the school by holding everyone accountable for student learning, including physical education teachers, librarians, music teachers, and even bus drivers. Teachers collaborated to determine the best ways to cover the content. In addition to the school community, families were also an important part of the collaborative process (CPE, 2005; Marzano, 2003).

The fifth strategy is to use creative scheduling (Danielson, 2002). Administrators played a key role in freeing up time for activities that promote teacher success, including scheduling time for instruction based on the needs of the students. For example, some elementary school principals who wanted to focus more on certain aspects of the curriculum created three hour literacy blocks, whereas some middle and high school principals created double periods of English and mathematics.

School principals used faculty meetings and replaced professional development sessions, which teachers had found to be a waste of time to allow for collaborative discussions among teachers. Announcements were sent via e-mail, and the faculty meetings were spent by collaborating with colleagues (Reeves, 2003). The sixth and final strategy involved administrators who spent money on things that worked.

Summary

The review of the literature suggested the importance of recognizing that a body of information on teacher quality was still missing. I believed that this study began to fill the void as it related to quality teaching. Despite the research and the studies presented in this section, the data still remained widespread because the term "teacher quality" lacks a clear meaning and clear measurement. The phrase was often used to refer to very different things. For the sake of this research, teacher quality referred to the quality of teachers' classroom practices. Specific teaching practices were indicators of teacher quality. As such, the literature supported the need to become more precise in the use of the term teacher quality.

Previous studies drew conclusions about the impact of factors narrowing the achievement gap. Thus, the literature supported the need to conduct a quantitative methods study to examine the effect of a high quality professional development program on NJASK state scores in science, mathematics, and language arts literacy.

Next, section 3 focuses on the research methodology selected and identified the participants, instruments and measures, data collection procedures, and finally an analysis of the hypothesis. Section 4 will present and analyze the methods used to collect data. Finally, section 5 will summarize and provide a strong conclusion with respect to implications for social change in the education field.

SECTION 3: RESEARCH METHODOLOGY

Introduction

This section includes information regarding the participants in this study and how they were selected, the data collection methods, instrumentation, and the methods for data analysis. The school district in which this study was conducted implemented a high quality teaching professional development (HQTPD) program for elementary teachers in 2008. The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between the groups of fourth grade students taught by elementary teachers before the implementation of the HQTPD program and fourth grade students taught by elementary teachers after the implementation of the HQTPD program. The focus of this study was to determine if there was a significant difference in the NJASK science, mathematics, and language arts literacy scores of fourth grade students before and after the implementation of the high quality teaching professional development program.

Research Problem

At the data site, which was located in the northern section of the state of New Jersey, the research problem was threefold. Specifically, (a) fourth grade students were not making academic progress as measured by NJASK, (b) elementary schools were failing to make adequate yearly progress (AYP), and (c) current literature review did not reveal whether or not a high quality teaching professional development program HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores. Review of the current literature revealed that there was no simple

explanation for the differences in state standardized test scores. I was hypothesizing that a high quality teaching professional development program had an effect on narrowing the academic achievement gap because additional educational professional development experiences of elementary teachers may assist fourth grade students in NJASK testing in science, mathematics, and language arts literacy.

This study was conducted in the state of New Jersey in an urban school district. The student academic achievement gap was an educational concern in the school district. In particular, this school district had determined that too many students lacked the academic skills needed to pass NJASK. The school district strived to raise the level of student proficiency by implementing core curriculum content standards.

The research problem was the low performance of students on NJASK testing. Students at the data site lacked the academic skills needed to pass NJASK testing. Educational stakeholders at the site needed to focus on high standards, a challenging curriculum; thus, I felt the need to conduct this study to examine the gap in student achievement in order to assist the leadership of the school district to determine how to narrow the gap in student achievement. The educational stakeholders at this data site were aware of this urgent issue and, as a result, have implemented this program in the 2007-2008 academic year. These stakeholders needed research-based findings on the effects of the high quality teaching professional development program for elementary teachers on NJASK scores in science, mathematics, and language arts literacy. The high quality teaching professional development program had been developed to help teachers use high quality instructional practices, in order to prepare students to demonstrate higher

level thinking and analytical and problem-solving skills, as measured by NJASK.

To this end, I examined whether or not a high quality teaching professional development program has had an impact on fourth grade students' science, mathematics, and language arts literacy scores as measured by NJASK testing. The aim of this study was to develop a theory that would translate into instructional practices that may lead to increased academic achievement. The focal point of this study was to determine whether or not there is a significant difference in the NJASK science, mathematics, and language arts literacy scores of fourth grade students who were taught by elementary teachers before the implementation of high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of high quality teaching professional development program.

Research Questions

The main research question that guided this study was whether or not there was an effect of a high quality teaching professional development program (HQTPD) on fourth grade students' science, mathematics, and language arts literacy NJASK scores.

Research Question 1

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is no significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants were NJASK tested in science during the 2007-2008 academic year before the implementation of the HQTPD program. The second cohort of fourth grade participants were NJASK tested in science during the 2008-2009 academic year after the implementation of the HQTPD program. Thus, the science scores of the first cohort was the pretest scores and the science scores of the second cohort was be the posttest scores. I collected NJASK science scores and used an independent *t-test* for paired samples to determine whether there was a significant

difference in the student academic performance in science as measured by the New Jersey NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group (first cohort), and the control group (second cohort), were selected without random assignment. Gravetter and Wallnau's (2005) decision map for choosing parametric tests was utilized for the rationale that the independent paired samples *t* test was employed for the parametric, numerical items collected from the NJASK data. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK science scores between the two cohorts of students. The level of significance was be set at .05. Upon determining the level of significance, a standard t value table was used to determine if the independent *t*-test value exceeded the critical t-value, indicating that a result was considered statistically significant.

Research Question 2

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is no significant difference in the student academic performance in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants were NJASK tested in mathematics during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade participants were NJASK tested in mathematics during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the mathematics scores of the first cohort was the pretest scores and the mathematics scores of the second cohort was the posttest scores. I collected NJASK mathematics scores and used an independent *t-test* for paired samples to determine whether there was a

significant difference in the student academic performance in mathematics as measured by the New Jersey NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group (first cohort), and the control group (second cohort), were selected without random assignment. Gravetter and Wallnau's (2005) decision map for choosing parametric tests was utilized for the rationale that the independent paired samples *t* test was employed for the parametric, numerical items collected from the NJASK data. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK mathematics scores between the two cohorts of students. The level of significance was set at .05. Upon determining the level of significance, a standard t value table was used to determine if the independent *t*-test value exceeded the critical t-value, indicating that a result is considered statistically significant.

Research Question 3

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants were NJASK tested in language arts literacy during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade participants were NJASK tested in language arts literacy during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the language arts literacy scores of the first cohort was the pretest scores and the language arts literacy scores of the second cohort was the posttest scores. I collected NJASK language arts literacy scores and used an independent *t-test* for paired samples to determine whether there was a significant difference in the student academic performance in language arts literacy as measured by the New Jersey NJASK

scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group (first cohort), and the control group (second cohort), were selected without random assignment. Gravetter and Wallnau's (2005) decision map for choosing parametric tests was utilized for the rationale that the independent paired samples *t* test was employed for the parametric, numerical items collected from the NJASK data. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK language arts literacy scores between the two cohorts of students. The level of significance was set at .05. Upon determining the level of significance, a standard t value table was used to determine if the independent *t*-test value exceeded the critical t-value, indicating that a result is considered statistically significant.

Research Purpose

The school district where this study was conducted implemented a high quality teaching professional development (HQTPD) program for elementary teachers in 2008. The research problem was that fourth grade students, at the data site, were not making academic progress, elementary schools were failing to make adequate yearly progress (AYP), and current literature review did not reveal whether or not a HQTPD program had an effect on fourth grade students' science, mathematics, and language arts literacy NJASK scores. The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts

literacy scores between fourth grade students taught by elementary teachers before the implementation of the HQTPD program and fourth grade students taught by elementary teachers after the implementation of the HQTPD program. The focus of this study was to determine if there was a significant difference in the NJASK science, mathematics, and language arts literacy scores of fourth grade students before and after the implementation of the high quality teaching professional development program. At the data site, fourth grade students were required to take the NJASK in science, mathematics, and language arts literacy.

The findings of this study helped district leaders, program developers, and school leaders to assist teachers to develop their instructional skills in order to maximize each student's potential to achieve at higher levels, thereby, contributing to narrowing the academic achievement gap. Further, the findings may also lead to an understanding of what constitutes *high quality* instructional practices that may lead to raising the level of academic proficiency.

Research Design

I employed the *nonequivalent quasi-experimental pretest and posttest control group design,* which involved two groups of fourth grade students (one group was taught by elementary teachers before the implementation of the high quality teaching professional development program and the other group was taught by elementary teachers after the implementation of the high quality teaching professional development program), both of which were pre-tested and post-tested utilizing the fourth grade NJASK scores during the academic years 2007-2008 and 2008-2009. This HQTPD

program was designed for elementary students at an urban northern New Jersey public school district. This HQTPD program was offered to elementary school teachers during the 2007-2008 academic year to assist students in passing NJASK testing, which is the New Jersey mandated student academic performance in science, mathematics, and language arts literacy NJASK (HQTPD) scores.

This HQTPD program was not a one-on-one mentoring program for elementary school teachers. This HQTPD program was not based on a specific model of school intervention program. Rather, the HQTPD program was designed to assist students in raising the level of academic proficiency. Notwithstanding the program's emphasis on teaching practices, the main focus was lifting academic achievement to a level which demonstrated a narrowing of the academic achievement gap. The quasi-experimental quantitative methods for investigating the data were chosen rather than qualitative methods because the NJASK test scores involve science, mathematics, and language arts literacy that were quantitative measures. I was not focusing on the interaction between the two cohorts of fourth grade students.

This researcher collected quantitative data from two groups of fourth grade students. Therefore, I chose a quantitative research design in order to analyze the fourth grade NJASK test scores in mathematics, science, and language arts. The data that were collected from the data site were numerical data. I used the quantified data in order to answer the research questions.

I did not select a qualitative design because I was not interested in answering research questions that provided responses to why a phenomenon has occurred.

Specifically, qualitative research could be used to understand social interactions where the participants were usually interviewed or observed by myself in order for me to collect data made of words, images, or objects (Kiriakidis, 2008). Additionally, this researcher did not select a qualitative design because her role as a researcher in a qualitative study would have been based upon the professional relationship between the participants and I. For this quantitative study, research biases were not known to the participants, and the data were archived data that were provided to me by the data site administrator responsible for research. According to Creswell (2003), "quantitative studies provide a numerical value to a research question" (p. 44). In order to answer the research questions for this study, I utilized the quantitative research method described in this section to test the hypotheses.

Setting and Sample

Demographics

The data site was a little over three square miles, and was one of the most densely populated places in the state of New Jersey. As the census of 2000, there were 60,695 people, 22,032 households, and 14,408 families residing in the township. The population density was 20,528.3 people per square mile (7,917.1/km). There were 24,116 housing units at an average density of 8,156.5/sq mi (3,145.7/km). The racial makeup of the township was 8.97% white, 81.66% African American, 0.24% Native American, 1.10% Asian, 0.10% Pacific Islander, 3.68% from other races, and 4.24% from two or more races. Hispanic or Latino or any race was 8.38% of the population.

As part of the 2000 Census, the residents at the data site were identified as being 81.66% black or African American. This was one of the highest percentages of African American and Caribbean American people in the United States, and the third-highest in New Jersey (behind Lawnside at 93.6%, and East Orange at 89.46%) of all places with 1,000 or more residents identifying their ancestry. The data site also had a large Haitian-American population, with 5,812 persons claiming Haitian ancestry in the 2000 Census.

There were 22,032 households out of which 33.9% had children under the age of 18 living with them, 30.2% were married couples living together, 27.6% had a female householder with no husband present, and 34.6% were non-families. Of all households, 29.3% were made up of individuals and 6.4% had someone living alone who was 65 years of age or older. The average household size was 2.74 and the average family size was 3.39.

In the township the population consisted of 28.0% under the age of 18, 10.7% from 18 to 24, 32.3% from 25 to 44,21.5% from 45 to 64, and 7.5% who were 65 years of age or older. The median age was 32 years. For every 100 females there were 87.7 males. For every 100 females age 18 and over, there were 81.5 males.

The median income for a household in the township was $36,575.00, and the median income for a family was $41,098. Males had a median income of $32,043 versus $27,244 for females. The per capita income for the township was $16,874. About 15.8% of families and 17.4% of the population were below the poverty line. This included 22.9% of those under age 18 and 12.2% of those aged 65 or over.

Sample Selection

The participating school district was a public school district serving Grades pre-k through Grade 12 in New Jersey, United States. As of the 2009-2010 school year, the district had 12 schools and an Alternative or Evening School. The district's 12 schools had an enrollment of 7,064 students and 735 fulltime classroom teachers, for a student-teacher ratio of 9:61. The district was classified by the New Jersey Department of Education as being in District Factor Group "A", the lowest of eight groupings. District Factor Groups organized districts statewide to allow comparison by common socioeconomic characteristics of local districts.

The participants of this study were elementary students in an urban Northern New Jersey. The fourth graders at the schools graduated (moved up) to fifth grade and were on track to be promoted to middle school. Two cohorts of fourth grade students were selected for this study. Upon IRB approval, at the data site, the Office of Mathematics, and Data Management and Assessment provided me with state scores in the aforementioned subjects for the two cohorts that participated in this study. Specifically, cohort one consisted of fourth grade students of which approximately 265 were girls and 276 were boys. Cohort two consisted of fourth grade students of which approximately 285 were girls and 296 were boys. Of these numbers, 35 boys and 16 girls in district were certified as having a learning disability, and 490 students received free lunch and 130 received reduced lunch. In general, all fourth grade students were considered average or above average achievers according to their grade point average as reflected by their

report cards. None of the students had been socially promoted. Therefore, there was no possibility that these students were older than the average fourth graders. All of these grade four students were on the middle school path.

The participants in this study were two cohorts of fourth grade students. The first cohort was in fourth grade during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade students was in fourth grade during the 2008-2009 academic year, after the implementation of the HQTPD program.

At the data site, fourth grade students were required to take the NJASK state mandated tests in science, mathematics, and language arts literacy. The NJASK testing measured students' proficiency in these subjects. Thus, a sample of fourth grade students was selected for this study based on these three criteria: (a) most of the students were not meeting required standards of proficiency on the aforementioned NJASK scores; (b) the schools these students attended failed to make adequate yearly progress as mandated by the NCLB Act of 2002, and (c) the teachers for the first cohort were receiving the HQTPD program and the teachers for the second cohort were implementing the HQTPD objectives.

As a result, in order to examine whether or not a HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores, the aforementioned selection criteria of the participants had to be met to measure the variance in science, mathematics, and language arts literacy scores between the first cohort taught by elementary teachers before the implementation of the HQTPD program

and the second cohort taught by elementary teachers after the implementation of the HQTPD program.

Treatment and Control Groups

The participants in this study were two cohorts of fourth grade students. The first cohort was in fourth grade, during the 2007-2008 academic year, before the implementation of the HQTPD program. The second cohort of fourth grade students was in fourth grade, during the 2008-2009 academic year, after the implementation of the HQTPD program. The first cohort was the control group because these students were taught before the implementation of the HQTPD program. The second cohort was the treatment group because these students were taught after the implementation of the HQTPD program.

HQTPD was a coordinated and embedded professional development program designed to help elementary teachers to focus on higher levels of proficiency for students who take the NJASK tests. HQTPD was aligned to the participating district's vision and mission, and provided evidence of increasing student achievement.

The first cohort was taught by the same teachers who taught the second cohort. The second cohort was taught by teachers who focused on higher levels of proficiency on NJASK testing for their students. The second cohort was exposed to strategies that increased their critical thinking, problem-solving, analytical, and mathematics, science, and art literacy skills. These new strategies were incorporated into the student's academic work. Students evaluated their personal progress and were expected to provide evidence of meeting or exceeding state standards.

Instrumentation and Materials

The New Jersey Department of Education in collaboration with Measurement Incorporated prepared the New Jersey Assessment of Knowledge and Skills (NJASK) testing for mathematics, science, and language arts literacy for all students in the state. NJASK was designed to assess students' knowledge and skills, and to present an early indication of the progress students were making in mastering the knowledge and skills described in the Core Curriculum Content Standards.

At the data site, fourth grade students were required to take the NJASK in science, mathematics, and language arts literacy. The science testing of NJASK measured students' ability to recall information and to solve problems by using science concepts. The mathematics testing measured students' ability to solve problems by applying mathematics concepts in number sense and numerical operations, geometry and measurement, patterns and algebra, data analysis, and so forth. The language arts literacy testing of NJASK measured students' achievements in reading and writing.
Students were expected to participate in this process in the spring of each academic year. The results of the NJASK were used by school districts in New Jersey to identify strengths and weaknesses in educational programs.

The NJASK scores were reported as scale scores in each of the content areas. The scores range from 100-199 (Partially Proficient), 200-249 (Proficient), and 250-300 (Advanced Proficient). The schools who received scores in the partially proficient range were considered to be below the state minimum range of proficiency, and those students may be the ones most in need of instructional support.

This researcher collected NJASK archived data from the local school district's mathematics and data management and assessment office upon IRB approval from both Walden University and the administrator responsible for research at the data site. Data were collected for the students' NJASK scores between 2008-2009 academic years. The collected data were placed in a secure location in the researchers' home computer that was password protected with only the researcher having access to the password. I included raw data in appendices for each academic subject of the NJASK testing. The pretest and posttest scores of each subject were shown in two different columns in data tables.

Validity and Reliability of NJASK

The NJASK addressed the subject of validity in the Technical Report 2008 prepared by the New Jersey Department of Education. In this manual, the DOE made it possible to determine whether or not children in fourth grade could demonstrate partial, full, or advanced proficiency. The validity of NJASK scores was based on the alignment of the NJASK assessments to the Core Curriculum Content Standards and the knowledge and skills expected of third and fourth grade students.

The validity of an intended interpretation of test scores relied on all the available evidence relevant to the technical quality of a testing program (AERA; APA; National Council on Measurement in Education, 1999, pp. 11-12). NJASK included evidence relevant to the technical quality of a testing program. Adequate score reliability, accurate score scaling, appropriate test administration and scoring, equating, standard setting, and

attention to fairness to those taking the exam were evident in each NJASK testing in science, mathematics, and language arts literacy.

The reliability coefficients given in the Technical Manual by the Department of Education in New Jersey were based on Cronbach's coefficient alpha measure of internal consistency. Cronbach's alpha was used on tests containing items that could be scored along a range of values.

The standard errors of measurement (SEMs) for the major content areas, Language Arts Literacy and Mathematics, were expressed in terms of the raw score metric and the scale score metric. The NJASK scale scores ranged between 100 and 300. The reliability of a content area was likely to be greater than the reliability of a cluster simply because the content area had more test items. Similarly, clusters with more items were likely to be more reliable than clusters with fewer items.

The reliability coefficients for Language Arts Literacy were between .81 and .89. The reliability coefficients for mathematics were between .83 and .89. The reliability coefficients for science were between .82 and .89. Although NJASK was intended to measure students' performance in relation to the Core Curriculum Content Standards, content validity was primary and was the most relevant and important source of evidence. An external committee assisted the New Jersey Department of Education by reviewing the assessments to determine how well they measured the knowledge and skills stated in the standards, and by comparing the New Jersey Standards, and by comparing the New Jersey Standards with standard in other states and countries.

Threat to Validity

The threat to validity, due to the fourth grade NJASK testing, was minimal as students did not know if they had a low or high science, mathematics, and language arts literacy score on the NJASK. Additionally, the state of New Jersey and its contractor conducted quality control checks and sent the school districts their results. The objective was for each school district to receive the testing results within two weeks from the time the test materials were received by the test contractor. Hard copies of NJASK scores were sent to each district. Shipments of makeup results were sent to each district soon after the main shipment of results occurred. Two weeks later, districts received hard copies of class rosters and all individual students' reports. During the first two weeks of July, districts received all of the summary-level reports, including school, system, and state performance summaries. Districts also received quartile summaries and a report of all student populations.

An interpretive guide was posted to the New Jersey Department of Education website for districts to access in interpreting the reports. An answer key was not made available to the district in any academic subject. Students in fourth grade did not know what a highly scoring answer might be for the NJASK test. Even if a student remembered, there was no way for the student to research what a high scoring response would be in the next grade. Given this information, I accurately measured if the mathematics, science, and language arts literacy scores in 2007-2008 had changed significantly compared to the 2008-2009 NJASK scores.

The NJASK tests were scored via an independent contractor. The reliability was evaluated by statistical methods. The state testing division paradigm suggested that the total reliabilities were between .81 and .89 for Language Arts Literacy, between .83 and .89 for mathematics, and between .82 and .89 for science. The validity of the NJASK was established as qualified, professional content specialists wrote all test items.

Data Collection

This researcher collected NJASK test scores in science, mathematics, and language arts literacy of approximately 1200 student who were in fourth grade during the academic years 2007-2008 and 2008-2009. Of the 1200 potential participants, 600 were in fourth grade during the academic year 2007-2008 and 600 during the academic year 2008-2009. These students had participated in the state of New Jersey mandated NJASK testing in science, mathematics, and language arts literacy during the state testing in the spring of their fourth grade year. The NJASK tests were administered by academic teachers trained by the data site guidance department to facilitate the test in April of that current year allowing for the pretest, and April of the following year allowing for the posttest.

The New Jersey Department of Education sent the student results to the school district assessment office. Upon completion of district level analysis of scores, the assessment office sent the student scores to the appropriate school guidance departments. The school's guidance department sent NJASK results to the parents or guardians in July of every year. The appropriate school guidance department made NJASK test scores available to teachers in each academic area.

The researcher compared the NJASK scores in science, mathematics, and language arts literacy between these two cohorts of fourth grade students before the implementation of the HQTPD program during the academic year 2007-2008 and after the implementation of the HQTPD program during the academic year 2008-2009. A quasi-experimental nonequivalent control group design was used to determine if gains were made in the area of science, mathematics, and language arts literacy as measured quantitatively by the NJASK testing.

This researcher had worked as an educator in the state of New Jersey for almost 38 years and had been a district administrator for over 20 years. This researcher collected archived data from the local school district upon receipt of IRB approval from both Walden University and the administrator responsible for research at the data site. Data were collected from the students' NJASK scores between 2008-2009. These data were archived and were available through the local school district's mathematics and data management and assessment office.

A research assistant worked with this researcher in order to ensure that all data entries and analyses were accurate and to ensure that all researcher biases were nullified. The research assistant signed a letter of confidentiality before being enlisted as an assistant.

Upon IRB approval, the office of Academic Affairs was contracted to arrange for a meeting. The purpose was to submit the doctoral proposal and to acquire permission to conduct the study at the data site. After approvals had been granted to conduct the study, I collected archived NJASK scores.

The collected data were entered into SPSS for analysis. For each student, a unique identification number was assigned by the researcher with the assistance of the research assistant. Each student's score in science, mathematics, and language arts literacy was entered into SPSS with a numeric value to identify the student as a participant. Specifically, a value of one identified those students who participated in the academic year before the program was implemented and a value of two identified those students who participated in the academic year after the program was implemented. Comparisons between the two groups were made for the aforementioned academic years.

Data Analysis

I entered all of the NJASK archived data records tested before the implementation of the HQTPD program during the academic year 2007-2008. The second cohort of fourth grade students' data were inputted into SPSS 17.0 for Windows. I employed the *nonequivalent quasi-experimental pretest and posttest control group design,* which involved two cohorts of fourth grade students (one cohort in fourth grade before the implementation of the HQTPD program during the academic year 2007 to 2008 and another cohort in fourth grade after the implementation of the HQTPD program during the academic year 2008-2009). The first cohort of fourth grade students were pre- 4 students were post-tested before the implementation of the HQTPD program during the academic year 2008-2009. I examined the effect of the HQTPD program on NJASK scores and evaluated the strength of pretest and posttest scores.

The researcher used an independent *t*-test to determine whether the NJASK results were significantly different between the two cohorts of students. The tests were

performed to test significance at a confidence level at or above 95% ($a = .05$). The *t*-test was facilitated to assess whether or not the means of these two groups were statistically different from each other (Kiriakidis, 2009). When obtained difference between the data and the hypothesis was greater than chance, then a large value for *t* was obtained (either large positive or large negative) (Gravetter & Wallnau, 2005). After the data were analyzed, if I concluded that the data were not consistent with the hypothesis, the decision was made to reject the hypothesis. If the difference between the data and the hypothesis was small relative to the standard error, I would obtain a *t* statistic near zero resulting in the decision to fail to reject the hypothesis. Once the *t* value was computed, I determined if the difference between the two groups was not likely a chance finding (Kiriakidis, 2009).

The pretest and posttest scores of each subject were the variables for this study. I did not include any covariates or confounding variables such as teachers' age, years of teaching experience, and gender because I was interested in determining the difference between the two cohorts in the aforementioned academic subjects.

Confidentiality

In order to provide anonymity, the schools in both groups were assigned unique numeric codes. I was the only person who had access to the coding system. The name of schools and administrators were not used during or after the study was conducted and the findings were reported.

The archived data were collected and placed in a secure location in the researchers' home office computer. The researcher's personal computer was secured by a password, and only I had access to the password.

Protection of Participants

The researcher collected data that contained neither names nor information that would identify individual fourth students. Archived data were specific to the fourth grade NJASK scores. Data collection was not initiated until the Institutional Review Board of Walden granted permission. Based upon the fact that the data were archived, professional relationships with administrators and staff at the data site did not affect the data collection process. As required by Walden University's Institutional Review Board and the participating school system's guidelines, the participants' rights were safeguarded. Permission to conduct research in the school district was obtained. The raw data were held by me on my at-home computer for 5 years, after which time they will be destroyed. Data were made available to the participants and community members upon request.

Role of the Researcher

The researcher is an advocate for students. The school district officials forwarded archived NJASK scores to the researcher with no identifying information about the participants. Thus, the participants remained completely anonymous.

The researcher was the superintendent for an urban public school system which was located in Northern New Jersey. Responsibilities of the researcher included the governance of the school district ensuring that curriculum and instruction, management of fiscal issues, human resources/personnel, buildings and grounds and facilities were

governed well. Because of my role at the data site, a research assistant worked with this researcher. The research assistant was not an employee at the data site and he was not a K-12 educator. The research assistant signed a letter of confidentiality before being enlisted as an assistant to this research. Given that the data were archived and teachers were not asked to provide me with any data, researcher biases was be nullified (Kiriakidis, 2009).

The researcher had worked as an educator for at least 37 years to date, serving in the capacities of high school teacher of English, supervisor of Language Arts, vice principal, principal, assistant superintendent for Academic Affairs and currently superintendent. I had long been concerned about the disparities in the way learners were treated on the basis of race, social class, and language differences. Convincing evidence suggested that effective teachers can play a significant role in closing the academic achievement gap. Given this evidence, the researcher's role was gathered evidence to support this premise.

Summary

The data for this study were collected and recorded by me with the assistance of my research assistant. Standardized test (NJASK) results were collected. Confidentiality of the students' records were maintained as well as their anonymity.

Statistical Package for the Social Sciences (SPSS) was used to organize descriptive data and to develop inferential analysis examining the impact of high quality teaching professional program on student achievement. The findings of the study may yield numerical or statistical information to support the research questions. The findings

may provide evidence of the impact of teacher quality professional programs on student achievement.

Section 4 focuses around the research questions and hypothesis addressed in the study of the academic achievement gap. Findings related to each are presented. Subsequently, Section 5 presents an overview of the study, reviewing questions being addressed in the study, followed by a study of the findings inclusive of the interpretation and implications for social change.

SECTION 4: FINDINGS

Introduction

This section provides the results of this nonequivalent quasi-experimental pretest and posttest control group design, which involved two groups of fourth grade students, in which the first group was taught by elementary teachers before the implementation of the high quality teaching professional development (HQTPD) program and the second group was taught by elementary teachers after the implementation of the HQTPD program. Both of these groups were pretested and post tested utilizing the fourth grade New Jersey Assessment of Skills and Knowledge (NJASK) (New Jersey Department of Education, 2008/2009) scores during the academic years 2007-2008 and 2008-2009. The first section of this section provides a description of the participants and the data collection methods. The second section provides a listing of the research questions and hypotheses. The third section provides a review of the findings, a presentation of the results, and an explanation of how the results were evaluated in order to answer the three research questions. The final section is a summation of this section.

At the data site the research problem was threefold. Specifically, (a) Fourth grade students were not meeting required standards of proficiency on the NJASK scores in science, mathematics, and language arts literacy, (b) elementary schools were failing to make adequate yearly progress (AYP), and (c) no research was conducted at the data site to examine whether or not a high quality teaching professional development program HQTPD program had an impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores. Review of the current literature revealed that there

is no simple explanation for the differences in state standardized test scores. One of the issues that led to this study was the need to concentrate on the effects of a HQTPD program on elementary student achievement.

The researcher conducted the study in a New Jersey urban school district where the student academic achievement gap was an educational concern. In particular, this school district had determined that too many students lacked the academic skills needed to pass NJASK. The school district attempted to raise the level of student proficiency by implementing core curriculum content standards.

The educational stakeholders at this data site were aware of this urgent issue and as a result had implemented a professional development intervention program during the academic year 2007-2008 and 2008-2009. These stakeholders needed research-based findings on the effects of the high quality teaching professional development program for elementary teachers on NJASK scores in science, mathematics, and language arts literacy.

The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in science, mathematics, and language arts literacy scores between the two groups of fourth grade students taught by the same elementary teachers before and after the implementation of the HQTPD program. The focus of this study was to determine if a significant difference existed in the NJASK scores of the aforementioned subjects of fourth grade students before and after the implementation of HQTPD program. The language arts literacy section of the NJASK measured students' achievements in reading and writing. The math section measured students' ability to

apply mathematical concepts in number sense and numerical operations, geometry and measurement, patterns and algebra, data analysis, and so forth. The science section of NJASK measured students' ability to recall information and to solve problems by using science concepts.

The aim of this study was to examine whether or not there was a change in fourth grade NJASK scores from one year to another year based on teachers' participation in the district's HQTPD program. The focal point of this study was to determine whether or not there was a significant difference in the NJASK science, mathematics, and language arts literacy scores of fourth grade students who were taught by elementary teachers before implementing a high quality teaching professional development program and fourth grade students who were taught by elementary teachers after implementing a high quality teaching professional development program.

The participating school district was a public school district serving Grades pre-k through Grade 12 in the state of New Jersey, United States of America. As of the 2009 to 2010 school year, the district had 12 schools and an Alternative or Evening School. The district's 12 schools had an enrollment of 7,064 students and 735 fulltime classroom teachers, for a student-teacher ratio of 9:61. The district was classified by the New Jersey Department of Education as being in District Factor Group "A", the lowest of eight groupings. District Factor Groups organized districts statewide to allow comparison by common socioeconomic characteristics of local districts.

The participants in this study were two cohorts of fourth grade students in an urban Northern New Jersey school district. The first cohort of fourth grade students was

in fourth grade during the academic year 2007-2008 before the implementation of the HQTPD program. The second cohort of fourth grade students was in fourth grade during the academic school year 2008-2009 after the implementation of the HQTPD program. The second cohort of fourth grade students participated in the NJASK Spring term testing cycle in science, mathematics, and language arts literacy for the academic year 2009. At the data site, fourth grade students were required to take the NJASK state mandated tests in science, mathematics, and language arts literacy. A sample of fourth grade students was selected for this study based on these three criteria: (a) most of the students were not meeting required standards of proficiency on the aforementioned NJASK scores; (b) the schools these students attended failed to make adequate yearly progress as mandated by the NCLB Act of 2001, and (c) the teachers for the first cohort were receiving the HQTPD program and the teachers for the second cohort were implementing the HQTPD objectives.

The first cohort was the control group because these students were taught before the implementation of the HQTPD program. The second cohort was the treatment group because these students were taught after the implementation of the HQTPD program. HQTPD was a coordinated and embedded professional development program designed to help elementary teachers to focus on higher levels of proficiency for students who take the NJASK tests. HQTPD was aligned to the participating district's vision and mission, and provided evidence of increasing student achievement.

The first cohort was taught by the same teachers who taught the second cohort. The second cohort was taught by teachers who focused on higher levels of proficiency on

NJASK testing for their students. The second cohort was exposed to strategies that increased their critical thinking, problem-solving, analytical, and mathematics, science, and language arts literacy skills. These new strategies were incorporated into the student's academic work. Students evaluated their personal progress and were expected to provide evidence of meeting or exceeding state standards.

The fourth grade students had participated in the state of New Jersey mandated NJASK testing in science, mathematics, and language arts literacy during the state testing in the spring of their fourth grade year. The NJASK tests were administered by academic teachers trained by the data site guidance department to facilitate the test in April or May of that current year allowing for the pretest, and April of the following year allowing for the posttest.

The testing vendor hired by the New Jersey Department of Education sent the student results to the school district assessment office. Upon completion of district level analysis of scores, the assessment office sent the student scores to the appropriate school guidance departments. The school's guidance department sent NJASK results to the parents or guardians in July of every year. The appropriate school guidance department made NJASK test scores available to teachers in each academic area.

Generation of Data

I used a quasi-experimental pretest-posttest design in order to examine the relationship between the fourth grade NJASK results (pretest) and the fourth grade NJASK results (posttest). The data were gathered through the NJASK state test conducted between the 2007-2008 and 2008-2009 academic years.

For the purpose of this study, grade four students' NJASK test scores after the implementation of the HQTPD program made up the experimental group, while grade four students' NJASK scores before the implementation of the HQTPD program made up the control group. The presence of the non-participant control group improves the internal validity of the study (Kiriakidis, 2009). The data were archived NJASK test results, and were obtained from the school district office upon receiving IRB approval from Walden University. The collection of data will be discussed in the next section.

Data Collection

After receiving IRB approval from Walden University (IRB # 05-10-10-0328888) and from the data site, the Office of Mathematics, Data Management, and Assessment at the data site provided me with NJASK state scores in the aforementioned subjects for the two cohorts that participated in this study. The reliability coefficients for the NJASK test scores, given in the Technical Manual by the Department of Education in New Jersey, were based on Cronbach's coefficient alpha measure of internal consistency. Cronbach's alpha was used on tests containing items that could be scored along a range of values (Kiriakidis, 2009).

The reliability coefficients for Language Arts Literacy were between .81 and .89. The reliability coefficients for mathematics were between .83 and .89. The reliability coefficients for science were between .82 and .89. Although NJASK was intended to measure students' performance in relation to the Core Curriculum Content Standards, content validity was primary and was the most relevant and important source of evidence. An external committee assisted the New Jersey Department of Education by

reviewing the assessments to determine how well they measured the knowledge and skills stated in the standards, and by comparing the New Jersey Content Standards with standards in other states. The standard errors of measurement (SEMs) for the major content areas, Language Arts Literacy and Mathematics, were expressed in terms of the raw score metric and the scale score metric.

The NJASK scale scores were between zero and 300. At the data site, the Office of Mathematics, Data Management, and Assessment provided me with archived NJASK state scores in the aforementioned subjects as scale scores between zero and 199 (Partially Proficient), between 200 and 249 (Proficient), and between 250 and 300 (Advanced Proficient). The schools that received scores in the Partially Proficient range were considered to be below the state minimum range of proficiency and those students may be the ones most in need of instructional support.

Pretest data were provided for fourth grade students from the Office of Mathematics, Data Management, and Assessment at the data site in the aforementioned subjects for the participants. The New Jersey Department of Education Testing Division provided each student with an individualized testing analysis of scores including language arts literacy, math, and science. These scores determined advancement to the next grade level, and overall scores are used to grade individual schools for state awards, and related funding for awards based on the achievement of State and Federal standards. For the intent of this study, the individual student scores in the aforementioned subjects were utilized for the academic school years between 2007 - 2008 and 2008-2009.

In this quasi-experimental study, the experimental group (students in grade four after the implementation of the HQTPD program), and the control group (students in grade four before the implementation of the HQTPD program), were selected without random assignment (Kiriakidis, 2009). Decision map for choosing parametric tests was utilized for the rationale that the independent paired samples *t* test was employed for the parametric, numerical items collected from the NJASK state scores (Gravetter & Wallnau, 2005). The researcher chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK test scores between the two cohorts of students (Kiriakidis, 2009). The level of significance was set at .05 (Kiriakidis, 2009). Upon determining the level of significance, a standard *t* value table was used to determine if the independent *t*-test value exceeded the critical *t*-value, indicating that a result is considered statistically significant (Kiriakidis, 2009). The organization of the data will be described in the next section.

Organization of Data

The NJASK test scores were pre-labeled according to each academic year. I collected the NJASK scores for the academic year 2007-2008 and put them into the first envelope labeled group 1. I collected the NJASK scores for the academic year 2008-2009 and put them into another envelope labeled group 2. Data for each group were entered into SPSS for analysis using the collected NJASK scores. All of the students in this study were identified as grade four students by the guidance department at each school at the data site. The study sample represented a stratified sample of the student population based on achievement level.

All students from the first and second cohort included nine-year-old pre-adolescent students attending elementary schools in northern New Jersey. The description of the participants will be discussed in the next section.

Description of the Participants

The participants in this study were fourth grade students. Specifically, the first cohort was in fourth grade before the implementation of the HQTPD program and the second cohort was in fourth grade after the implementation of the HQTPD program. All of the participants were required to take the NJASK state mandated tests in science, mathematics, and language arts literacy, and were taught by the same teachers. However, the second cohort was taught by teachers who focused on higher levels of proficiency on NJASK testing for their students utilizing strategies in critical thinking, problem-solving, analytical, and mathematics, science, and language arts literacy skills. The description of the instrumentation and materials will be discussed in the next section.

Instrumentation and Materials

The instrumentation and materials included the NJASK test scores provided by the New Jersey Department of Education. NJASK testing is designed for all students attending public schools and is administered in the spring of each academic year. NJASK scores are collected, compiled, and scored by the contractor of the New Jersey Department of Education and sent to each individual school district. The reliability and validity of the NJASK scores were established by the New Jersey Department of Education utilizing qualified and professional content specialists. The representatives of the test vendor, hired by the New Jersey Department of Education, prepared all NJASK

test items and evaluated them for overall quality by the New Jersey Department of Education. NJASK scores obtained were used for the purpose of academic placement for the next academic year within each school district. The description of the data analysis will be discussed in the next section.

Data Analysis

A research assistant worked with this researcher in order to ensure that all NJASK test score entries and data analyses were accurate, and to ensure that all researcher biases were nullified. The research assistant signed a letter of confidentiality before being enlisted as an assistant.

This researcher collected archived data consisting of students' NJASK scores in the aforementioned subjects for the academic years 2007-2008 and 2008-2009. The collected data were entered into SPSS for analysis. Each student's score in science, mathematics, and language arts literacy was entered into SPSS together with a numeric value to identify the academic year such as 2008 for the 2007-2008 academic year, and 2009 for the 2008-2009 academic year. Specifically, a numeric value of *2008* identified those students who participated in the academic year 2007-2008 before the HQTPD program was implemented and a numeric value of *2009* identified those students who participated in the academic year after the HQTPD program was implemented in the academic year 2009. Comparisons between the two cohorts were made for the aforementioned academic years in the aforementioned academic subjects.

The HQTPD program was designed for elementary students at an urban northern New Jersey public school district. The HQTPD program was offered to elementary school

teachers during the 2007-2008 academic year in order to assist students in passing NJASK testing, which is the New Jersey mandated student academic performance in science, mathematics, and language arts literacy NJASK scores. The HQTPD program was not a one-on-one mentoring program for elementary school teachers and not based on a specific model of school intervention program. Rather, the HQTPD program was designed to assist students in raising the level of academic proficiency. Notwithstanding the program's emphasis on teaching practices, the main focus was lifting academic achievement to a level which demonstrated a narrowing of the academic achievement gap. HQTPD was a coordinated and embedded professional development program designed to help elementary teachers to focus on higher levels of proficiency for students who take the NJASK tests. HQTPD was aligned to the participating district's vision and mission, and provided evidence of increasing student achievement.

The first cohort was taught by the same teachers who taught the second cohort. However, the second cohort was taught by teachers who focused on higher levels of proficiency on NJASK testing for their students. The second cohort was taught using strategies that increased their critical thinking, problem-solving, analytical, and mathematics, science, and language arts literacy skills. These instructional strategies were incorporated into the students' academic work. Students were expected to provide evidence of meeting or exceeding state standards.

I employed the *nonequivalent quasi-experimental pretest and posttest control group design,* which involved the two cohorts of fourth grade students (i.e., one group was taught by elementary teachers before the implementation of the HQTPD program

and the other group was taught by elementary teachers after the implementation of the program), both of which were pretested and post-tested utilizing the fourth grade NJASK scores during the academic years 2007-2008 and 2008-2009. The quasi-experimental quantitative research design for investigating the data was chosen because the NJASK test scores involved science, mathematics, and language arts literacy scores that were quantitative measures. I was not focusing on the interaction between the two cohorts of fourth grade students (Kiriakidis, 2009). I compared the NJASK scores between these two cohorts of fourth grade students to determine if gains were made in the area of science, mathematics, and language arts literacy as measured quantitatively by the NJASK testing.

I used an independent *t* test to determine whether the NJASK scores were significantly different between the two cohorts of students. The tests were performed to test the significance at a confidence level at or above 95% ($a = .05$). The *t* test was facilitated to assess whether or not the means of the NJASK test scores for the two groups were statistically significant different from each other (Kiriakidis, 2009). Once the *t* value was computed, I determined if the difference between the two cohorts was not likely a chance finding. The pretest and posttest NJASK test scores of each academic subject were the variables for this study.

I did not include any covariates or confounding variables such as teachers' age, years of teaching experience, and gender because I was interested in determining the difference between the two cohorts in the aforementioned academic subjects. The name of schools and administrators were not used during or after the study was conducted and

the findings were reported. I collected data that contained neither names nor information that would identify individual fourth grade students. Archived data were specific to the fourth grade NJASK test scores. The research assistant worked with me in order to ensure that the NJASK test scores were correctly entered into SPSS. The research assistant and I checked all data entries, per participant, for accuracy (i.e., all given scores from the data site were identical to the ones entered into SPSS 17.0).

The raw data will be held by the researcher on her at-home computer for 5 years, after which time they will be destroyed. The collected archived data will be kept in a secure location in the researchers' home office computer. The researcher's personal computer is secured by a password, and only I had access to the password.

Research Question 1

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is no significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants was NJASK tested in science during the 2007-2008 academic year, which was before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in science during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the science scores of the first cohort were the pretest scores and the science scores of the second cohort were the posttest scores. I collected NJASK science scores and used an independent *t* test for paired samples to determine whether or not there was a significant difference in the student academic performance in science as measured by NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program. In this quasi-experimental study, the experimental group and the control group were selected without random assignment. Decision map for choosing parametric tests was utilized for the rationale that the independent paired *t* test was employed for the parametric, numerical items collected from the NJASK data (Gravetter & Wallnau,

2005). I chose an independent *t* test for paired samples for data analysis to measure the variance in NJASK science scores between the two cohorts. The level of significance was set at .05. Upon determining the level of significance, a standard *t* value table was used to determine if the independent *t* test value exceeded the critical *t* value, indicating that a result was considered statistically significant.

In this quasi-experimental study, the first cohort consisted of 606 participants, and the second cohort consisted of 579 participants, giving a sample of $n = 1185$ participants who were selected without random assignment (Table 1). Thus, NJASK science test scores were collected for $n = 1{,}185$ fourth graders. The participants were considered average or above average achievers according to their grade point average as reflected by their report cards. None of the participants had been socially promoted meaning that there was no possibility that these students were older than the average fourth graders.

Table 1

Descriptive Statistics – Science, Math, Language Arts Literacy NJASK Scores

Grade 4 Students	Science	Math	Language Arts Literacy
Cohort One - 2008	606	604	600
Cohort Two - 2009	579	582	574
Total	1185	1186	1174

The science test mean of the control group (i.e., first cohort in the academic year 2007-2008) was $M = 207.63$ with a standard deviation of $SD = 30.704$. The science test mean of the experimental group (i.e., second cohort in the academic year 2009) was $M = 216.00$ with a standard deviation of $SD = 30.024$. The mean of the experimental group

was higher than the mean of the control group by 8.37 points of the NJASK test in science indicating that the participants in the experimental group did better in science than the control group as a result of the HQTPD program (Table 2).

Table 2

Descriptive Statistics for Science Test Scores

Grade 4 Students	*M*	*SD*
Cohort One - 2008	207.63	30.704
Cohort Two – 2009	216.00	30.024

The *t* test analysis indicated that the independent *t* test value exceeded the critical *t* value, indicating that this result was considered statistically significant ($t = 4.738$, $p = 0.11$). Thus, the null hypothesis is rejected that stated that there was no significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program. As a result, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of

the high quality teaching professional development program. In conclusion, the effect of the HQTPD program had a positive impact on the NJASK science test scores.

Research Question 2

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught math by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is no significant difference in the student academic performance in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught math by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught math by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants was NJASK tested in math during the 2007-2008 academic year, which was before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in math during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the math scores of the first cohort were the pretest scores and the math scores of the second cohort were the posttest scores. I collected NJASK math scores and used an independent *t* test for paired samples to determine whether or not there was a significant difference in the student academic performance in math as measured by NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group and the control group were selected without random assignment. Decision map for choosing parametric tests was utilized for the rationale that the independent paired *t* test was employed for the parametric, numerical items collected from the NJASK data (Gravetter & Wallnau, 2005). I chose an independent *t* test for paired samples for data analysis to measure the variance in NJASK math scores between the two cohorts. The level of significance was set at .05. Upon determining the level of significance, a standard *t* value table was used to determine if the independent *t* test value exceeded the critical *t* value, indicating that a result was considered statistically significant (Kiriakidis, 2009).

In this quasi-experimental study, the first cohort consisted of 604 participants, and the second cohort consisted of 582 participants, giving a sample of $n = 1186$ participants

who were selected without random assignment (Table 1). Thus, NJASK math test scores were collected for n = 1,186 fourth graders. The participants were considered average or above average achievers according to their grade point average as reflected by their report cards. None of the participants had been socially promoted meaning that there was no possibility that these students were older than the average fourth graders.

The math test mean of the control group (i.e., first cohort in the academic year 2007-2008) was M = 202.05 with a standard deviation of SD = 35.989. The math test mean of the experimental group (i.e., second cohort in the academic year 2009) was M = 211.07 with a standard deviation of SD = 35.810. The mean of the experimental group was higher than the mean of the control group by 9.02 points of the NJASK test in math indicating that the participants in the experimental group did better in math than the control group as a result of the HQTPD program (Table 3).

Table 3

Descriptive Statistics for Math NJASK Test Scores

Grade 4 Students	*M*	*SD*
Cohort One - 2008	202.05	35.989
Cohort Two – 2009	211.07	35.810

The t test analysis indicated that the independent t test value exceeded the critical t value, indicating that this result was considered statistically significant (t = 4.324, p = 0.13). Thus, the null hypothesis is rejected that stated that there is no significant difference in the student academic performance in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught math by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were

taught math by elementary teachers after the implementation of the high quality teaching professional development program. As a result, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught math by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught math by elementary teachers after the implementation of the high quality teaching professional development program. In conclusion, the HQTPD program had a positive impact on the NJASK math test scores.

Research Question 3

What is the effect of a high quality teaching professional development program (HQTPD) designed for elementary teachers on the academic performance of fourth grade students in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing?

Alternative Hypothesis

There is significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught language arts literacy by elementary teachers after the implementation of the high quality teaching professional development program.

Null Hypothesis

There is no significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught language arts literacy by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught language arts literacy by elementary teachers after the implementation of the high quality teaching professional development program.

The first cohort of fourth grade participants was NJASK tested in language arts literacy during the 2007-2008 academic year, which was before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in language arts literacy during the 2008-2009 academic year, after the implementation of the HQTPD program. Thus, the language arts literacy scores of the first cohort were the pretest scores and the language arts literacy scores of the second cohort were the posttest scores. I collected NJASK language arts literacy scores and used an independent *t* test for paired samples to determine whether or not there was a significant difference in the student academic performance in language arts literacy as measured by NJASK scores between students in the first cohort, which was the fourth grade students before the implementation of the HQTPD program, and students in the second cohort, which was the fourth grade students after the implementation of the HQTPD program.

In this quasi-experimental study, the experimental group and the control group were selected without random assignment. Decision map for choosing parametric tests was utilized for the rationale that the independent paired *t* test was employed for the parametric, numerical items collected from the NJASK data (Gravetter & Wallnau, 2005). I chose an independent *t* test for paired samples for data analysis to measure the variance in NJASK language arts literacy scores between the two cohorts. The level of significance was set at .05. Upon determining the level of significance, a standard *t* value table was used to determine if the independent *t* test value exceeded the critical *t* value, indicating that a result was considered statistically significant (Kiriakidis, 2009).

In this quasi-experimental study, the first cohort consisted of 600 participants, and the second cohort consisted of 574 participants, giving a sample of n = 1,174 participants who were selected without random assignment (Table 1). Thus, NJASK language arts literacy test scores were collected for n = 1,174 fourth graders. The participants were considered average or above average achievers according to their grade point average as reflected by their report cards. None of the participants had been socially promoted meaning that there was no possibility that these students were older than the average fourth graders.

The language arts literacy test mean of the control group (i.e., first cohort in the academic year 2007-2008) was M = 192.87 with a standard deviation of SD = 28.113. The language arts literacy test mean of the experimental group (i.e., second cohort in the academic year 2009) was M = 202.13 with a standard deviation of SD = 28.105. The mean of the experimental group was higher than the mean of the control group by 9.26

points of the NJASK test in language arts literacy indicating that the participants in the experimental group did better in language arts literacy than the control group as a result of the HQTPD program (Table 4).

Table 4

*Descriptive Statistics for L*anguage Arts Literacy NJASK *Test Scores*

Grade 4 Students	*M*	*SD*
Cohort One - 2008	192.87	28.113
Cohort Two – 2009	202.13	28.105

The *t* test analysis indicated that the independent *t* test value exceeded the critical *t* value, indicating that this result was considered statistically significant ($t = 5.639$, $p = 0.08$). Thus, the null hypothesis is rejected that stated that there was no significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught language arts literacy by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught language arts literacy by elementary teachers after the implementation of the high quality teaching professional development program. As a result, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught language arts literacy by elementary teachers before the implementation of the high quality teaching professional development program and

fourth grade students who were taught language arts literacy by elementary teachers after the implementation of the high quality teaching professional development program. In conclusion, the effect of the HQTPD program had a positive impact on the NJASK language arts literacy test scores.

Summary

This section provided the results of this nonequivalent quasi-experimental pretest and posttest control group research design, which involved two cohorts of fourth grade students where the first cohort was taught by elementary teachers before the implementation of the HQTPD program and the second cohort was taught by elementary teachers after the implementation of the HQTPD program. Both of these cohorts were pretested and post-tested utilizing the fourth grade New Jersey Assessment of Skills and Knowledge (NJASK) (New Jersey Department of Education, 2008/2009) scores during the academic years 2007-2008 and 2008-2009.

I used a quasi-experimental pretest-posttest design in order to examine the relationship between the fourth grade NJASK results (pretest) and the fourth grade NJASK results (posttest). The data were gathered through the NJASK state test conducted during the 2007-2008 through the 2008-2009 academic years. I chose an independent *t*-test for paired samples for data analysis using SPSS version 17.0 to measure the variance in NJASK test scores between the two cohorts. The level of significance was set at .05.

For the first research question, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in science as

measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program. For the second research question, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught math by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught math by elementary teachers after the implementation of the high quality teaching professional development program.

In conclusion, the effect of the HQTPD program had a positive impact on the NJASK math test scores. For the third research question, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught language arts literacy by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught language arts literacy by elementary teachers after the implementation of the high quality teaching professional development program.

In conclusion, the effect of the HQTPD program had a positive impact on the NJASK test scores. Therefore, the null hypotheses were rejected, and I concluded there were statistically significant differences in the average pretest and posttest NJASK scores between the two cohorts. Conclusions and implications related to the findings are discussed in detail in section 5.

SECTION 5:

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

I used a nonequivalent quasi-experimental pretest and posttest control group research design to analyze the test scores of two cohorts of fourth grade students, in which the first cohort was taught by elementary teachers before the implementation of the high quality teaching professional development (HQTPD) program and the second cohort was taught by same elementary teachers after the implementation of the HQTPD program. Both of these cohorts were pretested and post-tested utilizing the fourth grade New Jersey Assessment of Skills and Knowledge ([NJASK] New Jersey Department of Education, 2008/2009) scores during the academic years 2008 and 2009.

Summary of Research Purpose and Design

The purpose of this quantitative study was to use an independent *t*-test for paired samples to measure the variance in the NJASK test scores in science, mathematics, and language arts literacy between the two cohorts of fourth grade students taught by elementary teachers before and after the implementation of the HQTPD program. The focus of this study was to determine if a significant difference existed in the NJASK science, mathematics, and language arts literacy test scores of fourth grade students before and after the implementation of the HQTPD program.

I conducted the study in a New Jersey urban school district where an educational concern was the student academic achievement gap. The research problem was the performance of students on NJASK testing. Students, at the data site, lacked the academic skills needed to pass NJASK testing.

The HQTPD program intervention was grounded in the social learning theory. Actively engaged teachers in professional development programs using support-based learning enhanced

their proficiency (Gordon, 2004). Based on Vygotsky's theory (1978), when teachers are engaged in activities within a supportive learning environment and when they received appropriate guidance, then learning could occur (Kearsley, 1994). By applying the multiplicity of the support-based learning and the experiential learning theories teachers were able to help students pass NJASK testing.

The collected data were archived NJASK test scores obtained from the school district office upon receiving IRB approval from Walden University (IRB # 05-10-10-0328888). NJASK test scores in science, mathematics, and language arts literacy were collected for 1,185 grade four students. The data were analyzed using the nonequivalent quasi-experimental pretest and posttest control group design, which involved two cohorts of fourth grade students before and after the implementation of the HQTPD program.

Summary of Research Findings

The findings of this study indicated that there were statistically significant differences in the mean scores of science, mathematics, and language arts literacy as measured by NJASK testing for the two cohorts of grade four students. Therefore, there were statistically significant differences in the average mean scores of the pretest and posttest NJASK test scores between the two cohorts in science, mathematics, and language arts literacy. The findings of this study indicated that the NJASK test scores in science, mathematics, and language arts literacy improved after the implementation of the HQTPD program. Thus, the HQTPD program was found to be successful in its academic goal of assisting the participating students towards passing NJASK testing.

Relationship of Findings to the Empirical Literature

Introduction

These findings relate in a variety of ways to the empirical literature reviewed in section 2. The literature discussed included research pertaining to high quality teaching professional development programs for elementary teachers, standardized testing, student achievement, NCLB, and an exploration into the types of high quality instructional models. However, an exhaustive review of the literature between 2005 and 2010 revealed limited research studies on the impact of high quality instruction of fourth grade teachers on the academic achievement gap as measured by the New Jersey Assessment of Skills and Knowledge state testing. Each of the findings is briefly discussed in this section along with empirical research regarding grade four students' performance in science, mathematics, and language arts literacy as measured by NJASK testing.

NJASK Testing in Science

There was a statistically significant difference in the student academic performance in science as measured by the NJASK testing between fourth grade students (i.e., the first cohort was the control group) who were taught by elementary teachers before the implementation of the HQTPD program and fourth grade students (i.e., the second cohort was the experimental group) who were taught by elementary teachers after the implementation of the HQTPD program. Specifically, the first cohort of fourth grade participants was NJASK tested in science during the 2007-2008 academic year, which was before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in science during the 2008-2009 academic year, after the implementation of the HQTPD program.

NJASK science test scores were collected for n = 1,185 fourth graders. Data analysis indicated that the second cohort had NJASK test scores in science that were statistically significant different than the first cohort ($a = .05$, $t = 4.738$, $p = 0.11$).The mean scores in science of the second cohort was higher than the mean scores in science of the first cohort by 8.37 points of the NJASK test in science, indicating that the participants in the experimental group did better in science than the control group as a result of the HQTPD program. In conclusion, the HQTPD program had a positive impact on the NJASK science test scores.

NJASK Testing in Math

There was a statistical significant difference in the student academic performance in math as measured by the NJASK testing between fourth grade students (i.e., the first cohort was the control group) who were taught by elementary teachers before the implementation of the HQTPD program and fourth grade students (i.e., the second cohort was the experimental group) who were taught by elementary teachers after the implementation of the HQTPD program. Specifically, the first cohort of fourth grade participants was NJASK tested in math during the 2007-2008 academic year, which was before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in math during the 2008-2009 academic year, after the implementation of the HQTPD program.

NJASK math test scores were collected for n = 1,186 fourth graders. Data analysis indicated that the second cohort had NJASK test scores in math that were statistically significant different than the first cohort ($a = .05$, $t = 4.324$, $p = 0.13$).The mean scores in math of the second cohort was higher than the mean scores in math of the first cohort by 9.02 points of the NJASK test in math, indicating that the participants in the experimental cohort did better in math

than the control cohort as a result of the HQTPD program. In conclusion, the HQTPD program had a positive impact on the NJASK math test scores.

NJASK Testing in Language Arts Literacy

There was a statistical significant difference in the student academic performance in language arts literacy as measured by the NJASK testing between fourth grade students (i.e., the first cohort was the control group) who were taught by elementary teachers before the implementation of the HQTPD program and fourth grade students (i.e., the second cohort was the experimental group) who were taught by elementary teachers after the implementation of the HQTPD program. Specifically, the first cohort of fourth grade participants was NJASK tested in language arts literacy during the 2007-2008 academic year, which was before the implementation of the HQTPD program. The second cohort of fourth grade participants was NJASK tested in language arts literacy during the 2008-2009 academic year, after the implementation of the HQTPD program.

NJASK language arts literacy test scores were collected for n = 1,174 fourth graders. Data analysis indicated that the second cohort had NJASK test scores in language arts literacy that were statistically significant different than the first cohort ($a = .05$, $t = 5.639$, $p = 0.08$). The mean scores in language arts literacy of the second cohort was higher than the mean scores in language arts literacy of the first cohort by 9.26 points of the NJASK test in language arts literacy, indicating that the participants in the experimental cohort did better in language arts literacy than the control cohort as a result of the HQTPD program. In conclusion, the HQTPD program had a positive impact on the NJASK language arts literacy test scores.

Summary of Findings Related to Literature on the HQTPD Program

The HQTPD program was found to have a significant impact on NJASK science,

mathematics, and language arts literacy test scores. Specifically, NJASK science, mathematics, and language arts literacy test scores improved because the experimental cohort generated scores that were statistically significant different than the NJASK test scores of the control cohort. The HQTPD program has had an impact on NJASK science, mathematics, and language arts literacy of grade four students. I conclude that the academic goals of the HQTPD program in assisting grade four students towards obtaining improved results on the NJASK testing were met.

The second cohort' (experimental group) success resulted from the HQTPD program because at the data site the district leaders placed emphasis on "greater accountability" (Russonello & Stewart, 2005). The grade four teachers used curricula focused on narrowing the academic achievement gap (Mano, 2005, p. 256).

The goals of the HQTPD program were linked to high quality teaching and student academic success (Koppich, 2006). The HQTPD program provided grade four teachers with opportunities to utilize research-based practices about what works in the classroom (Singleton & Linton, 2006, pp. 4-6).

The ultimate goal for data site administrators was to have research-based findings about the high quality training for grade four teachers through the HQTPD program on "producing quality learning" (Glatthorn, 2006, p. 45). The NJASK test scores revealed that at the data site grade four teachers who participated in the HQTPD program had a positive effect on student achievement (Au, 2006, p.57). Therefore, high quality teaching entailed raising the NJASK test scores because "what was measured got accomplished" (Spellings, 2006, p. 371).

Quality teaching was the focus of the school district where this study was conducted (Fenstermacher & Richardson, 2005). Quality teaching through the HQTPD program provided teachers with opportunities for cognitive development (Bybee & Sand, 1982, p. 112) to respond

to students' needs (Williams, 2003, p. 244).

The focus of the HQTPD program was on high quality instruction and on organization of the physical environment as important aspects of learning (Jankowska & Atlay, 2008). The focus of the HQTPD program was on improving instruction for elementary teachers to create successful learning environments (Darling-Hammond, 2007) for their elementary students to gain more in NJASK performance.

The teachers who participated in the HQTPD program were expected to deliver the core curriculum content as expert teachers by developing and applying knowledge about the complex instructional skills they must have to ensure that their students reach a level of proficiency on NJASK testing (Stotsky, 2009). Ozden (2008) emphasized that content knowledge had positive influence on pedagogical content knowledge.

The HQTPD program helped grade four teachers to develop specific strategies to improve their teaching practice (Kyriakidis & Creemers, 2008, p. 202). As Rosemarin (2009) asserted, the basic role of the teacher was not to transmit knowledge, but rather to provide the optional conditions for learning, which was one of the goals of the HQTPD program. In addition, Rinaldo (2009) asserted that the goal of the professional educator was to transform his or her students, to inspire them to think, to feel, and to experience citizenship as active members in a democratic society.

Further results of this study are also congruent with the literature review that provided evidence, which supports the premise that the HQTPD program can be transformed into positive gains in student proficiency in NJASK testing. According to Weiss (2004), student learning engenders the ultimate ability to solve problems, to make decisions, and to critically analyze their environments. Additionally, “successful teachers treat students with instructional

scaffolding, provide a focus on instruction, extend student thinking and abilities, and possess in depth knowledge of both subject matter and the student (Ladson-Billings, 2006, p. 123). When professional development is aligned to support student learning, student achievement improves. The HQTPD program is dedicated to the idea that professional development for elementary teachers should maximize the impact of effective teaching on student proficiency in NJASK testing. School districts have an effective preparation and ongoing staff development program to assist educators in narrowing the academic achievement gap (Haycock, 2001).

The findings of this study are congruent with the literature found in section 2, which provided evidence supporting the idea that instructional strategies commonly used are test preparation activities, content alignment, and concentration on tested subjects such as science, mathematics, and language arts literacy (Sunderman, et al., 2004).

The HQTPD program contained key initiatives supported by specific professional development and research-based instructional strategies (Reeves, 2010). The HQTPD program included persistent coaching, mentoring linked with initiative, and multiple opportunities for training and retraining.

The HQTPD program was found to have a significant impact on NJASK test scores. I conclude that district leadership supported the implementation of the HQTPD program in order to help grade four students pass NJASK testing. In addition, the HQTPD program helped teachers with student assessment. As a result, teachers improve their instructional practices and students did better on NJASK testing after the implementation of the HQTPD program. "Teachers who used curricula in teaching strategies promoted continuity that narrowed the achievement gap (Mano, 2005, p. 256). The findings of this study are in line with the current literature reviewed.

Findings Related to Literature on Social Change

Grade four students who do not pass the NJASK testing affect not only the local school district and the state of New Jersey, but also the global economic marketplace. The global economic marketplace has a powerful impact on the 21st century classroom and on the teachers' effectiveness because people with the advances of technology are interconnected.

Grade four teachers at the data site need to continue to utilize the HQTPD program as effectively as possible in order to meet the academic needs of their students. Grade four teachers at the data site also need to instill in students an ability to obtain the skills and knowledge needed to survive in the fast paced global economy of today.

At the data site, social change may include support for elementary teachers in order to increase their self-efficacy and improve their teaching practices through job-embedded professional development opportunities. Also at the data site, social change may include support for elementary students to increase their academic performance in NJASK testing.

The school district administration at the data site need to continue to support elementary teachers through professional development programs such as the HQTPD program in order to prepare their students for academic success and their teachers for eventual leadership in the new global climate.

Findings Related to Literature on No Child Left Behind Act of 2001

The results of this study are in line with the literature review described in section 2 of this study that has provided supportive evidence that teachers participating in HQTPD programs can improve their instructional practices. As a result, their students can increase their academic proficiency in NJASK testing and therefore help the district to narrow the achievement gap in science, mathematics, and language arts literacy.

Based on the NCLB Act of 2002, all children in the United States will function at grade level by the year 2014. NCLB required the measurement of adequate yearly progress (AYP) to identify schools in need of improvement, a practice with concerns for professional organizations, academics, and the general public as well (AYP status, 2004; National Education Association, 2004; Policy implications, 2004; Popham, 2004; Weaver, 2004). Central to NCLB mandates was that states establish student performance benchmarks and identify schools not making AYP, with proficiency judged through state specific assessments. Those students failing to do so for four consecutive years may be referred for various corrective actions. After five years of not making AYP, schools may be converted into a charter school, a private company may take over the school, or the state may assume responsibility for running the school (U.S. Dept. of Education, 2002). Given these NCLB mandates, in combination with trends in AYP data, it was virtually certain that state interventions in low-performing schools increased nationwide.

The NCLB legislation was intended to set high standards for the nation's schools and to compel schools to improve their curriculum and instruction (Heubert & Hauser, 1999; Katz, 2008). Thus, the school district at the data cite needs to continue to develop objective measures as a means to raise academic standards, to hold its elementary schools accountable for their curriculum and instruction, and to provide parents with evidence of their children's academic performance in NJASK testing.

The results of this study are in line with the NCLB Act of 2002. The mandates of NCLB were described in section 2 of this study. NCLB mandates have provided supportive evidence that teachers need to participate in programs such as the HQTPD program in order to help schools meet AYP. In addition, the school district can be more accountable in improving the performance of students in science, mathematics, and language arts literacy by the year 2014.

The school district's goals and objectives are in line with both the NCLB and the findings of this study by implementing the HQTPD program as an accountability system to improve instruction and curriculum (Diamond & Spillance, 2004; Elmore, 2004; Sunderman, 2001). Therefore, schools not meeting AYP at the data site should continue to offer the HQTPD program to all elementary teachers to help students pass NJASK testing. The HQTPD program should continue to be used as an intervention model to help the school district measure its educational decisions (Feinberg & Shapiro, 2009).

The findings of this study are in line with the expectations of the NCLB Act that evidence-based literacy instruction should be provided to all students (Block & Israel, 2005, p. 3). This refers to research that applied rigorous, systematic, and objective procedures to obtain valid knowledge (McCallion, 2006). Many decisions regarding the NCLB legislation establish the basis for No Child Left Behind's definition of comprehension strategies (Stewart, 2004, p. 733). Therefore, high quality professional development (Bell, 2003, p. 673) opportunities for teachers have a positive impact on students' learning (Shanahan, 2003, p. 648). Staff development regarding instruction should be designed "to develop new knowledge and understandings" (Cummins, 2006, p.140). The findings of this study prove that high quality professional development is beneficial for students as "successful schools use data" to guide instruction (Torgesen, 2006).

The term *scientific-based reading research* referred to research that applied rigorous, systematic, and objective procedures to obtain valid knowledge relevant to reading development, reading instruction, and reading difficulties; and includes research that has been accepted by a peer reviewed journal or approved by a panel of independent experts (McCallion, 2006). The findings of this study are in line with the literature on ongoing professional development for

teachers. Specifically, ongoing professional development for elementary teachers through the HQTPD program should create effective standards-based elementary classrooms that may lead to academic proficiency levels of grade four students on standardized tests as measured by NJASK testing. At the data site, the school district should continue to provide elementary teachers with opportunities for assessment, collaboration, and consistent instructional practices. The HQTPD program is proved to be vital to the continued success of students.

Since elementary teachers were the most valuable resource available to schools (Hughes, 2007; Masters, 2004), there was a crucial need for a substantive teacher quality professional development programs and student achievement. To focus upon teacher professionalism to raise the level of student proficiency, at the data site, a HQTPD program was needed to provide foundations that would support higher NJASK test scores. Thus, the findings of this study are congruent with research that relates to effectiveness of teachers. Clearly, the effectiveness of teachers is of vital importance to the academic performance of students, as this study's findings revealed. More can be done to improve education by improving the effectiveness of teachers than by any other single factor (Sanders, et al., 1997, p. 3). Clearly, all teachers will need to master a large repertoire of instructional strategies to succeed with all students. As the findings indicate, a HQTPD program will not only promote continual learning focused upon student needs, test results, and best practices, but also can significantly link effective practices that may result into student proficiency on standardized tests.

The findings of this study are in line with current research on quality teaching. Furtak and Primo (2008) compared the form and extent of an experimental treatment to student learning and found that a high quality professional development program could guide teachers' quality of delivery so that teachers would be able to enact them in the classroom. Additionally, a

professional development program of this nature may help to develop specific strategies that improve teaching practice (Kyriakides & Creemers, 2008, p.202). Teaching resources need to be linked to instructional quality (Raudenbush, 2008). Thus, the HQTPD program can support instruction that may lead to an increase in standardized test scores and overall academic achievement.

The finding are also in line with the school district's expectations, at the data site, that quality teaching refers to a teacher's ability to improve student learning as measured by student gains on standardized testing (Goe, 2008). Therefore, the aim of the HQTPD program should be on achieving this goal by expecting teachers to collaborate with stakeholders in order to determine the best ways to cover course content as a way to hold them accountable for student learning (Marzano, 2003; Reeves, 2003).

The findings of this study are congruent with the district's expectation to utilize research-based data on the HQTPD program. These findings strongly demonstrate that the grade four teachers who participated in the HQTPD program should be able to disaggregate the data in order to make informed curriculum and assessment decisions (Downey, Frase, & Steffy, 2003, p.161).

The findings are also in line with the extensive expectations of NCLB Act (2002) that mandate a comprehensive statewide system of accountability. All states established testing programs that met the NCLB mandate according to Marchant (2006). At the data site, the HQTPD program focused on core curriculum content standards identifying what students were supposed to know and be able to do in Science, mathematics, and language arts literacy. The HQTPD program has been proven to be a high quality professional development program (Heubert&Hauser, 1999; Katz, 2008). According to Reardon and Galindo (2009), one way of

measuring an achievement gap was to define gaps as the difference in students' mean scores. The findings of this study were very poignantly congealed with Reardon and Galindo (2009) because I actually utilized the same process during the analysis of the data for this study. According to Finnigan (2009), professional development programs must provide adequate assistance to teachers to improve student test scores, and teacher support must be sufficiently targeted, coherent, or intensive enough to influence student learning in a meaningful way. Hence, instructional practices which are effective, may lead to improvement in high stakes testing in the areas of science, mathematics, and language arts literacy.

Findings related to the literature on effective teaching has provided supportive evidence that teaching that improves student learning is highly effective teaching that produces gains in student achievement scores (Goe, et al., 2008, p.8). An alignment of practices enabling teachers to carry out instructional objectives and approaches to improving test scores in science, mathematics and language arts may have involved professional development and work with a curriculum specialist (Sonifie & Wenzel, 2006).

Practical Applications of the Findings

The findings of this study provided evidence that the HQTPD program assisted grade four teachers through professional development in remaining focused on narrowing the student achievement gap at the data site. Substantial knowledge and research-based practices exist about what works in the classroom (Singleton & Linton, 2006, pp. 4-6).

The findings of this study are in line with teacher quality. The findings revealed that the HQTPD program impacted the experimental cohort NJASK test scores. To this end, the premise was that teachers who presented high quality instruction positively affected students' NJASK test scores. The basis for teaching and raising test scores "must be a consideration of cognitive

development facilitated by activities and situated learning that engage learners" (Bybee & San, 1982, p. 112).

As the findings of this study relate to standardized tests, much of the focus on testing is a result of the NCLB Act of 2002, which mandated states to improve test scores. The findings are in line with the literature on instructional practices. The HQTP program encompasses the presentation of academic information through both lecture and demonstration (Stichter, 2009). In fourth grade, effective classes were those that had high rates of student NJASK test scores. The findings indicated that there were statistically significant differences in the average pretest and post test NJASK scores between the two cohorts. The HQTPD program must provide support for students.

The findings of this study provide empirical evidence that elementary students increased their NJASK test scores. In an examination of variables affecting student achievement outcomes, Sanders indicated that the single most important factor affecting student achievement outcomes is the classroom (Sanders, 1992, p. 2). This study sheds further light on why ongoing high quality classroom instructional practices are so important and how they help students towards understanding important concepts and standards. School district offering HQTPD program for the design of high quality practices and assessments is one manner in which schools and school districts can ensure the applicability of these instructional practices.

In this study, the HQTPD program guided grade four teachers by connecting professional development to research-based core curriculum content standards in mathematics, science, and language arts literacy. There should be a careful analysis of the sub-skills and knowledge within those standards that students are supposed to master (Popham, 2004).

The findings of this study support the idea that by using a HQTPD program in schools there can be effective starting points for improving teaching practice. The HQTPD Program can become a vital component of the effort to raise NJASK scores.

The findings surely were in keeping with those made by the Teaching Commission (2004) who indicated, "While it was difficult to isolate the variables that directly impact student achievement, research had shown that good teaching matters (n.p.). The findings show that an HQTPD program can provide opportunities to study, question, and reflect on proven methods of instruction that will help students achieve on the NJASK state testing.

Finally, effective teachers are those who were skilled at raising the achievement levels of their students (Murnane et al., 2007). Teacher effectiveness or quality teaching means that a teacher has the ability to improve student learning as measured by student gains on standardized achievement tests. The implications of these findings are clear. There is a positive relationship between HQTPD Program and academic achievement gains in the NJASK 4 for science, mathematics, and language arts literacy.

Implications for Social Change

At the data site, district leaders needed research-based findings to provide a structure for grade four students to pass NJASK testing. The findings of this study are in line with the school district's academic goals.

The empirical evidence is that this program has been successfully implemented by the school district and has assisted grade four students to pass NJASK testing. The empirical evidence about the HQTPD program generates new knowledge for school and district leaders of the benefits of such a program on staff development.

The findings of this study provide empirical evidence for educational stakeholders (e.g., school and district administrators, teachers, students, and parents or guardians) with regards to the positive impact of the HQTPD program on student proficiency on NJASK testing. The impact of the HQTPD program for grade four students was positive and should be replicated for grade five and six students to pass NJASK in science, mathematics, and language arts literacy. The implementation of this program for grade five and six students may have the potential to provide these students with positive experiences in increasing their proficiency levels on NJASK testing. With more positive NJASK experiences, elementary students will more likely become productive members of society. Thus, the HQTPD program should be a district-wide initiative designed to provide structure for elementary students in need of academic support.

The findings of this study may shed further light on instructional practices that support elementary students to increase their NJASK test scores. Elementary teachers need support through staff development such as the HQTPD program.

Educational institutions should use the findings of this study to evaluate programs such as the HQTPD program. Educational stakeholders should examine the strengths and weaknesses of the HQTPD program and its effectiveness on grades five and six.

The HQTPD program promoted positive social change at the data site. Specifically, this program has the potential to assist elementary students to become life-long learners.

Parents or guardians have been direct recipients of the effectiveness of the HQTPD program as their children passed NJASK testing. The success of the HQTPD program afforded the parents the opportunity to increase their affirmative support of elementary schools and of their children's teachers. The findings indicated that the implementation of the district's vision and mission was supported by parents or guardians. Further, the empirical evidence was

necessary to account for the justification of human and capital resources. Thus, human and capital resources for HQTPD program should continue at the data site for the purposes of providing staff development for elementary teachers because positive student performance on NJASK would be realized.

At the data cite, the community received the benefits of the success of the HQTPD program as students increased their levels of proficiency on NJASK testing. The academic goals of the HQTPD program promoted positive social change. The HQTPD program is a necessity for the district to meet its goals for students' increased levels of proficiency on NJASK testing as mandated by the NCLB Act of 2002. The HQTPD program may make a difference in the lives of students, and ultimately impact the entire community in a positive way. The HQTPD program may add an opportunity for school administration and teachers to make a difference in the education of elementary students because when students are able to become productive learners, society benefits significantly.

Recommendations for Action

The empirical evidence about the HQTPD program generates new knowledge for school and district leaders of the benefits of this program on staff development. Therefore, at the data site, district leaders need to provide a structure for grade four, five, and six students to pass NJASK testing. Thus, the HQTPD program should be a district-wide initiative designed to provide structure for grade four, five, and six students.

The HQTPD program is a necessity for the district to meet its goals for students' increased levels of proficiency on NJASK testing as mandated by the NCLB Act of 2002. The HQTPD program may make a difference in the lives of elementary students, and ultimately impact the entire community in a positive way.

Literature review revealed limited information on the HQTPD program. Researchers interested in replicating this study should collect data from more than one school district in the county. Researchers may replicate this study by collecting data for more academic years before and after the implementation of the HQTPD program and with more standardized scores.

School District Policy on HQTPD Program

The researcher believes that a district policy should be developed relative to staff development. The findings of this study indicated a significant difference in students' academic proficiency that was achieved when students were taught by grade four teachers who participated in the HQTPD program. A policy on the HQTPD program would encourage teaching staff to pursue continuing professional development through participation in workshops, conferences, offered through the HQTPD program. Of particular concern is that professional development for teaching staff may provide evidence that student achievement of the Core Curriculum Content Standards may be achieved as a result of professional development. In accordance with the New Jersey administrative code, a professional development program would assure that students have every opportunity to achieve the Core Curriculum Content Standards.

A policy on the HQTPD program should be initiated by the Assistant Superintendent for Curriculum and Instruction who would collaborate this effort with the Director of Staff Development. The policy should be carefully crafted by members of the Policy and Procedures Committee who would make recommendations relative to the guidelines, required practices, and critical instructional needs. A program of this nature would require a careful, joint school/district review of the professional development subjects being offered each teacher. Procedures must be put into the HQTPD program as a professional development program.

The influence of a particular state or district policy on school performance, including the local context, interventions and the time allocated for improvement is needed to sustain the HQTPD program. Therefore, these characteristics should be included in the district policy on the HQTPD program. Additionally, the HQTPD program policy should be mandated, monitored, and evaluated.

The HQTPD program should be a shared responsibility between the school district administrators and teachers. The school district plan should be to identify instructional issues that must be supported by the HQTPD program for the success of instructional practices at the district, school, and classroom levels.

Funding for the HQTPD Program

The funding for the HQTPD program can be elicited from monies, which are allocated from Title 1 funds. Each school district in need of improvement must allocate 10% of the district's budget, which is mandated by the NCLB Act of 2002, for professional development such as the HQTPD program.

Another source of funding for the HQTPD program might be grants for district improvement. The Race to the Top Grant, School Improvement Grants, or drawing on local district resources could help in providing funding for the HQTPD program, which might lead to improvement of academic achievement.

Partnerships between the School District and the Community

Since no single strategy alone is totally successful, a school district should develop partnerships with the community. Partnerships between the school district and the community should be useful in sharing the district's vision. The district should continue to implement the

strategies and techniques teachers learned as a result of their participation in the HQTPD program.

Community partnerships could provide the district with the support it needs to help students increase their proficiency levels in NJASK testing. The district should maintain active community partnerships that include helping teachers and students with mentors, tutors, and role models. Community partnerships may be able to help with fund raising, which could lead to increasing the resources available to local schools.

Recommendations for Further Study

This study was limited to eight elementary schools in the state of New Jersey that implemented the HQTPD program for grade four teachers. I feel that the study should reflect the review of literature to include elementary schools in various regions of the United States of America in order to determine the effectiveness of the HQTPD program at different academic settings with larger sample sizes.

A qualitative research study should be conducted in order to obtain qualitiatve3 data through observations, interviews, focus groups pertaining to the perceptions of school and district administrators, elementary teachers and students, parents or guardians with regards to the HQTPD program. A study should be conducted to analyze more than two academic years with pre and post implementation data in order to explore the long term benefits of the HQTPD program by tracking the same group of students.

A mixed research study should be conducted involving both quantitative and qualitative data for a select sample of elementary schools within two or more school districts in the county. Specifically, researchers could collect standardized scores for other academic subjects.

A mixed research study should be conducted with a sample of grade four, five, six students, their parents or guardians, and teachers with regards to the HQTPD program. Scholars should collect standardized scores of more than five years of post implementation of the HQTPD program.

As a school district implemented the HQTPP program, district administrators should provide support such as specialists and coaches who can help teachers apply the skills learned. Professional development is vital to student success. Consequently, the recommendation is to sustain an HQTPD program at the middle school level as a next step to add more credibility to an already successful program.

The collected data were for only two academic years. I recommend that more time be devoted to see if the intervention of the HQTPD program can be sustained. Therefore, I recommend a more extensive period of study in order to find out how quality professional development impacts the narrowing of the academic achievement gap as measured by the NJASK scores. The HQTPD program is focused on areas student and teacher needs. Therefore, the researcher's recommendation is to ensure that such a program be extensive and ongoing.

Reflections

The researcher's experience in conducting this study was mainly positive. I have been passionate about the issue of narrowing the academic achievement gap in NJASK testing. Being in a doctoral program afforded me the opportunity to explore the impact of the HQTPD program on NJASK testing for grade four students. This study was an immensely significant opportunity for me to study something that has a relationship with improved state testing. I feel a sense of accomplishment at having persevered through such a rigorous educational process. Thus, this researcher gained a strong sense of accomplishment from this study and believes that the

sustainability of the HQTPD program over a number of years will result in students achieving solid NJASK testing improvements that would lead to continued adequate yearly progress.

Summary

This section provided the conclusions and recommendations of this nonequivalent quasi-experimental pretest and posttest control group research design, which involved two cohorts of fourth grade students where the first cohort was taught by elementary teachers before the implementation of the HQTPD program and the second cohort was taught by elementary teachers after the implementation of the HQTPD program. Both of these cohorts were pretested and post-tested utilizing the fourth grade New Jersey Assessment of Skills and Knowledge (NJASK) (New Jersey Department of Education, 2008/2009) scores during the academic years 2007-2008 and 2008-2009.

For the first research question, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in science as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught by elementary teachers after the implementation of the high quality teaching professional development program.

For the second research question, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in math as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught math by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught math by

elementary teachers after the implementation of the high quality teaching professional development program. In conclusion, the HQTPD program had a positive impact on the NJASK math test scores. For the third research question, the alternative hypothesis was accepted that stated that there was significant difference in the student academic performance in language arts literacy as measured by the New Jersey Assessment of Skills and Knowledge (NJASK) testing between fourth grade students who were taught language arts literacy by elementary teachers before the implementation of the high quality teaching professional development program and fourth grade students who were taught language arts literacy by elementary teachers after the implementation of the high quality teaching professional development program.

In conclusion, the HQTPD program had a positive impact on the NJASK test scores. The results of this study have indicated the effectiveness of the HQTPD program. The results of this study are in line with the literature review described in section 2 of this study that has provided supportive evidence that teachers participating in HQTPD programs can improve their instructional practices. As a result, their students can increase their academic proficiency in NJASK testing and therefore help the district to narrow the achievement gap in science, mathematics, and language arts literacy.

The results of this study are in line with the NCLB Act of 2002. The school district's goals and objectives are in line with both the NCLB and the findings of this study by implementing the HQTPD program as an accountability system to improve instruction and curriculum.

The empirical evidence is that this program has been successfully implemented by the school district and has assisted grade four students to pass NJASK testing. The empirical

evidence about the HQTPD program generates new knowledge for school and district leaders of the benefits of such a program on staff development.

The impact of the HQTPD program for grade four students was positive and should be replicated for grade five and six students to pass NJASK in science, mathematics, and language arts literacy. The implementation of this program for grade five and six students may have the potential to provide these students with positive experiences in increasing their proficiency levels on NJASK testing. With more positive NJASK experiences, elementary students will more likely become productive members of society.

The HQTPD program should be a district-wide initiative designed to provide structure for elementary students in need of academic support. The findings of this study may shed further light on instructional practices that support elementary students to increase their NJASK test scores. Elementary teachers need support through staff development such as the HQTPD program. Educational institutions should use the findings of this study to evaluate programs such as the HQTPD program. The HQTPD program promoted positive social change at the data site. Specifically, this program has the potential to assist elementary students to become life-long learners.

Literature review revealed limited information on the HQTPD program. Researchers interested in replicating this study should collect data from more than one school district in the county. Researchers may replicate this study by collecting data for more academic years before and after the implementation of the HQTPD program and with more standardized scores.

This researcher gained a strong sense of accomplishment from this study. The development of the HQTPD program resulted in students achieving NJASK test improvement. The HQTPD program can benefit the students and the community as well as other educational stakeholders.

Empirical evidence revealed that the HQTPD program had a positive impact on fourth grade students' science, mathematics, and language arts literacy NJASK scores. The local school district and the surrounding institutes of higher education and professional development providers in the state of New Jersey may benefit from having an awareness of the effectiveness of HQTPD on student achievement. The awareness of the impact of HQTPD has implications for positive social change because increasing student achievement in the local school district would create positive social change in the field of teaching and learning.

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APPENDIX A:

INTERVIEW GUIDE

Cover Letter/Introduction

Dear Administrator of the Office of Curriculum and Instruction,

My name is Ethel W. Davion and I am a Doctoral Candidate at Walden University working on my doctoral study. For my doctoral study, I need to collect NJASK (New Jersey Assessment of Skills and Knowledge) test scores from your school district. The data collection process will begin after I receive IRB approval from Walden University that my proposal is approved.

Please sign the attached Data Use Agreement for me to submit to the IRB of Walden University upon approval of my doctoral study by my doctoral study committee and URR.

Your assistance with this doctoral process is most appreciated.

Sincerely,

Ethel Davion
Doctoral Candidate Walden University

APPENDIX B:

DATA USE AGREEMENT

This Data Use Agreement is entered into by and between Ethel W. Davion (Data Recipient) and XXXXXXX. The purpose of this Agreement is to provide Data Recipient with access to a Data Set for use in research in accord with the HIPAA and FERPA Regulations. The N. J. Department of Education shall prepare and furnish to Data Recipient data in accord with any applicable HIPAA or FERPA Regulations. No direct identifiers such as names may be included in the Data Set. Data Recipient agrees to the data only as permitted by this Agreement and to use appropriate safeguards to prevent use or disclosure of the data to others than as permitted by this Agreement or required by law. IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER

Signed: XXXXXXXXXXXX

Print Name: XXXXXXXXXX

Print Title: XXXXXXXXXXXX University

DATA RECIPIENT

Signed: 

Print Name: Ethel W. Davion

Print Title: Doctoral Candidate Walden

CURRICULUM VITAE

Objective: *To obtain a position in Educational Leadership*

Education: Doctor of Education, Walden University
Baltimore, Maryland January 2006-Present
Concentration, Leadership for Teaching & Learning

Master of Arts in Secondary School Administration,
Glassboro State College
(Rowan University) Glassboro, NJ
Graduated: 1983

Bachelor of Arts, Livingston College,
Salisbury, North Carolina,
Graduated: 1970

Continuing Education Courses (for credit)
Harvard University – Summer 1988
Temple University – Fall 1975
Kean University - Spring 2000
(toward six year educational level) Masters +32 graduate courses

Professional Development

Notre Dame University – Summer 1987
Princeton University – Principals' Leadership Conference - Summer, 2002
Oxford University Roundtable – Summer 2002

Experience

Superintendent of Schools 2006-Present
Interim Superintendent of Schools 2005-2006
Assistant Superintendent of Academic Affairs 2000-2005
Principal (High School) -1996-2000
Vice Principal (High School) 1992-1996
Supervisor of Language Arts Literacy 1987-1992
Teacher of Cooperative English/Reading 1969-1970
Teacher of English (High School) 1971-1987

Professional Associations

AASA – American Association of School Administrators
NASA – National Association of School Administrators
SRN/CQL – School Research Nexus/Center for Quality Leadership
NJASA –New Jersey Association of School Administrators
Superintendents' Study Council of New Jersey
IPA-(Prestigious) International Platform Association
NECEL – North Eastern Coalition of Education Leaders
Urban Superintendents – 2005 – Present – Executive Board (Officer)