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A COMPARISON OF ROUTES TO CERTIFICATION:
INSTRUCTIONAL DECISIONS AND TEACHER PREPARATION

By

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the College of Education
at the University of Central Florida
Orlando, Florida

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ABSTRACT

This research study examined whether there is a relationship between teacher preparation and instructional practice. The dataset for this study was the 1999-2000 Schools and Staffing Survey (SASS). Specifically, variables created in SASS from the information provided by the Public School Teacher Questionnaire were utilized. The teacher population sample for this research study was derived from these data and then separated into two groups (alternatively and traditionally-certified teachers) based on certification variables within the dataset. The study conducted was a correlational study with instructional practices variables extracted from the dataset. Using Chi Square Goodness of Fit statistical tests, the data were analyzed to determine if teacher preparation influences instructional practice. Therefore, the research questions for this research study were:

1. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment?
2. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates?
3. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability?

4. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice?

5. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems?

Overall, while there were statistically significant relationships between certification type and various instructional practices, the effect sizes were very small (ranging from $-.005$ to $.036$). This suggests that the statistical significance may be an artifact of the large sample size and that there may be little practical significance. Therefore, a relationship was not found between the type of teacher preparation program and instructional practice.

This is dedicated to my colleagues. You have provided immeasurable comfort, strength, and inspiration to your students and fellow educators. I am honored to work with you and be a part of the difference you are making in the world.

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My first acknowledgment of support is extended to my family. They knew all along what I could accomplish. Mom and Jill, you are the strongest, most capable women I know. Everything I accomplish is because of the standard you have set.

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CHAPTER ONE – OVERVIEW OF RESEARCH STUDY

Introduction

The ideal measurement of quality education is student learning and achievement. Educational research has found that certain instructional strategies positively correlate with student achievement (Akkus, Gunel, & Hand, 2007; Brown, 2009; Darling-Hammond & Youngs, 2002b; Palardy & Rumberger, 2008; Provasnik & Stearns, 2003, Stronge, Ward, Tucker, and Hindman, 2007; Timperley & Parr, 2009). One possible determinant of the instructional strategies utilized by an educator may be the teacher preparation that educator receives (Zuelke, 2008). The National Commission on Excellence in Education (NCEE) addressed teacher preparation in their report titled *A Nation at Risk (NAR)* in 1983. Educational policy since that time, such as the Improving America's Schools Act of 1994 (IASA) and the No Child Left Behind Act of 2001 (NCLB), has continued to highlight the need for qualified individuals in the classroom. This research study investigated whether discrepancies exist among instructional practices between teachers who have taken different routes to teacher preparation. The conclusions made in the research will provide insight into the relationship between teacher preparation and teacher instructional practices. Chapter one will summarize some of the educational research and policies that serve as a foundation for this research study. Then, the research questions of this study will be highlighted. The problem statement, purpose and significance of the research study will also be discussed. Chapter one will conclude with the delimitations, limitations, assumptions, and operational definitions of the research study.

Theoretical Background

In *A Nation at Risk: The Imperative for Educational Reform*, the NCEE voiced concern for teacher quality at all levels of education and focused on the academic qualifications of teachers (Adisu & Caboni, 2004). The report stated, "Too many teachers are being drawn from the bottom quarter of graduating high school and college students" (National Commission on Excellence in Education, 1983). To encourage more competent individuals to enter the educational field, the NCEE suggested that motivational measures should be made used to attract qualified individuals to the teaching profession, especially in areas where there were shortages such as math and science (Adisu & Caboni, 2004). In the report, the NCEE appraised the quality of teacher preparation curriculum. The report stated that curriculum for prospective teachers focused on courses in pedagogy, or educational methods, instead of subject matter (National Commission on Excellence in Education, 1983). Also included within the report was a command for colleges and universities to be held responsible for the quality of the teacher preparation they provide. The report stated that students intending to enter the field of education should be expected "to meet high education standards, demonstrate an aptitude for teaching and display competence in an academic discipline. Colleges and universities which prepare future teachers should be judged by how well their graduates meet these criteria" (National Commission on Excellence in Education, 1983).

The next phase of the accountability movement began with No Child Left Behind Act of 2001 (NCLB). According to NCLB, all teachers must have at least a bachelor's degree and attain full state certification or successfully pass a state's teacher licensing examination. In addition, elementary school teachers' subject matter knowledge and instructional skills must be assessed by a rigorous state test and secondary school teachers must pass a subject matter test or complete

college coursework. These requirements are known as “highly-qualified status.” Title I of NCLB stated that all teachers must meet the above requirements, which are dependent on various circumstances (Adisu & Caboni, 2004). NCLB also makes many provisions for teacher professional development. According to Coble and Azordegan (2004), NCLB also provides recommendations for the structure and format of teacher professional development

Instructional Practices and Student Achievement

Educational research has shown that the use of research-based instructional practices can be linked to student achievement (Akiba, Chiu, & Zhuang, 2008; Anglin, 2008; Brown, 2009; Ginsburg-Block & Fantuzzo, 1998; Hall, 2005; Hilberg, Tharp, & DeGeest, 2000; Thompson, 2009). Research-based instruction is the implementation of instructional practices that research suggests is effective. Research-based instruction has also been credited for closing the achievement gap amongst minority and white students (Billig et al., 2005; Croatt, 2008; Dreyfuss, 2005; Dryden, 2008; Lawson, 2008; Rappino, 2008). One example of research-based practice is data-driven instruction, which is also known as curriculum-based measurement. Data-driven instructional practices have also been found to have a positive connection with student achievement (Bambrick-Santoyo, 2007; Corcoran & Silander, 2009; Noyce, Perda, & Traver, 2000; Pritz & Kelley, 2009; Stecker, Fuchs, & Fuchs, 2005).

What is research-based instruction? Research-based instructional practices include group projects, real-world applications, problem-solving, hands-on experiences, use of technology, student self-assessments, and data-driven instruction. Specifically, data-driven instruction will be

a relevant element in this research study. Data-driven instruction is also known as curriculum-based measurement, adaptive instruction, mastery measurement, and progress monitoring. According to Fuchs (2004), “With mastery measurement, teachers specify a hierarchy of instructional objectives constituting the annual curriculum and, for each objective in the sequence, devise a criterion-referenced test to assess mastery” (p. 188). Once a certain objective is mastered by an individual student, the teacher focuses on the next objective in the hierarchy of academic outcomes. Progress monitoring is often coupled with another educational practice examined in this study: grouping students by skill-level based on assessment performance.

The relationship that this research study examines is the one between instructional practice and teacher preparation. Is there a relationship between teacher preparation and the instructional decisions that are being made in the classroom? In other words, is there a relationship between teacher preparation and the extent that a teacher uses research-based instructional practices? If so, student achievement may be influenced. In order to gain a better understanding of this connection, it is beneficial to take a closer look at teacher preparation. In recent years, an element that has had an impact on teacher preparation is alternative certification (May, Katsinas, & Moore, 2003).

Alternative Certification Programs

While there are diverse models, alternative certification programs (ACPs) have some broad characteristics that apply universally. In general terms, ACPs provide a direct route to earning teaching credentials. Through these programs, participants are instructed in both

pedagogical and professional matters. Early entry into the classroom is facilitated by field-based instruction and feedback. In addition, there is an emphasis on enhanced supervision of candidates through their on-the-job training (Leibbrand, 2000). Alternative certification programs can range from short summer studies followed by direct placement in classrooms to university or college programs that grant master's degrees and recommend candidates for certification. Most of the ACPs require participants to have bachelor's degrees and passing scores on basic skills tests (Flores, Desjean-Perrotta, & Steinmetz, 2004).

Alternative certification programs are becoming widespread. According to May, Katsinas, and Moore (2003), there were an estimated 600 ACPs producing approximately 35,000 new teachers each year in 2002; each of these programs represents many different models for certification. In 2010, 48 states and the District of Columbia report they have at least some type of alternate route to teacher certification, with only Alaska and Oregon now saying their states do not have alternative routes to teacher certification. The National Center for Education Information (NCEI) estimates that approximately 59,000 individuals were issued teaching certificates through alternative routes in 2005-06 and approximately one-third of new teachers being hired are coming through alternative routes to teacher certification (National Center for Alternative Certification, 2010). Because of the prevalence of ACPs, it is relevant to examine how these programs compare to traditional preparation programs in their efforts to supply classrooms with prepared, effective teachers. Research indicates that a greater number of men, minorities, and older students take advantage of ACPs rather than traditional routes to teacher certification. Many of these individuals come into teaching from the business and military fields and approximately a quarter of participants are already in the field of education with intent to

attain “highly-qualified status” as defined by the No Child Left Behind Act (“Alternative Choices,” 2005).

Many advantages of alternative certification programs have been identified by ACP proponents. Townsend and Ignash (2003) refer to research supporting the theory that alternative certification diversifies the demographics of educators. The lack of diversity among teachers is a prominent issue, especially in urban schools and in the subject areas of math, science, and special education. Proponents also believe that ACPs attract teachers who bring past experiences and love for their subject matter into the classroom. Laczko-Kerr and Berliner (2003) cite studies that indicate that traditional programs discourage knowledgeable people from entering the education profession because of their focus on pedagogy. According to the authors, ACPs allow individuals who are rich in content knowledge, like science and math, to enter the classroom through a viable option. The authors claim that ACPs also attract individuals who are more willing to work in rural and urban poor districts. In addition, ACPs are often cost-effective for the institutions that support these programs (Laczko-Kerr & Berliner, 2003).

Alternative certification programs must be responsible for the transition from new to experienced teacher if they are going to be successful. According to Lederman and Flick (2001), there is research that supports the hypothesis that education coursework and training is more important than subject matter knowledge. If this is accurate, this negates some of the proponents’ strongest arguments. The structure of ACPs may also be problematic. According to Lederman and Flick (2001), many individuals who are interested in these programs want a rapid transition into the classroom. The authors assert that this creates a shorter preparation time within these programs in order to entice people, which can have detrimental effects on the level of preparedness of program participants. According to Laczko-Kerr and Berliner (2003), another

difficulty with ACPs is that even if one is properly preparing its participants, there may be a stigma as a result of taking a non-traditional route to teacher certification. Laczko-Kerr and Berliner (2003) refer to evaluations of ACPs which indicate that there is a significant level of dissatisfaction among participants. Moreover, the same authors make claims that these educators possess less self-efficacy than their counterparts, receive less mentoring, and have less understanding of students' needs. According to the Laczko-Kerr and Berliner (2003), all of these factors can have a negative effect on student achievement, as these arguments assert that educators from these programs have a limited view of curriculum, a lack of understanding of learning theory and motivation, difficulty making content relevant, and poor planning skills.

The challenge is to make alternative certification programs a quality system that provides school districts with much needed teachers who are well-trained, confident in their abilities, and committed to the field of education. There are strategies that these programs can employ in order to focus on these goals. Coble and Azordegan (2004) assert that ACPs should collaborate with public school districts and community colleges, increase the rigor of the selection and advising processes, involve higher education arts and science faculty, strengthen clinical and field experience, provide professional development, and stay informed in the educational field. Mentoring is often cited as a crucial element to quality ACPs because it increases participants' self-efficacy (Wayman, Foster, Mantle-Bromley, & Wilson, 2003). Berry (2001) maintains that strong academic and pedagogical coursework, intensive field experience, and requirements that candidates meet all of the state's standards are the keys to successful ACPs.

Since there are different definitions of alternative certification, it is necessary to indicate what constitutes an ACP for the purposes of this research study. Based on the dataset that was used for this study, alternative certification is anything other than a bachelor's degree program, a

“5th year” program, or a master’s degree program. Also, the survey respondent must have referred to his or her teacher preparation program as an ACP.

Instructional Practices and Teacher Preparation

The core question of this research study is whether the type of teacher preparation educators receive influences their instructional decisions. Some evidence has shown that alternatively-prepared teachers are concerned with subject matter knowledge and feel that pedagogy is unimportant (Brown, Vaughn, & Smith, 2004). If this is true, it would follow that alternatively-certified teachers are less aware of how to present material so that students learn effectively. In fact, they may be giving less thought to their instructional practices than their traditionally-certified counterparts. If the preceding statement is true, what is contributing to this situation? Some research shows that teacher education programs are not focusing enough on preparing teachers to give research-based instruction or make data-driven curriculum and instruction decisions (Killion, 2009). This is an interesting finding considering the fact that current educational policy focuses on standards and the educational research which supports standards and accountability in education. This train of thought leads to the foundation of this research study: teacher preparation and its influence on teachers’ instructional decisions.

A research study conducted by Morrocco (1992) did investigate whether there is a connection between the type of teacher preparation an educator received and whether the educator utilized cooperative learning strategies. Cooperative learning has been identified as an effective instructional strategy; therefore, it is classified as a research-based instructional

practice. Morrocco (1992) divided his sample population into alternatively and traditionally-certified teachers. One group consisted of educators who had completed an ACP, Maryland Master's Certification Program (MMCP). The other group consisted of educators who graduated from traditional undergraduate education programs from numerous universities and colleges. The study found that there was no significant difference in the frequency of cooperative learning strategy utilization, which is a research-based instructional practice. Teachers from both groups cited educational research findings as the reason for using cooperative learning strategies. The only difference between the two groups was that graduates of traditional programs used a significantly larger range of cooperative learning strategies. Although Morrocco did not investigate the same instructional practices as this research study, it is significant to note that his findings did not show a relationship between teacher preparation and instructional practice.

Problem Statement

What should teacher preparation include in order to ensure that future educators influence student achievement positively? Since certain instructional practices (research-based instructional practices) have been found to be related to student achievement (Akiba, Chiu, & Zhuang, 2008; Anglin, 2008; Brown, 2009; Ginsburg-Block & Fantuzzo, 1998; Hall, 2005; Hilberg, Tharp, & DeGeest, 2000; Thompson, 2005), it is important to consider what influences instructional decisions. Few studies to date have examined the question of whether pathway to teacher certification relates to the instructional decisions a teacher makes (Killion, 2009; Morrocco, 1992).

Purpose of the Study

Since educational research has shown that certain instructional practices relate to student achievement (Akiba, Chiu, & Zhuang, 2008; Anglin, 2008; Brown, 2009; Ginsburg-Block & Fantuzzo, 1998; Hall, 2005; Hilberg, Tharp, & DeGeest, 2000; Thompson, 2009), this research represents an attempt to determine if there is a statistically significant relationship between the self-reported use of five instructional practices and teacher preparation, specifically alternatively-certification and traditional certification.

Significance of the Study

Since alternative certification has become a prominent pathway into education, it is important to examine whether the type of teacher preparation program relates to the instructional decisions that an educator makes. If the path to teacher certification can be found to affect instructional decisions, then it is possible student achievement may be related to the teacher preparation that an educator receives. The results will offer the educational community important knowledge regarding teacher preparation and its relationship to the instructional decisions teachers make. This study differs from previous studies conducted in that it looks at the relationship between teacher certification methods and certain instructional practices, rather than teacher knowledge and retention levels. The study identifies any possible instructional discrepancies between the instructional practices of alternatively-certified teachers and traditionally-certified teachers. This study adds to the body of educational knowledge regarding teacher preparation.

Research Questions

This research study will examine five research questions. The research questions that were examined in this study included:

1. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment?

The hypothesis is that there will be a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment.

2. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates?

The hypothesis is that there will be a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates.

3. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability?

The hypothesis is that there will be a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability.

4. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice?

The hypothesis is that there will be a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice.

5. Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems?

The hypothesis is that there will be a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems.

Delimitations

1. The variables used were limited to those available in the 1999-2000 Schools and Staffing Survey (SASS) public-use Public School Teacher Questionnaire.
2. The cases are limited to teachers who indicated the following: a) held a certificate in their main teaching assignment field; b) had a regular or standard state certificate or advanced

professional certificate; c) attained a regular or standard state certificate or advanced professional certificate through traditional or alternative certification means; and d) received student scores on state or local achievement tests.

Limitations

1. There is no fidelity measure implemented to determine the accuracy of the self-report data.
2. The 1999-2000 SASS was the most recent public use data available at the time this study was conducted.
3. The research study uses an existing database. Therefore, the research study was developed and designed after the data were collected.
4. The data were solely quantitative. Qualitative data may have offered a more thorough perspective of the respondents' instructional decisions.

Assumptions

1. Respondents to the 1999-2000 SASS Public School Teacher questionnaire are truthful and knowledgeable.
2. The self-report data accurately reflects the decisions that the teachers were making in the classroom.

Operational Definitions

1. *A Nation at Risk (NAR)*: A report published in 1983 where the National Commission on Excellence in Education (NCEE) described issues facing American education and proposed some possible resolutions to the problems it had outlined. Of particular concern for the NCEE was the quality of teaching at all levels of public education (Adisu & Caboni, 2004).

2. *Alternative Certification Program (ACP)*: A direct route to earning teaching credentials. It is an alternative to the traditional route through a college or school of education. Alternative certification programs can range from short summer studies followed by direct placement in classrooms to university or college programs that grant master's degrees and recommend candidates for certification. Most of the alternative certification programs require bachelor's degrees and passing scores on basic skills tests (Flores, Desjean-Perrotta, & Steinmetz, 2004).

3. *Alternatively-Certified Teachers*: The term “alternative teacher certification” has been used often to refer to every non-traditional method available for becoming licensed to teach, from emergency certification to very complex programs, that accommodates the needs of the increasing population of individuals who already have at least a bachelor's degree and extensive life experience and want to become teachers (National Center for Alternative Certification, 2008). In this research study, an alternatively-certified teacher earned a regular or standard state certificate or advanced professional certificate through an alternative program or continuing professional development (as measured by variable “Certification Route,” CERTRT).

4. *Highly-qualified Teacher Status*: According to NCLB, all teachers must have at least a bachelor's degree. They must also attain full state certification, or successfully pass a state's teacher licensing examination. Elementary teachers' subject matter proficiency and instructional

skills must be assessed by a thorough state test. Secondary teachers must pass a subject matter test or college coursework (Hardman, Rosenberg & Sindelar, 2005).

5. *No Child Left Behind (NCLB)*: Federal legislation passed in 2001. According to NCLB, all teachers must have at least a bachelor's degree. It supplied the educational community with a definition of *highly-qualified teacher status* (Hardman, Rosenberg & Sindelar, 2005).

6. *Schools and Staffing Survey Teacher Questionnaire*. An instrument which was used to collect data from teachers about their education and training, teaching assignment, certification, workload and perceptions and attitudes about teaching. The SASS, conducted by the U.S. Department of Education's National Center for Education Statistics (NCES), is the largest and most comprehensive survey related to the United States K-12 educational system. The 1999-2000 SASS Teacher Questionnaire expanded data collection on teacher preparation, induction, organization of classes, and professional development. It also collected new data on the use of computers (Tourkin et al., 2004).

7. *Title I*: Section of NCLB which states that all teachers must meet the above requirements. Alternative certification has been a viable option for those individuals in the classroom who need to attain these credentials in order to remain certified (Hardman, Rosenberg & Sindelar, 2005).

8. *Traditionally-Certified Teachers*: Educators who received their teacher certification and bachelor's degree through a four-year university's College of Education. In this research study, a traditionally-certified teacher earned a regular or standard state certificate or advanced professional certificate through a bachelor's degree program, a "5th year" program, or part of a master's degree program (as measured by variable "Certification Route," CERT).

Summary

Chapter one summarized some of the educational research background and the educational policies that serve as a foundation for this research study. Specifically, the previous research connected to alternative certification, student achievement and instructional practices were summarized. Then, the research questions of this study were highlighted. In addition, the problem statement, purpose and significance of the research study were discussed. Chapter one concluded with the delimitations, limitations, assumptions, and operational definitions of the research study.

CHAPTER TWO – REVIEW OF LITERATURE

Introduction

Chapter two will discuss the background of educational research that serves as a foundation for this research study. The link between teacher quality and student achievement will be discussed as well as the educational policies that were motivated by the relationship between the two concepts. Then, former research studies which examined the link between teacher preparation and teacher quality will be summarized. A synopsis of the recommendations for alternative certification programs that have been made as a result of previous educational research will be given. Chapter two will conclude with an overview of the research exploring the link between instructional practice and student achievement.

Teacher Quality, Instructional Practices, and Student Achievement

In relation to student achievement, research indicates that teacher education and teacher effectiveness is more important than smaller classrooms, teacher salary increases, and teacher experience (Arnette, 2009; Darling-Hammond, 2000a; Darling-Hammond, 2000b). Studies conducted by Wenglinsky (2000) conclude that certain research-based teacher practices, such as incorporating higher-order thinking skills and hands-on learning, relate to student achievement in a positive manner. Other educational researchers have focused on how teachers use classroom time as a measure of their effectiveness (Scherer, 2001). Teacher effectiveness and student

achievement have been consistently correlated in educational research. For example, many researchers have used standardized tests, such as the Tennessee Value-Added Assessment System, to measure the relationship between teacher quality and student achievement. Many studies found that teacher quality has a significant association with student achievement (Arnette, 2009; Darling-Hammond, 2000b; Topping & Sanders, 2000).

Ingersoll (2007) states that poor teacher quality has been used as a scapegoat for many societal issues, from the decline in the United States economy to the rise in teen pregnancy. The strongest link that has been made to teacher quality is level of student achievement. As a result, a response to poor teacher quality has been the accountability movement. According to Ingersoll (2007), the accountability movement includes such measures as “standardized curriculums, teacher licensing examination, merit-pay programs, and explicit performance standards coupled with more rigorous teacher and school evaluations” (p. 21). In order to attain a thorough understanding of the standardized accountability movement and its effects, it is beneficial to highlight the beginnings and development of this educational policy.

Nation at Risk and Teacher Quality

On August 26, 1981, Terrel Howard Bell, the United States Secretary of Education, developed the National Commission on Excellence in Education (NCEE). In April of 1983, he assigned the duty of creating a report detailing educational quality to the commission. This report was titled *A Nation at Risk: The Imperative for Educational Reform*. In it, the NCEE described problems facing public education and proposed some possible solutions to the problems it had outlined (Adisu & Caboni, 2004). Of particular concern for the NCEE was the state of teaching

at all levels of public education. The committee focused primarily on the academic qualifications of those individuals choosing teaching as a career and the scope and quality of teacher education at the nation's schools of education. The report stated that there was a large number of teachers who fell into the bottom quarter of their high school and college graduating class (NCEE, 1983). To encourage a more qualified group of individuals to enter the teaching professions, the NCEE suggested that enticements be made available to the students considering the teaching profession in order to attract the most qualified individuals, especially in areas where there were shortages such as math and science. Two incentives that the NCEE recommended were grants and loans for highly competent students (Adisu & Caboni, 2004).

The NCEE devoted a considerable amount of its attention to the quality of the higher education curriculum in which future teachers were enrolled. They felt that there was a lack of time spent learning the content area in which teachers would deliver instruction. At the nation's colleges and universities, the report stated that the teacher preparation curriculum focused on pedagogy and slighted subject matter coursework (NCEE, 1983). The report also found 41% of the courses that students majoring in elementary education took were in education, which decreased the number of subject matter courses in which those future teachers could enroll (Adisu & Caboni, 2004). Also included within the report was a demand for colleges and universities to be responsible for teacher quality. The report stated that students intending to enter the teaching profession should be expected "to meet high education standards, demonstrate an aptitude for teaching and display competence in an academic discipline. Colleges and universities which prepare future teachers should be judged by how well their graduates meet these criteria" (NCEE, 1983, Recommendation D).

The Last 25 Years of Federal Legislation and Teacher Quality

The impact of the Elementary and Secondary Education Act of 1965 (ESEA) and Title I legislation can be seen in the changes suggested in *A Nation at Risk (NAR)*. First, it is necessary to consider the nature of these programs prior to *NAR*. Interestingly, Wong and Nicotera (2004) assert that Title I guidelines did not obligate states, districts, and schools to implement rigorous student academic achievement assessment.

In 1988, the Hawkins-Stafford Elementary and Secondary School Improvement Amendments were passed. According to Wong and Nicotera (2004), this was the beginning of the new accountability movement and was characterized by the adoption of legislation that required ongoing assessment of Title I programs and their effect on student academic achievement. The development of school improvement plans was also required by all schools that did not meet district standards. In addition, state education agencies were forced to intercede if a district was unable to improve a school's academic performance level. These accountability measures expressed an aspiration for quality and excellence. This also improved the organization between Title I programs and the school curriculum.

The next phase of legislation was initiated by the passage of the Improving America's Schools Act of 1994 (IASA). One of the impetuses for this legislation was the release of a report in 1992 that supported much of the assertions and recommendations of the *NAR*. It was called the *Making Schools Work for Children in Poverty* and was created by the Commission on Chapter 1 (the name of Title I up until 1994). According to Wong and Nicotera (2004), the IASA strengthened the accountability system that had been previously developed. It required states to create assessments that supported a rigorous curriculum, as well as define annual levels for adequate progress (AYP) for all students. The IASA also changed teacher instructional practices

by focusing the movement toward splintered Title I programs. As a result, instructional practices for Title I students began to mirror the effective teaching strategies recommended in *NAR*. This legislation also raised expectations for the evaluation of student performance (Wong & Nicotera, 2004).

No Child Left Behind and Teacher Quality

According to NCLB, all teachers must have at least a bachelor's degree in any field. They must also attain full state certification or successfully pass a state's teacher licensing examination. Elementary teachers' subject matter competency and teaching skills must be assessed by a rigorous state test. Secondary teachers must pass a subject matter test or college coursework. Title I of NCLB stated that all teachers must meet the above requirements, which are dependent on various circumstances (Adisu & Caboni, 2004).

First-year public elementary school teachers must demonstrate their subject knowledge by taking an examination. According to Coble and Azordegan (2004), NCLB wields great influence over these examinations. NCLB required that these tests assess more rigorously than basic skills. Existing elementary school teachers must either go through the same process or demonstrate competency through a state-designed appraisal standard known as "high objective state standard of evaluation" (HOUSSE). The HOUSSE must provide quantifiable information about a teacher's knowledge in the subject taught, such as time spent teaching the subject. Its main function is as a content area evaluation (Coble & Azordegan, 2004).

According to Coble and Azordegan (2004), first-time public middle/secondary school teachers must also demonstrate competency in each of the academic subjects they teach by

taking a subject knowledge test; in addition, they have other options available to them, such as an academic major, graduate degree, or some form of advanced certification. Existing public middle/secondary teachers may use one of these options or may choose to use the HOUSSE alternative.

The No Child Left Behind Act makes many provisions for teacher professional development. These provisions include, but are not limited to, the improvement of classroom management skills and training in effective instructional strategies and classroom technology. According to Coble and Azordegan (2004), NCLB also provides recommendations for the structure and format of teacher professional development: “NCLB states that professional development activities should be sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction - not an occasional daylong workshop or conference” (p. 4).

The No Child Left Behind Act’s focus on the preparation of teachers in subject matter knowledge and less centered on pedagogy leads to the question of how best to prepare highly-qualified teachers. Research conducted by Boe, Shin, and Cook (2008) showed that broad pedagogy instruction was a vital factor of providing classrooms with well-prepared teachers. This study supported its findings by comparing teachers who had extensive pedagogy instruction with teachers who had little or none.

Federal Budget and Teacher Preparation

Although some research refutes this assumption, it is reasonable to assume that putting the spotlight on teacher preparation has resulted in a federal investment (Shaik Ali-Williams,

2008). One way to evaluate the extent of federal investment is to take a close look at the financial resources provided by the government in support of this legislation. In 1998, the Higher Education Act of 1965, a policy set forth by President Lyndon B. Johnson to increase higher education opportunities, was amended in order to address teacher preparation in Title II of the new legislation (Honawar and Keller, 2007). According to Honawar and Keller (2007):

Title II of the Higher Education Act was envisioned as a \$300 million program during its creation in 1998, but it has been funded at less than \$60 million. And only 28 percent of the federal government's \$2.9 billion investment in professional development under the NCLB law has gone toward its intended purpose. (p. 27)

Teacher Preparation

There are two broad categories of teacher preparation programs. One route to teacher certification is a traditional program in which a future educator attends a college or university, obtains an undergraduate or graduate degree in an educational discipline and then applies for a teaching certificate. The other route is known as alternative certification. This path involves obtaining a degree in something other than education and then participating in a program that offers the required education classes. The education courses may be taken either before or during the teacher's employment in the education field. Some ACPs are part of graduate degree programs and others are not (National Center for Alternative Certification, 2006).

Traditional Teacher Preparation

According to Brown (2005), traditional teacher preparation programs associated with colleges and universities are the main source of teacher supply in the United States. Each state must approve teacher education programs; this allows the university to offer and bestow baccalaureate degrees in education. Then, future teachers who complete these programs must pass any required certification exams to become licensed and it is assumed that these individuals have fulfilled required course content and field experience (Brown, 2005). According to Boyd, Goldhaber, Lankford, and Wyckoff (2007), teacher preparation coursework includes three groups: foundational (introduction to the teaching profession, learning and development, history of education, etc.), pedagogy (teaching methods, classroom management, etc.), and subject-matter content.

The requirements of teacher preparation include more than the prescribed coursework. The field experience component allows participants to correlate their knowledge with actual classroom experience. According to Boyd et al. (2007), field experience requirements vary from state to state, ranging from five to twenty weeks. Another important element of teacher preparation is the subject matter knowledge of content-area teachers. The requirements regarding this factor also vary from state to state:

Twenty-five states require high school teachers both to have a major in their subject area and to pass a content-knowledge exam. Six states require teachers only to have a major in their subject area, while eighteen other states require them only to pass a content knowledge exam in their area. Within these requirements, however, the content

knowledge that constitutes a major or that must be demonstrated on certification exams varies widely. (Boyd et al., 2007, p. 48)

According to Boyd et al. (2007), the most debated aspect of teacher preparation is pedagogy, which is instruction that focuses on the ability to relate content material effectively. This concept includes the knowledge of pedagogy, learning theories, classroom management, and assessment (Flores, Desjean-Perrotta, & Steinmetz, 2004). It is a controversial educational issue since some experts in the educational field feel that pedagogy is an important part of teacher preparation, while other professionals feel that there is too much emphasis on the concept (Boyd et al., 2007).

Alternative Certification Programs

Alternative certification programs enable future teachers to enter the field more quickly than traditional programs. Usually, this is done by avoiding some of the traditional teacher preparation requirements (Boyd et al., 2007). ACPs have become more prevalent in the last two decades:

All require teachers to hold a bachelor's degree; 80 percent require teachers to demonstrate subject matter knowledge by completing coursework or passing an exam, or both. Although some states have long used alternate routes, more than half of such programs were created in the past fifteen years and more than a third were created after 2000. Some states and school districts rely heavily on alternate routes as a source of supply. New Jersey, Texas, and California get more than a third of their new teachers in

this way, and alternate routes are a rapidly growing source of supply in many other states and school districts. (Boyd et al., 2007, p. 51)

Since the criterion of the alternative route is different than that of the traditional one, it is beneficial to consider the requirements of these programs; it is worth noting that these conditions differ amongst the states. Most ACPs require pre-service and in-service elements and it is the length of the pre-service requirement that varies, from as short as two weeks to as long as an academic year. The most common pre-service training in ACPs varies from four to twelve weeks and takes place during the summer before public schools open in the fall. Other elements of ACPs also vary from state-to-state. For example, less than half the states require field experience and the variety and number of education courses diverge (Boyd et al., 2007).

Alternative certification programs have been categorized by the National Center for Education Information. It is beneficial to review some of these categories. CLASS A refers to programs that are created for the sole purpose of drawing individuals who already have at least a bachelor's degree in a field other than education into public school teaching. These ACPs involve teaching with an experienced mentor and coursework that focuses on pedagogy. CLASS B programs are very similar, but they are restricted to shortages and/or secondary grade levels and/or subject areas. CLASS C routes involve an appraisal of professional and academic background. The training consists of inservice opportunities and courses necessary to reach proficiencies required for certification. The state and/or local school district have most of the responsibility for program structure. CLASS D ACPs are similar except that an institution of higher education has the primary responsibility for program structure. CLASS F programs are emergency routes. The prospective teacher is issued some form of emergency certification that allows that individual to teach while taking the teacher education courses required for regular

certification. CLASS G ACPs are intended for individuals fulfilling only a few requirements, such as current teachers who want to move their certification from one state to another or from one endorsement area to another. CLASS H includes those routes that allow a person who has some outstanding credentials to teach certain subjects. CLASS J programs are developed for the purpose of eliminating emergency routes. They prepare individuals who do not meet essential requirements to become qualified to enter an alternate or traditional teacher preparation program. CLASS K routes provide accommodation for particular populations, such as Troops to Teachers (National Center for Alternative Certification, 2006).

Since there are different definitions of alternative certification, it is necessary to indicate what constitutes an ACP for the purposes of this research study. Based on the dataset that was used for this research, alternative certification is anything other than a bachelor's degree program, a "5th year" program, or a master's degree program. Also, the survey respondent must have referred to his or her teacher preparation program as an ACP.

Support for Alternative Certification Programs

Starting in the 1990's, colleges of education were encouraged by public school districts, state officials, and agencies to develop more alternative certification programs in order to help meet a teacher shortage (May, Katsinas, & Moore, 2003). Regardless of the impetus, a number of advantages of alternative certification have been identified by proponents. Feistritzer et al. (1998) found that alternative certification diversified the demographics of the teacher population when they did a study of one prominent ACP, Troops to Teachers. Diversity among teachers is a

prominent issue, especially in urban schools and in the subject areas of math, science, and special education. Proponents also believe that ACPs attract teachers who bring past experiences and love for their subject matter into the classroom. Laczko-Kerr and Berliner (2003) assert that traditional programs discourage knowledgeable people from entering the education profession because of their focus on pedagogy. According to the authors, ACPs allow individuals who are rich in content knowledge, such as science and math, to enter the classroom through a viable option. The authors claim that ACPs attract individuals who are more willing to work in rural and poor, urban districts. In addition, it cannot be denied that ACPs are often cost-effective for the institutions that support these programs (Laczko-Kerr & Berliner, 2003). In the United States, 73% of teachers support the expansion of ACPs (Justice, Greiner, & Anderson, 2003).

Criticism of Alternative Certification Programs

Alternative certification programs must be responsible for the transition from new to experienced teacher if they are going to be successful. Many individuals coming from other employment sectors have unrealistic expectations about the field of education. When their expectations are not met, the classroom becomes a source of many negative experiences (Beck-Frazier, 2005). According to Beck-Frazier (2005), this sequence may contribute greatly to the lack of retention among alternative certification participants. While attributing high attrition rates to ACPs is problematic (Johnson, Berg, & Donaldson, 2005), it is still worthwhile to consider the criticisms that have been revealed when ACP retention has been studied.

According to Lederman and Flick (2001), there is research that supports the theory that education coursework and training is more important than subject matter knowledge. If this is accurate, some of the proponents' strongest arguments are negated. A study by Fowler (2002) indicated that ACPs do not attract individuals that have adequate knowledge of their content area. In this study, 230 participants in a Massachusetts ACP were a select group of outstanding individuals with expertise in math and science. Those who participated in this fast track program fared poorly on the Massachusetts Tests for Educator Licensure (MTEL). The study indicates the participants were not receiving proper instruction in pedagogical and professional knowledge. The most arresting part of the research found that participants in the program performed 18% lower on content tests as their traditionally-prepared counterparts.

The structure of alternative certification programs may be problematic. According to Lederman and Flick (2001), many individuals who are interested in these programs want a rapid transition into the classroom. They assert that this creates a shorter process time within these programs in order to entice people, which can have detrimental effects on the level of preparedness of program participants. According to Laczko-Kerr and Berliner (2003), another difficulty with ACPs is that even if one is prepared, there may be a stigma as a result of taking a non-traditional route to teacher certification. Some individuals report having a difficult time finding a position due to certification choice. According to Laczko-Kerr and Berliner (2003), this stigma is fading as a result of the prevalence of ACPs. Laczko-Kerr and Berliner (2003) refer to evaluations of ACPs which indicate that there is a significant level of dissatisfaction among participants. Moreover, they make claims that these educators possess less self-efficacy than their counterparts, receive less mentoring, and have less understanding of students' needs. According to Laczko-Kerr and Berliner (2003), all of these factors can have a negative effect on

student achievement, as these arguments assert that educators from these programs have an inadequate understanding of curriculum, learning theory, motivation, content relevancy, and lesson-planning. More recent studies have supported these findings (Honawar, 2007).

Criticism of alternative certification programs also come from studies that have investigated teacher characteristics. Shen (1997) used the Schools and Staffing Survey 1993-1994 to compare the characteristics of alternatively and traditionally-certified teachers. The findings suggest that there are some significant concerns with alternatively-certified teachers. For example, the study indicated that alternatively-certified teachers have fewer academic qualifications than traditionally-certified teachers. Also, ACPs were not able to recruit individuals with valuable experience. Instead, ACPs attracted a significant number of recent college graduates looking to avoid the demands of traditional teacher education programs. In addition, the study showed that more traditionally-certified teachers were committed to the teaching profession than alternatively-certified teachers.

Alternative Certification Programs and Community Colleges

Special attention should be paid to the increasing role that community colleges play in alternative certification. According to Nakai and Turley (2003), the close relationship between ACPs and community colleges correlates with the teacher shortage and the fact that community colleges currently enroll more than 40% of all college graduates. A common criticism of community colleges offering ACPs is that most of the faculty members who teach in these programs do not have doctoral degrees in education, like the faculty of a college of education. As

a result, one of the advantages of a traditional program is a solid, theoretical research-based foundation (Nakai and Turley, 2003). According to Townsend and Ignash (2003), there are advantages to the community college involvement in alternative certification. The authors assert one of the greatest benefits to ACPs facilitated by community colleges is that the programs are offered by institutions that understand the learning needs of non-traditional students. As indicated earlier, a majority of the participants in ACPs are non-traditional students (Feistritzer et al., 1998). Some researchers assert that community college involvement is a benefit to ACPs since they offer an alternative to the undesirable emergency credentialing. Most agree that these programs offered through community colleges can be successful if thoughtfully planned and evaluated (Nakai & Turley, 2003).

Alternative Certification: Then and Now

The SASS Public School Teacher Questionnaire, the dataset for this research study, generated data from the 1999-2000 school year. It is beneficial to make a comparison between ACPs during that time in order to gain a better understanding of the teacher population that existed when the data were developed. At that time, 40 states had some form of ACP; these states report 115 such programs. In 1998-99, ten new ACPs were developed. From 1998 to 2000, 14 states passed, introduced or prepared to implement ACPs. During the 1998-99 school year, more than 24,000 teachers were certified through ACPs, as reported by the 28 states that kept these data. During this time, NCEI identified 12 states (Arkansas, California, Colorado,

Connecticut, Delaware, Illinois, Kentucky, Maryland, New Jersey, New Mexico, Pennsylvania, and Texas) that had exemplary ACPs which met the following criteria:

“The program has been specifically designed to recruit, prepare and license talented individuals for teaching who already have at least a bachelor's degree. Candidates for these programs pass a rigorous screening process, such as passing tests, interviews, demonstrated mastery of content. The programs are field-based. The programs include coursework or equivalent experiences in professional education studies before and while teaching. Candidates for teaching work closely with trained mentor teachers. Candidates must meet high performance standards for completion of the programs.” (Feistritzer, 2000)

In 2010, Alaska and Oregon were the only states that did not have alternative certification programs. Also, those 48 states and the District of Columbia have reported to the National Center for Education Information (NCEI) that there are approximately 600 ACPs among them. The information supplied by the states also gave account that an estimated 59,000 individuals were issued teaching certificates through ACPs in 2008-09. Approximately one-third of new teachers being hired are coming through ACPs.

Teacher Preparation and Teacher Outcomes

The outcomes used to compare ACPs and their participants to traditional certification programs and their participants have varied widely. The factors that have been studied by researchers include the following: content knowledge, licensing exams, classroom performance, perceptions of training, and student achievement.

National Teacher Exam

Research studies that compared alternative certification programs participants with traditional certification programs participants using national teacher exam scores indicated no significant differences between the two groups. Hawk and Schmidt (1989) focused their study on two education programs at East Carolina University – one traditional and one alternative. Two subject area exams, math and science, were used as performance measures; no statistically significant difference between the mean scores of the participants prepared through the two programs were found. The scores of the two groups on the professional knowledge exam were not statistically different. This exam assesses future teachers on educational issues such as teaching methods and classroom management.

Praxis II and Teacher Licensing Exams

The Praxis II Subject Assessments measure subject matter knowledge that public school instructors will teach, as well as instructional skills and pedagogy. Individuals entering the field of education take the *Praxis II* tests as part of the teacher certification process (Alhamisi, 2008). In examining traditionally and alternatively-certified teachers, Alhamisi (2008) did not find a statistically significant difference in the *Praxis II* scores based on certification type. Klagholz and the Thomas B. Fordham Foundation (2000) used the teacher licensing exams given in New

Jersey in order to determine if there was a difference in scores between alternatively and traditionally-certified teachers in that state. The researcher reported that the alternatively-certified teachers scored significantly higher and that the retention rate for that group was higher.

Classroom Performance/Administration Evaluation

Overall, research that used classroom performance measures and administrative evaluations to compare alternatively and traditionally-certified teachers resulted in mixed findings. In some instances, research studies that compared ACPs and their participants with traditional certification programs and their participants using classroom performance data as a variable frequently revealed significant differences between the two groups, but not consistently.

Some of the research studies using administrative evaluation based on classroom observations as a performance measure inconsistently revealed significant differences between the two groups and indicated that traditionally-prepared teachers were evaluated more positively. Hawk and Schmidt (1989) evaluated and compared five major teacher functions, such as time management, classroom management and instructional feedback. The findings indicated that at least 10% more of the traditionally-certified teachers performed at an “above standard” level than alternatively-certified teachers in all but one domain, instructional monitoring. Jelmberg (1996) compared alternatively and certified-teachers through a random sample of New Hampshire teachers who were polled, along with their principals. The results showed no significant difference in the educational credentials of alternatively and certified-teachers. The principal evaluations of the teachers included two categories: instructional planning and

instructional skills. The results showed that college-based teacher education participants performed better in both domains than their alternatively-certified counterparts. Feiman-Nemser and Parker (1990) supported this with findings that indicated alternatively-certified teachers who have not completed all certification requirements tend to struggle with curriculum development, the use of various instructional methods, classroom management, student motivation, lesson planning, responding to students' learning needs, and encouraging the use of critical thinking skills.

In contrast, Lutz and Hutton (1989) found that alternatively-certified interns were rated as high as or higher than traditionally-certified, first-year teachers were by their principals and mentor teachers. Also, they attained as high or higher scores on evaluations of their teaching ability/performance than their counterparts. Owings et al. (2006) performed a research study focusing on Troops to Teachers, a Class J alternative certification program. More than 90% of the principals surveyed reported that teachers certified through this program are more effective in classroom instruction, classroom management, and student achievement than traditionally-prepared teachers. In other words, these findings suggest that the principals used in this study had a different perception of alternatively-certified teachers than the principals involved in the Jelmberg study.

Some research studies did not result in findings that indicated a significant difference in the perceptions and evaluations of traditionally and alternatively-certified teachers. Miller, McKenna, and McKenna (1998) concluded that there was no statistical difference in classroom behaviors between alternatively and certified-teachers after three years classroom experience. Alhamisi's (2008) recent findings also reported no significant difference between alternatively and certified-teachers when administrative perception is implemented as a performance measure.

One particular study found mixed results. Sindelar, Daunic and Rennels (2004) found that traditionally-certified teachers were rated higher on instructional practices using the *Praxis III* classroom observation assessment as a performance measure. In contrast, they also found that school administrators indicated more confidence in alternatively-certified teachers.

Teacher Perception of Educator Training

Some of the research studies that evaluated alternative certification programs used participant questionnaires as a performance measure. These types of studies resulted in mixed findings.

Some research studies using questionnaires as a performance measure focused on the responses of ACP participants. Easley's (2006) findings showed that 77% of the alternatively-certified teachers polled indicated an aspiration to remain in teaching, 8% were undecided and slightly more than 15% indicated that they were unlikely to remain in the profession. Interestingly, those who indicated a desire to remain in the field credited their decision to the advantages of working with students and a desire to make a difference in their students's lives and society at large.

In Jelmberg's (1996) study, teacher preparation and occupational satisfaction were evaluated through questionnaires given to a random sample of teachers, then alternatively and traditionally-certified teachers were compared. Traditionally-certified teachers were more satisfied with the professional courses, the practicum supervision, and the overall preparation they received in comparison to the alternatively-certified teachers. This questionnaire also

requested information as to why the teacher chose the educational field. The responses of traditionally-certified teachers were more favorable since the answers indicated that the teachers from this group were more child-oriented versus alternatively-certified teachers who were motivated by job availability. Darling-Hammond, Chung, and Frelow (2002a) performed a research study that utilized a 1998 survey given to 3,000 beginning teachers. The findings were similar in that it showed that traditionally-certified teachers felt significantly better prepared than alternatively-certified teachers.

Many research studies using teacher questionnaires as a performance measure did not find statistically significant differences between the responses of traditionally and alternatively-certified teachers. The research of Houston, Marshall, and McDavid (1993) showed that after eight months of classroom experience, there were no differences between alternatively and traditionally-certified teachers in the areas of apparent problems encountered in the field, satisfaction with the level of mentoring they received, and overall job satisfaction. In fact, alternatively-certified teachers felt that they received more demonstrated teaching and coaching. Similarly, Miller, McKenna, and McKenna (1998) found that there was a difference in perception of teacher preparation initially based on certification (alternative or traditional), but not after three years. Alhamisi's (2008) recent findings also reported no significant difference between alternatively and traditionally-certified teachers when the sample population was asked about teacher preparation experiences.

Nougaret, Scruggs, and Mastropieri's (2005) research revealed a notable discrepancy. While alternatively and traditionally-certified teachers did not perceive their abilities any differently, they were evaluated significantly different when measured by classroom observation evaluations conducted by school administrators.

Student Achievement

In examining student performance of teachers who were alternatively-certified as compared to traditionally-certified, there are disparate findings. These studies are important because student achievement is a valuable measure of how effective a teacher is in the classroom (Arnette, 2009; Darling-Hammond, 2000a; Darling-Hammond, 2000b).

Some of the research studies that used student achievement found that the students of alternatively-certified teachers performed better academically than their counterparts, students taught by traditionally-certified teachers. Gimbert, Cristol, and Sene (2006) found that math students taught by first-year, alternatively-certified teachers achieved as well as or better than their peers taught by traditionally-certified, first-year teachers. Glazerman, Mayer and Decker's (2006) findings suggest that Teach For America (TFA) participants had a positive impact on math achievement and no impact on reading achievement when compared to a control group of non-TFA teachers. It should be noted that the researchers used alternatively and traditionally-certified teachers from the same school from the same school grades.

In contrast, Laczko-Kerr and Berliner (2002) found that traditionally-certified teachers significantly outperformed under-certified teachers with children who are most at risk of academic failure, such as not completing high school. There were three classifications of certification type used in this study: under-certified teachers from the national program Teach For America (TFA), under-certified teacher from programs other than TFA, and teachers fully-certified through accredited universities and colleges. The researchers created matched sets of teachers within the under-certified and certified subgroups in order to control extraneous variables that might influence the outcome. This resulted in 109 pairs of teachers ($N=293$). A state achievement test was the performance measure for this study. Results indicated that

students of certified teachers make about 20% more academic growth per year than do students of under-certified teachers.

Like the previous research study, there were other studies that focused on the Teach for America program. Richardson (2008) found that math students of traditionally-certified math teachers significantly outperformed students of alternatively-certified math teachers on state achievement tests. On the other hand, Decker et al. (2004) found that the math students of Teach for America teachers performed higher than students of traditionally-certified students. Meanwhile, there was no significant difference found between reading scores of the two subgroups. In a more recent study, Xu et al. (2009) found a relationship between certification type and student exam performance. The positive TFA results are strong, especially for math and science classes. In North Carolina, a study was recently conducted by Henry et al. (2010) to investigate the relationship between teacher preparation and student achievement. The study focused on the University of North Carolina (UNC) graduates of teacher education, but one of the findings involved Teach for America (TFA), an ACP. The study showed that students of TFA teachers generally outperformed the students of UNC graduates. On the other hand, Heilig and Jez's (2010) study produced findings that indicated that the students of novice TFA teachers perform significantly less well in reading and mathematics than the students of fully-credentialed beginning teachers. Their research also showed that this discrepancy decreased with experience.

Some research studies produced mixed results. Miller, McKenna, and McKenna (1998) reported that there was no significant difference in the student achievement scores on the Iowa Test of Basic Skills (ITBS) when alternatively and certified-teachers were compared after three years of teaching. In this study, middle-school teachers who had participated in a single ACP in Georgia were used and they were matched with traditionally-certified counterparts who taught at the same school, same grade level, and same subjects. Both groups of teachers had taught for

three years and resulted in 41 teachers each ($N=82$). All teachers gave their students the ITBS as a pre- and post-test. One of the most comprehensive and recent research studies that compared the student achievement of alternatively and traditionally-certified teachers was conducted by the Institute of Education Sciences. In this study, Constantine et al. (2009) included 2,600 students in 63 schools in 20 districts. In the selected schools, the grade levels that contained at least one alternatively-certified and one traditionally-certified teacher were included and students were randomly assigned to one or the other. A math and reading pre-tests were given to all students at the beginning of the school year as baseline assessments and math and reading post-tests were administered the end of the year as performance measures. During the school year, one classroom observation was conducted as a second performance measure. In the analysis of this data, there was no statistically significant difference between pre- and post-test achievement scores when the students of alternatively-certified teachers and those of traditionally-certified teachers were compared. In regards to the second performance measure (classroom observation of instructional practice), there were six measurements and only one resulted in a statistical difference when alternatively-certified and traditionally-certified teachers were compared. According to this research study, the two groups of teachers differed in how they taught classroom literacy, with alternatively-certified teachers scoring lower on this dimension.

Recommendations for Alternative Certification Programs

The challenge is to make alternative certification programs a quality system that provides school districts with much needed teachers who are well-trained, confident in their abilities, and committed to the field. There are strategies that these programs can employ in order to focus on

these goals. Coble and Azordegan (2004) asserted that ACPs should collaborate with public school districts and community colleges, increase the rigor of the selection and advising processes, involve higher education arts and science faculty, strengthen clinical and field experience, provide professional development, and stay informed in the educational field. Mentoring is often cited as a crucial element to quality ACPs because it increases participants' self-efficacy (Wayman, Foster, Mantle-Bromley & Wilson, 2003). Berry (2001) maintains that strong pedagogical and content coursework, thorough field experience, and requirements that candidates meet all of the state's standards are the solutions to successful ACPs. In a study conducted of ACPs at Texas community colleges by May, Katsinas, and Moore (2003), eight recommendations were made by the researchers. These suggestions included examining competition, assessing the labor market, establishing advisory committees with members of the school district, starting small, selecting candidates carefully, and performing outcomes evaluations. Research conducted by Masci and Stotko (2006) support these assertions. They performed a program evaluation of an ACP which incorporated many of these recommendations. Participant exit surveys and certification test scores indicate that the implementation of these policies has been beneficial. This supported the findings of the earlier research cited that implied that program characteristics are more important than whether the program is traditional or alternative.

Instructional Practices and Student Achievement

An overview of the research related to instructional practices (such as research-based instruction, data-driven instruction, and ability grouping) and its relationship to student

performance is now examined. It should be noted that none of the following research studies examined the differences in instructional practices between alternatively and traditionally-certified teachers.

Research-Based Instruction

What instructional practices are positively related to increased student performance? Educational research has shown a link between the use of research-based instructional practices and student achievement (Akiba, Chiu, & Zhuang, 2008; Anglin, 2008; Brown, 2009; Ginsburg-Block & Fantuzzo, 1998; Hall, 2005; Hilberg, Tharp, & DeGeest, 2000; Thompson, 2005). In some research studies, research-based instruction has also been credited for contributing to the diminishment of the achievement gap amongst minority and white students (Billig et al., 2005; Croatt, 2008; Dreyfuss, 2005; Dryden, 2008; Lawson, 2008; Rappino, 2008). Data-driven instructional practices have also been found to have a beneficial correlation with student achievement; therefore, data-driven instruction is categorized as a research-based practice (Bambrick-Santoyo, 2008; Corcoran & Silander, 2009; Noyce, Perda, & Traver, 2000; Pritz & Kelley, 2009; Stecker, Fuchs, & Fuchs, 2005). Research-based instructional practices also include group projects, real-world applications, problem-solving, hands-on experiences, use of technology, and student self-assessments. Specifically, data-driven instruction will be a relevant element in this research study.

Many research studies support the use of research-based instruction in order to support student achievement. Anglin (2008) investigated a specific aspect of research-based instruction,

use of technology. In this case, the technology implemented allowed individualized learning paths, which is another research-based practice. The researcher found that research-based mathematics instruction led to higher math scores on the Florida Comprehensive Assessment Test (FCAT). Ginsburg-Block and Fantuzzo (1998) researched the effects of two methods, problem solving and peer collaboration, on mathematics achievement, academic motivation, and self-concept of 104 low-achieving third and fourth graders. Both of the instructional practices produced positive results in all three measurements, including mathematics achievement. In relation to student mathematic achievement, research studies conducted by Hall (2009) and Hilberg, Tharp, and DeGeest (2000) had similar findings supporting research-based instruction. A research study conducted by Thompson (2005) studied the effects on research-based instruction on math and science. The study found that research-based instructional practices were positively related to student achievement in both disciplines.

Some of the research studies investigating the link between research-based instruction and student achievement have suggested a weak relationship between the two variables. Using college entrance exam scores (Scholastic Aptitude Test) as a performance measurement, Calzada (2002) found that research-based instruction did not significantly relate to achievement. The research study found that students exposed to research-based instructional practices did have higher scores than students who did not receive research-based instruction, but the difference was not significant. In this research study, two schools in South Texas were used to create the population sample since one school used a traditional curriculum model, while the other used research-based instructional practices. Scores were collected over a three year period. Kemp (2007) found similar findings when research-based instruction was implemented in math instruction. In this case, a standardized test was given to 65 seventh graders before and after an

instructional period. While the students given research-based instruction had higher gains, the difference between the two means was not statistically significant.

Educational research has credited research-based instruction for bridging the achievement gap amongst minority and white students. Billig, et al. (2005) concluded that research-based instruction contributed to the closing of the achievement gap at four successful schools that their research study surveyed. Dreyfuss (2005) conducted a similar analysis of three schools in Virginia which resulted in similar findings. Croatt (2008) and Rappino (2008) found research-based instruction to be an influential factor in the success of schools effectively serving urban students of color living in poverty. Dryden (2008) found that research-based instruction also played a crucial role at one academically successful urban elementary school in Los Angeles with a high poverty level, while Lawson (2008) came to the same conclusion at an urban high school with a high poverty level and a high achievement rate amongst minorities. For this research study, the instructional practices of standards-based instruction, data-driven instruction, and ability-grouping were investigated.

Standards-Based Instruction

Standards-based instruction is the use of state or district standards to guide instructional practice in the classroom. In a meta-analysis performed by Lauer et al. (2005), most of the forty-eight reviewed studies found that standards-based instruction had a positive relationship with student achievement. Some studies choose to investigate student achievement within a specific discipline. Research performed by Thompson (2009) focused on math achievement. Students

who were exposed to standards-based math instruction significantly improved their performance on standardized tests, the Iowa Test of Basic Skills (ITBS).

Not all research showed a positive relationship between standards-based instruction and student achievement. A study conducted by Kemp (2007) showed no statistically significant difference in the math gains between students given a standards-based curriculum and those given a traditional curriculum.

Data-Driven Instruction

One category of research-based instruction, data-driven instruction, has been positively correlated with student achievement. Data-driven instruction involves using assessments to determine the path of curriculum and instruction (Stecker, Fuchs, & Fuchs, 2005). In a comparison of two New Jersey middle schools, Bambrick-Santoyo (2008) found that data-driven instruction may have contributed to the significant difference in the student achievement level of the two schools when one school implemented data-driven instruction. In an analysis of public high schools, Corcoran and Silander (2009) found that one of the tools used to effectively increase student achievement is curriculum-based measurement. Noyce, Perda, and Traver (2000) details how mastery measurement contributed to the improvement in student scores on standardized tests in one Massachusetts school district. In a review of their vast educational research, Stecker, Fuchs, and Fuchs (2005) detail how their research supports the theory that curriculum-based measurement is beneficial to student achievement when implemented

correctly. It is their premise that it is not enough to monitor a student's progress; educators must be trained to use data to transform curriculum and instruction.

In at least one case, research on adaptive instruction did not show significant results in relation to student achievement. Quint, et al. (2008) found that data-driven instruction positively impacted student performance on standardized test in one school district, but the results were not statistically significant. This research utilized the Formative Assessments of Student Thinking in Reading (FAST-R) as a performance measure. This assessment is used in the public schools in and around the Boston area. One of the reasons given by the researcher for the lack of significant results was not in progress monitoring itself, but in its weak implementation within the case study school district.

Ability Grouping

Ability grouping consists of grouping students by skill-level based on assessment performance. When this is done by a school to determine what classes a student takes, it is referred to as tracking. For the purposes of this study, ability grouping is when a teacher groups students by ability within a classroom in order to work on specific projects and activities (Hendricks, 2009).

Educational research on ability grouping has produced positive findings which generally support the use of this instructional practice. Much of the research on this practice tends to find that ability grouping is beneficial to students who are assigned to high-ability groups and does

not promote student achievement among students assigned to low-ability groups (Condrón, 2008; Kulik & Kulik, 1984; Lleras & Rangel, 2009; Tieso, 2005; Wang, 2006).

Positive results have been found for the use of ability grouping with gifted students. Hendricks' (2009) study found positive results for ability grouping, but only measured the achievement level of gifted students. This research study used three different performance measures (Iowa Test of Basic Skills, Classroom Environment Scale, and Mathematics Self Efficacy Scale) and two population groups (heterogeneously and homogeneously grouped students). Using the same type of student population, Taylor's (2007) study resulted in similar findings. In this research study, a student population of gifted students ($N=235$) from two Tennessee schools was targeted. Ability-grouping was implemented at one school and the achievement gains on the state-mandated aptitude test over a two-year period were analyzed. The 112 students in the ability-grouping set attained greater gains in scores than their 123 counterparts.

Research studies that implemented a more heterogeneous student population produced mixed findings. Nomi (2006) found that ability grouping had mixed results on reading achievement. For this study, the ECLS-K dataset was used, which consisted of a nationally representative sample of kindergarteners. In this study, the results of ability-grouping varied greatly and the difference could be contributed to school characteristics, especially the student population's ability distribution. Robinson (2008) established that ability grouping in reading during kindergarten benefited children whose primary language was not English more than other students. Saunders (2005) found that homogeneous ability grouping was more beneficial than heterogeneous ability grouping in mathematics instruction. This study included a district test as a performance measure and a student population of 305 sixth graders within three schools. There

were 290 students in the homogeneous group and 96 students in the heterogeneous group. Finally, the researcher compared the gains these students made over an annual instructional period. Lou et al. (1997) had similar findings when they performed a meta-analysis of many research studies that evaluated homogeneous and heterogeneous groupings.

Instructional Practices and Teacher Preparation

Currently, the research studies investigating the type of teacher preparation an educator receives and its influence on their instructional decisions are scarce. No study to date has examined the relationship of teacher preparation on the particular instructional decisions; namely, the extent to which an educator uses state or district standards to guide instructional practice, whether an educator uses groupings of students to teach students who learn at different rates, the extent to which an educator uses the information from state or local achievement tests to group students into different instructional groups by achievement or ability, the extent to which an educator uses the information from state or local achievement tests to assess areas where he or she needs to strengthen content knowledge or teaching practice, and the extent to which an educator uses the information from state or local achievement tests to adjust their curriculum in areas where the students encountered problems.

Some research shows that teacher education programs are not focusing enough on preparing teachers to give standards-based instruction or make data-driven curriculum and instruction decisions (Killion, 2009). This qualitative research (interviews, student surveys, etc.) study looked at three university teacher preparation programs in order to find out what they were doing to prepare teachers for data and assessment practices in schools. While data collection and

assessment were a focus within the coursework, utilizing data to differentiate instruction was found to be an area that needed more attention.

A research study conducted by Morrocco (1992) did investigate whether there is a connection between the type of teacher preparation an educator received and whether the educator utilized cooperative learning strategies. Cooperative learning has been identified as an effective instructional strategy; therefore, it is classified as research-based. Cooperative learning includes teaching social skills, individual accountability within the team, long term projects, and team members working collaboratively for mastery of information. Morrocco (1992) divided his sample population into two groups. One group consisted of educators who had completed an ACP, Maryland Master's Certification Program (MMCP). This is a one-year program that carefully selects candidates with baccalaureate degrees to attain teacher certification while completing a Master's Degree in Education. The other group consisted of educators who graduated from traditional undergraduate education programs from numerous universities and colleges. One of the performance measures was a questionnaire that the sample population of teachers completed asking about the cooperative learning practices, such as frequency of use, repertoire, and reasoning. The teachers' administrators were also asked to rate the teachers on the same issues. The study found that there was no significant difference in the frequency of cooperative learning strategy utilization. Both groups of teachers cited educational research findings as the reason for using cooperative learning strategies. The only difference between the two groups was that graduates of traditional programs used a significantly larger range of cooperative learning strategies.

Summary

Chapter two discussed the background of educational research and policy that serves as a foundation for this research study. The link between teacher quality and student achievement was discussed as well as the educational policies that were motivated by the relationship between the two concepts. Then, former research studies which examined the association between teacher preparation and teacher quality were summarized. A synopsis of the recommendations for ACPs that have been made as a result of previous educational research was given. Chapter two concluded with an overview of the research exploring the connection between instructional practice and student achievement. This research study examines whether there is a link between the instructional decisions an educator makes and the type of teacher preparation he or she received. Educational research has investigated this link, but it has not been thoroughly examined.

CHAPTER THREE – RESEARCH METHODOLOGY

Introduction

Chapter three will summarize the research methodology for this study. The research questions will be presented as well as a composite of the data source, including a description and summary of its sampling design. Then, the instrumentation, data collection procedures, and analysis will be detailed. Chapter three will conclude with a clarification of the adjustment made for the complex sampling design.

Research Questions

The research questions that were examined in this study included:

1. Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment?

The hypothesis is that there will be a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment.

2. Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates?

The hypothesis is that there will be a relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates.

3. Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability?

The hypothesis is that there will be a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability.

4. Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice?

The hypothesis is that there will be a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice.

5. Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems?

The hypothesis is that there will be a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered

problems.

Data Source

This section includes detailed information regarding the research study's data source. First, an overview of the Schools and Staffing Survey will be given. Then, the sampling design and instrumentation will be described. The section will conclude with a summary of the data collection procedures.

Description of the SASS

Data from this study were drawn from the 1999-2000 Schools and Staffing Survey (SASS). The SASS, conducted by the U.S. Department of Education's National Center for Education Statistics (NCES), is the largest and most comprehensive survey related to the United States K-12 educational system. The purpose of SASS is to develop informative data for educational policymakers and to identify the academic areas that need attention (Tourkin et al., 2004). The SASS database consists of information collected through questionnaires that were given to a large sample of the nation's principals, teachers, school districts, and school media centers and consisted of six components: the School District Survey, the Principal Survey, the School Survey, the Teacher Survey, the School Library Media Center Survey, and the Teacher Follow-up Survey. The overall objective of SASS is extremely comprehensive: "To collect the information necessary for a complete picture of American elementary and secondary education.

The abundance of data collected permits detailed analyses of the characteristics of schools, principals, teachers, and school district policies” (Tourkin et. al., 2004, p. 2).

Sampling Design

The sampling design for the SASS was a multistage structure. The sampling procedure for the public school teachers actually began with public school selection. Public schools, the primary sampling unit, were selected to be representative at the national and state levels. Once schools were selected, school districts associated with the chosen public schools were included in the sample. Then, principals assigned to schools that were a part of the public school sample were selected (Gruber et al., 2002).

The procedure for selecting public school teachers is connected to the Public School sample chosen for the SASS. The sampled schools were asked to provide a list of their teachers and teacher assignments. Seven percent of public schools did not provide lists. From the lists that were submitted, teachers were assigned to one of five strata, listed in order of priority: 1) teacher’s reported race is Asian or Pacific Islander; 2) teacher’s reported race is American Indian or Alaska Native; 3) teachers assigned to teach classes designed for students with Limited-English Proficiency; 4) teachers in their first, second, or third year of teaching; 5) teachers not classified in any of the above groups. At this point in the process, teachers within the strata were then selected based on probability proportional to size ($N = 56,354$) (Gruber et al., 2002).

Instrumentation

For purposes of this study, data were drawn from the 1999-2000 SASS Public School Teacher Questionnaire which asked for information “regarding education and training, teaching assignment, teaching experience, certification, teaching workload, perceptions and attitudes about teaching, job mobility, and workplace conditions” (U.S. Department of Education, *SASS - Overview*, 2009). The Public School Teacher Questionnaire consists of 71 questions broken into nine subscales: 1) general information (seven items), 2) certification and training information (19 items), 3) professional development (six items), 4) class organization (six items), 5) resources and assessment of students (12 items), 6) working conditions (six items), 7) decision making (five items), 8) general employment information (six items), and 9) contact information (four items). For purposes of this study, questions from two subscales were used: a) certification and training information subscale and b) resources and assessment subscale.

Reliability and Validity

The NCES conducted four stages of reliability and validity testing prior to the administration of the Public School Teacher Questionnaire. The process began in 1995 with an evaluation of the 1993 survey. Interviews were given in order to assess the format of the questionnaire and to determine which questions were problematic. In 1997, the survey was revised after more interviews were conducted and a split-level test was given to 250 public schools. In 1998, this revised survey was piloted twice. The first time, 550 schools were selected and follow-up interviews were administered. After those two field-tests, the survey was once

again revised (Gruber et al., 2002).

An important part of the reliability testing process for the school and teacher surveys was the SASS Re-interview Program. This procedure tested for variance by focusing on questions considered crucial or problematic to the survey. A significant variance between the responses originally given and the responses given during the re-interview indicated a problem with the question design or the characteristics of the data being collected by that question. All re-interviews were carried out by mail, with most respondents receiving their re-interview questionnaire between three and four weeks from the date that they mailed back their original survey (Gruber et al., 2002).

Since the estimates developed from using SASS represent a sample population, the sample survey's reliability is based on how close the responses are to those that would be obtained from a complete administering of the questionnaire to the entire population sample. Score reliability is dependent on two different types of errors: non-sampling and sampling. Non-sampling errors can be attributed to factors such as a respondent's inability to recall information and data-processing inaccuracy. Sampling errors reflect variation in responses due to administration to a sample of the population rather than the entire population. The impact that these types of errors make can only be calculated in the case of sampling errors. Sampling errors were determined by using a bootstrap variance procedure (Gruber et al., 2002).

While there were a number of procedures performed to test the instrument's reliability, no measures were taken to assess its validity. In other words, it was not determined whether the responses of the participants accurately reflect their instructional practice. The reliability of the data may be compromised due to the possible inaccuracy of self-report data.

Variables

Variables that were used in this research study to operationally define type of certification as well as instructional practices are discussed in this section.

Certification

Alternatively and traditionally-certified teachers were identified by SASS question 13a which stated: “Do you have a teaching certificate in this state in your MAIN teaching assignment field?” Responses to this question included “yes” or “no.” Based on the response to the teaching certification question, (question 13a), a series of branching questions were presented. If the respondent answered “yes,” indicating they did have a certificate in their main teaching assignment field, they were asked to indicate the type of certificate they attained (question 13b). Responses included: a) regular or standard state certificate or advanced professional certificate, b) probationary certificate, c) provisional certificate (usually indicating that they are still participating in an ACP), d) temporary certificate, or e) emergency certificate or waiver.

Question 13c asked the respondents if they indicated that they held a regular or standard state certificate or advanced professional certificate in the previous question (13b). If “yes,” question 13d asks how they attained certification. Responses included: a) as part of a bachelor’s degree program; b) as part of a “5th year” program; c) as part of a master’s degree program; d) after I began teaching, as part of an alternative program; e) before I began teaching, as part of an alternative program; f) through continuing professional development; and g) other (Schools and

Staffing Survey, 2000). For the purposes of this study, “traditionally certified teachers” are defined as teachers who indicated they attained certification as part of any one of the following: (a) bachelor’s degree program; b) “5th year” program; or c) master’s degree program. For the purposes of this study, “alternatively-certified” teachers are defined as teachers who indicated that they attained certification as part of any one of the following: (d) after I began teaching, as part of an alternative program; e) before I began teaching, as part of an alternative program; f) through continuing professional development. Respondents who selected “other” were excluded from the study.

Instructional Practices

Questions regarding instructional practices of teachers were drawn from the “resources and assessment of students” subscale of the questionnaire. For purposes of this study, questions 44, 45, and 47 were examined. Question 44 asked respondents to what extent they used state or district standards to guide the instructional practice in their main teaching assignment field. The responses were chosen from a five-point Likert scale ranging from “not at all” to “to a great extent.” Question 45 asked respondents whether they used different groupings of students in their classroom to teach students who learn at different rates. Responses included “yes” or “no.”

Teachers were asked to respond to questions related to student test scores. Question 47 asked (yes or no) if teachers received students’ scores on state or local achievement tests. Those who answered “yes” were asked a series of three questions related to the extent to which information from students’ test scores was used to do the following: 1) group students into

different instructional groups by achievement ability (47b.1); 2) assess areas where content knowledge or teaching practice needed to be strengthened (47b.2); and 3) adjust curriculum in areas where students encountered problems (47b.3). Responses for all three items were on a five-point Likert scale ranging from “not at all” to “to a great extent.” Table 1 provides information on the exact wording of the question as it appeared in the SASS, the question number on the printed survey, the variable name as presented in the SASS data file, and the responses.

Table 1
Delimiting Variables

Question	Question Number	Variable	Value
Do you have a teaching certificate in this state in your MAIN teaching assignment field?	13a	0103	1 = Yes 2 = No

Question	Question Number	Variable	Value
What type of certificate do you hold in this field?	13b	0104	<p>1 = Regular or standard state certificate or advanced professional certificate</p> <p>2= Provisional or other type given to persons who are still participating in what the state calls an "alternative certification program"</p> <p>3 = Probationary certificate (the initial certificate issued after satisfying all requirements except the completion of a probationary period)</p> <p>4 = Temporary certificate (requires some additional college coursework and/or student teaching before regular certification can be obtained)</p> <p>5 = Emergency certificate or waiver (issued to persons with insufficient teacher preparation who must complete a regular certification program in order to continue teaching)</p>
Did you mark box 1 in item 13b above?	13c	0105	<p>1 = Yes</p> <p>2 = No</p>

Question	Question Number	Variable	Value
How did you earn your regular or standard state certificate or advanced professional certificate in your MAIN teaching assignment field?	13d	0106	<p>1 = As part of a bachelor's degree program</p> <p>2 = As part of a "5th year" program</p> <p>3 = 6 = As part of a master's degree program</p> <p>4 = After I began teaching, as part of an alternative program</p> <p>5 = Before I began teaching, as part of an alternative program</p> <p>6 = Through continuing professional development</p> <p>7 = Other – <i>Please specify</i></p>
Type of certification	Created from 13d (0106)	Cert	<p>1 = traditionally certified (response 1)</p> <p>0 = alternatively certified (responses 4, 5, or 6)</p>
Do you receive your students' scores on state or local achievement tests?	47a	0255	<p>1 = Yes</p> <p>2 = No</p>

Table 2
Variables Included in Model Testing

Question	Question Number	Variable	Value
Do you use different groupings of students in your classroom to teach students who learn at different rates?	45	0253	1 = Yes 2 = No
Using the scale 1–5, where 1 is "Not at all" and 5 is "To a great extent," to what extent do you use the information from your students' test scores – (1) To group students into different instructional groups by achievement or ability?	47b.1	0256	1 = Not at all 2 3 4 5 = "To a great extent"
Using the scale 1–5, where 1 is "Not at all" and 5 is "To a great extent," to what extent do you use the information from your students' test scores – (2) To assess areas where you need to strengthen your content knowledge or teaching practice?	47b.2	0257	1 = Not at all 2 3 4 5 = "To a great extent"

Question	Question Number	Variable	Value
Using the scale 1–5, where 1 is "Not at all" and 5 is "To a great extent," to what extent do you use the information from your students' test scores – To adjust your curriculum in areas where your students encountered problems?	47b.3	0258	1 = Not at all 2 3 4 5 = "To a great extent"

Data Collection Procedures

Data collection for the 1999–2000 SASS took place during that school year. The teacher questionnaires were sent out to the designated sample of teachers and the following process was subsequently carried out. If a teacher did not respond to the first mailing, a second mailing was conducted. Then, non-respondents were contacted by centralized telephone centers. Finally, the remaining non-respondents were allocated to field staff that performed phone and personal interviews.

Analysis

The research conducted was a correlational study. The first research question of this study asks, "Is there a relationship between whether teachers are alternatively-certified or

traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment?” A chi square test of association was used to answer this question. The independent variable is type of certification and the dependent variable is the extent to which state or district standards are used by the respondent to guide instruction (question 44).

The second research question of this study asks, “Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates?” A chi square test of association was used to answer this question. The independent variable is type of certification and dependent variable is whether the respondent uses groupings of students in the classroom to teach students who learn at different rates (question 45).

The third research question of this study asks, “Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability?” A chi square test of association was used to answer this question. The independent variable is type of certification and dependent variable is extent to which the information from state or district standards are used by the respondent to group students into different instructional groups by achievement or ability (question 47b.1).

The fourth research question of this study asks, “Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice?” A chi square test of association was used to answer this question. The independent variable is type of certification and dependent variable is

extent to which the information from state or district standards are used by the respondent to assess areas where he or she needs to strengthen content knowledge or teaching practice (question 47b.2).

The fifth research question of this study asks, “Is there a relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems?” A chi square test of association was used to answer this question. The independent variable is type of certification and dependent variable is extent to which the information from state or district standards are used by the respondent to adjust curriculum in areas where students encountered problems (question 47b.3)

The Bonferroni adjustment was applied to control for the increased chance of a Type I error due to conducting multiple Chi square procedures. Thus, rather than conducting the procedures at an alpha of .05, an alpha of .01 (.05/5) was applied.

Adjustment for Complex Sampling Design

To adjust for the complex sampling design when computing descriptive statistics for the teacher sample, the full sample teacher weight (TFNLWGT) was applied along with replicate weights (TREPWT1-TREPWT88) using the balanced repeated replication (BRR) method within AM software (American Institute for Research, n.d.).

To adjust for the non-simple random sampling procedure employed in the 1999-2000 SASS when analyzing data to address the research questions, the analyses was conducted by applying the full sample teacher weight (TFNLWGT). An adjustment to ensure correct variance

estimation was not possible. AM software does not include a chi square test of association procedure and SPSS for Complex Samples does not provide the option for variance estimation by replicate weights, only by Taylor Series linearization and the SASS does not have strata and cluster variables needed for Taylor Series linearization. Because neither Taylor Series linearization nor a replicate procedure were possible, a more conservative alpha level was applied when reviewing the results for the research questions (Thomas and Heck 2001). Additional details on the technical issues associated with the 1999-2000 SASS can be found in the technical manual (Tourkin et al., 2004).

Summary

Chapter three summarized the research methodology for this study. The research questions were presented as well as a composite of the data source, including a description and summary of its sampling design. Then, the instrumentation, data collection procedures, and analysis were detailed. Chapter three concluded with a clarification of the adjustment made for the complex sampling design.

CHAPTER FOUR - RESULTS

Introduction

Chapter four will present the findings of this research study. This chapter will commence with a descriptive analysis of the population sample. Then, an interpretation of analysis of each research question will be offered.

Descriptive Statistics of Teacher Population Sample

The SASS dataset, which includes information from the Public School Teacher questionnaire, was used for this research study. Respondents had to answer that they held a regular or standard state certificate or advanced professional certificate in their main teaching assignment (Question 13.a-c) in order to be included. When asked how they earned their earned their teaching certificates, respondents who answered “other” were eliminated. Respondents must have indicated that they receive students’ scores on state or local achievement tests (question 47a) in order to be included in the research study. Finally, missing cases from these variables, as well as the instructional practice variables (question 45, 47b.1-3), were removed. These procedures resulted in 20,072 cases (weighted $N = 1,535,263$) with 2,846 (weighted $n = 203,186$) alternatively-teachers (14.2%) and 17,226 (weighted $n = 1,332,077$) traditionally-certified teachers (85.8%).

Of the respondents who indicated their gender, 78.8% were female and 21.2% were male.

When gender was broken down within the two groups (alternatively and traditionally-certified teachers), there was a higher percentage of male alternatively-certified teachers (26.8%) than male traditionally-certified teachers (20.3%). These percentages align with research indicating that alternative certification programs attract men to the education profession (Feistritzer et al., 1998).

Of the respondents who indicated their age, the largest percentage was between 40-49 years-old (33.7%). When age was broken down by the two groups (alternatively and traditionally-certified teachers), teachers who were traditionally certificated were generally younger than alternatively certified teachers with the largest percentage of traditionally certified teachers being 40-49 years of age (34.2%) as compared to the largest percentage of alternatively certified teachers being 50 years of age or older (42.2%).

Of the respondents who indicated their race, the largest percentage was white (89.2%). In addition, 8.2% of the respondents were black. When race was broken down by the two groups (alternatively and traditionally-certified teachers), there was a higher percentage of white traditionally-certified teachers (90%) than white alternatively-certified teachers (83.8%). In addition, there was a higher percentage of black alternatively-certified teachers (13.6%) than black traditionally-certified teachers (7.4%). These percentages align with research indicating that alternative certification programs attract minorities to the education profession (Feistritzer et al., 1998).

Of the respondents who indicated their years of experience, the mean was 15.3 years ($SD= 9.8$) with the minimum being 0 years and the maximum being 54 years. When years of experience was broken down by the two groups (alternatively and traditionally-certified teachers), the mean was 15.8 years ($SD = 10.0$) for alternatively-certified teachers with the

minimum being 0 years and the maximum being 54 years. The mean was 15.2 years ($SD = 9.8$) for traditionally-certified teachers with the minimum being 0 years and the maximum being 48 years. Alternatively-certified teachers had slightly more experience than traditionally-certified teachers.

Table 3
Sample Characteristics by All Respondents and by Certification Type

	Certification Type		
	All Respondents	Traditionally Certified	Alternatively Certified
<i>Gender</i>			
• Male	21.2%	20.3%	26.8%
• Female	78.8%	79.7%	73.2%
<i>Age</i>			
• Less than 30 years old	12.9%	13.7%	7.5%
• 30-39 years-old	20.7%	20.8%	20.0%
• 40-49 years-old	33.7%	34.2%	30.3%
• 50 years or older	32.7%	31.2%	42.2%
<i>Race</i>			
• American Indian or Alaskan Native (Aleut, Alaska Indian, Yupik, Inupiat)	1.0%	1.0%	1.0%
• Asian or Pacific islander (Japanese, Chinese, Filipino, Korean, Asian Indian, Vietnamese, Hawaiian, Guamanian, Samoan, other Asian)	1.6%	1.6%	1.6%
• Black	8.2%	7.4%	13.6%
• White	89.2%	90.0%	83.8%

Interpretation of Analysis

The research conducted was a correlational study. For each of the five research questions, a chi square test of association was performed and the crosstab calculations were evaluated.

Research Question One

Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use state or district standards to guide instructional practice in their main teaching assignment?

A chi square test of association was conducted to evaluate whether the extent teachers use state or district standards to guide instructional practice in their main teaching assignment was related to whether they were alternatively-certified or traditionally-certified. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .001 (i.e., $.05/5=.001$). The null hypothesis was that there is not an association between the variables, and the alternative hypothesis is that there is an association between the variables. The independent variable was whether a teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that teachers use state or district standards to guide instructional practice in their main teaching assignment with five levels from “not at all” to “to a great extent.”

The extent to which a teacher uses state or district standards to guide instruction in his or her main teaching assignment was statistically significantly related to whether a teacher was alternatively-certified or traditionally-certified, Pearson $\chi^2(4, \text{weighted } N = 1535263) =$

1244.198, $p < .001$, $\phi = .028$. The assumption of five expected frequencies per cell was met. However, using Cohen's (1998) guidelines for interpretation, the phi statistic, a measure of effect size, indicates a small effect. This suggests that the statistical significance may be an artifact of the large sample size.

Review of Standardized Residuals

Standardized residuals were reviewed to determine the cells that were contributing to the overall statistically significant relationship. Standardized residuals that are greater than +/- 3.29 suggest that cell is statistically significantly contributing to the relationship between the variables. Additionally, the sign of the residual suggests whether the observed frequency is greater than the expected frequency (i.e., positive value) or less than the expected frequency (i.e., negative value) (Lomax & Hahs-Vaughn, in progress).

Level 1: Do Not Use State or District Standards to Any Extent to Guide Instructional Practice in Their Main Teaching Assignment

Based on examination of the standardized residuals for the cells, there were statistically significantly: 1) more alternatively-certified teachers ($SR = 29.3$); and 2) less traditionally-certified teachers ($SR = -11.4$) who do not use state or district standards to any extent (level 1) in order to guide instructional practice in their main teaching assignment. Based on certification type, approximately 1.3% of traditionally-certified teachers and about 2.3% of alternatively-

certified teachers do not use state or district standards to any extent in order to guide instructional practice in their main teaching assignment (see Table 4).

Level 2: Use State or District Standards to a Minor Extent to Guide Instructional Practices in Their Main Teaching Assignment

Based on the examination of the standardized residuals for the cells, there were statistically significantly: 1) less alternatively-certified teachers ($SR = -10.8$); and 2) more traditionally-certified teachers ($SR = 4.2$) who use state or district standards to a minor extent (level 2) in order to guide instructional practice in their main teaching assignment. Based on certification type, approximately 4.1% of traditionally-certified teachers and about 3.5% of alternatively-certified teachers use state or district standards to a minor extent in order to guide instructional practice in their main teaching assignment (see Table 4).

Level 3: Use State or District Standards to a Moderate Extent to Guide Instructional Practices in Their Main Teaching Assignment

Based on the examination of the standardized residuals for the cells, there were statistically significantly: 1) more alternatively-certified teachers ($SR = 8.8$); and 2) less traditionally-certified teachers ($SR = -3.4$) who use state or district standards to a moderate extent (level 3) in order to guide instructional practice in their main teaching assignment. Based on certification type, approximately 13.3% of traditionally-certified teachers and about 14.2% of

alternatively-certified teachers use state or district standards to a moderate extent in order to guide instructional practice in their main teaching assignment (see Table 4).

Level 4: Use State or District Standards to a Significant Extent to Guide Instructional Practices in Their Main Teaching Assignment

Based on the examination of the standardized residuals for the cells, there were similar proportions of alternatively-certified teachers ($SR = -2.7$) and traditionally-certified teachers ($SR = 1.1$) who use state or district standards to a significant extent (level 4) in order to guide instructional practice in their main teaching assignment. In other words, the proportions of observed values in these cells were not statistically significantly different and thus these cells were not contributing to the overall statistical significance of the relationship. Based on certification type, approximately 30.2% of traditionally-certified teachers and about 29.8% of alternatively-certified teachers use state or district standards to a significant extent in order to guide instructional practice in their main teaching assignment (see Table 4).

Level 5: Use State or District Standards to a Great Extent to Guide Instructional Practices in Their Main Teaching Assignment

Based on the examination of the standardized residuals for the cells, there were statistically significantly less alternatively-certified teachers ($SR = -4.3$) who use state or district standards to a great extent (level 5) in order to guide instructional practice in their main teaching

assignment. The proportion of traditionally-certified teachers ($SR = 1.7$) who use state or district standards to a great extent in order to guide instructional practice in their main teaching assignment was similar to what was expected (i.e., this cell was not contributing to the statistically significant chi square results). Based on certification type, approximately 51.2% of traditionally-certified teachers and about 50.4% of alternatively-certified teachers use state or district standards to a great extent in order to guide instructional practice in their main teaching assignment (see Table 4).

Summary of Research Question One

In summary, the results generally suggested that statistically significantly: a) more alternatively certified teachers and less traditionally certified teachers do not use standards to any extent (level 1); b) less alternatively certified and more traditionally certified teachers use standards to a minor extent (level 2); c) more alternatively-certified teachers and less traditionally-certified teachers use standards to a moderate extent (level 3); and d) less alternatively-certified teachers use state or district standards to a great extent (level 5) in order to guide instructional practice in their main teaching assignment. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use state or district standards to a significant extent (level 4) in order to guide instructional practice in their main teaching assignment.

Table 4***Standards-Guided Practice by Certification Type (Frequencies, Percentages within Columns, and Standardized Residuals)***

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		
		<u>Alternatively Certified</u>	<u>Traditionally Certified</u>	<u>Total</u>
Standards guide practice	Not at all (1)	$n = 4415$	$n = 17121$	$n = 21536$
		(2.2%)	(1.3%)	(1.4%)
	$SR = 29.3$	$SR = -11.4$		
	Minor (2)	$n = 7122$	$n = 54052$	$n = 61174$
(3.5%)		(4.1%)	(4.0%)	
		$SR = -10.8$	$SR = 4.2$	
Moderate (3)	Moderate (3)	$n = 28804$	$n = 177828$	$n = 206632$
		(14.2%)	(13.3%)	(13.5%)
		$SR = 8.8$	$SR = -3.4$	
Significant (4)	Significant (4)	$n = 60488$	$n = 401639$	$n = 462127$
		(29.8%)	(30.2%)	(30.1%)
		$SR = -2.7$	$SR = 1.1$	

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		<u>Total</u>
		<u>Alternatively Certified</u>	<u>Traditionally Certified</u>	
Standards guide practice	Great (5)	$n = 102358$ (50.4%) $SR = -4.3$	$n = 681437$ (51.2%) $SR = 1.7$	$n = 783795$ (51.1%)

Research Question Two

Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and whether they use groupings of students in their classroom to teach students who learn at different rates?

A chi square test of association was conducted to evaluate whether the proportion of teachers who use groupings of students in their classrooms to teach students who learn at different rates (two categories: yes/no) varied depending on whether they were alternatively-certified or traditionally-certified. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .001 (i.e., $.05/5 = .001$). The null hypothesis was that there is not an association between the variables, and the alternative hypothesis is that there is an association between the variables. The independent variable was whether a teacher was alternatively-certified or traditionally-certified. The dependent variable was whether teachers use groupings of students in their classroom to teach students who learn at

different rates.

Whether a teacher uses groupings of students in his or her classroom to teach students who learn at different rates was statistically significantly related to whether a teacher was alternatively-certified or traditionally-certified, Pearson $\chi^2(1, \text{weighted } N = 1535263) = 45.777, p < .001, \text{phi} = -.005$. The assumption of five expected frequencies per cell was met. However, using Cohen's (1998) guidelines for interpretation, the phi statistic, a measure of effect size, indicates a small effect. This suggests that the statistical significance may be an artifact of the large sample size.

Review of Standardized Residuals

Standardized residuals were reviewed to determine the cells that were contributing to the overall statistically significant relationship. Standardized residuals that are greater than +/- 3.29 suggest that cell is statistically significantly contributing to the relationship between the variables. Additionally, the sign of the residual suggests whether the observed frequency is greater than the expected frequency (i.e., positive value) or less than the expected frequency (i.e., negative value) (Lomax & Hahs-Vaughn, in progress).

Use Groupings of Students to Teach Student Who Learn at Different Rates

Based on the examination of the standardized residuals for the cells, there were similar

proportions of alternatively-certified teachers ($SR = -3.0$) and traditionally-certified teachers ($SR = 1.2$) who use groupings of students in their classroom to teach students who learn at different rates. In other words, the proportions of observed to expected values in these cells were not statistically significantly different and thus these cells were not contributing to the overall statistical significance of the relationship. Based on certification type, approximately 77.2% of traditionally-certified teachers and about 76.6% of alternatively-certified teachers use groupings of students in their classroom to teach students who learn at different rates (See Table 5).

Do Not Use Groupings of Students to Teach Student Who Learn at Different Rates

Based on the examination of the standardized residuals for the cells, there were statistically significantly more alternatively-certified teachers ($SR = 5.5$) who do not use groupings of students in their classroom to teach students who learn at different rates. The proportion of traditionally-certified teachers ($SR = -2.2$) who do not use groupings of students in their classroom to teach students who learn at different rates was similar to what was expected (i.e., this cell was not contributing to the statistically significant chi square results). Based on certification type, approximately 22.8% of traditionally-certified teachers and about 23.4% of alternatively-certified teachers do not use groupings of students in their classroom to teach students who learn at different rates (see Table 5).

Summary of Research Question Two

In summary, the results generally suggested that statistically significantly more alternatively certified teachers do not use groupings of students in their classroom to teach students who learn at different rates. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use groupings of students in their classroom to teach students who learn at different rates.

Table 5
Uses Classroom Groups by Certification Type (Frequencies, Percentages within Columns, and Standardized Residuals)

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		<u>Total</u>
		<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	
Uses Classroom Groups	Yes	$n = 155576$ (76.6%) $SR = -3.0$	$n = 1028965$ (77.2%) $SR = 1.2$	$n = 1184541$ (77.2%)
	No	$n = 47609$ (23.4%) $SR = 5.5$	$n = 303112$ (22.8%) $SR = -2.2$	$N = 350721$ (22.8%)

Research Question Three

Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to group students into different instructional groups by achievement or ability?

A chi square test of association was conducted to evaluate whether the extent teachers use the information from state or local achievement tests to group students into different instructional groups by achievement or ability varied depending on whether they were alternatively-certified or traditionally-certified. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .001 (i.e., $.05/5 = .001$). The null hypothesis was that there is not an association between the variables, and the alternative hypothesis is that there is an association between the variables. The independent variable was whether a teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that teachers use the information from state or local achievement tests to group students into different instructional groups by achievement or ability with five levels from “not at all” to “to a great extent.”

The extent to which a teacher uses the information from state or local achievement tests to group students into different instructional groups by achievement or ability was statistically significantly related to whether a teacher was alternatively-certified or traditionally-certified, Pearson $\chi^2(4, \text{weighted } N = 1535263) = 430.133, p < .001, \text{phi} = .017$. The assumption of five expected frequencies per cell was met. However, using Cohen’s (1998) guidelines for interpretation, the phi statistic, a measure of effect size, indicates a small effect. This suggests

that the statistical significance may be an artifact of the large sample size.

Review of Standardized Residuals

Standardized residuals were reviewed to determine the cells that were contributing to the overall statistically significant relationship. Standardized residuals that are greater than +/- 3.29 suggest that cell is statistically significantly contributing to the relationship between the variables. Additionally, the sign of the residual suggests whether the observed frequency is greater than the expected frequency (i.e., positive value) or less than the expected frequency (i.e., negative value) (Lomax & Hahs-Vaughn, in progress).

Level 1: Do Not Use the Information from State or Local Achievement Tests to any Extent

Based on examination of the standardized residuals for the cells, there were statistically significantly less alternatively-certified teachers ($SR = -7.5$) who do not use the information from state or local achievement tests to any extent (level 1) in order to group students into different instructional groups by achievement or ability. The proportion of traditionally-certified teachers ($SR = 2.9$) who do not use the information from state or local achievement tests to any extent in order to group students into different instructional groups by achievement or ability was similar to what was expected (i.e., this cell was not contributing to the statistically significant chi square results). Based on certification type, approximately 30.9% of traditionally-certified teachers and

about 29.8% of alternatively-certified teachers do not use the information from state or local achievement tests to any extent in order to group students into different instructional groups by achievement or ability (see Table 6).

Level 2: Use Information from State or Local Achievement Tests to a Minor Extent

Based on the examination of the standardized residuals for the cells, there were statistically significantly: 1) less alternatively-certified teachers ($SR = -8.7$); and 2) more traditionally-certified teachers ($SR = 3.4$) who use the information from state or local achievement tests to a minor extent (level 2) in order to group students into different instructional groups by achievement or ability. Based on certification type, approximately 18.2% of traditionally-certified teachers and about 17.3% of alternatively-certified teachers use the information from state or local achievement tests to a minor extent in order to group students into different instructional groups by achievement or ability (see Table 6).

Level 3: Use Information from State or Local Achievement Tests to a Moderate Extent

Based on the examination of the standardized residuals for the cells, there were similar proportions of alternatively-certified teachers ($SR = .3$) and traditionally-certified teachers ($SR = -.1$) who use the information from state or local achievement tests to a moderate extent (level 3) in order to group students into different instructional groups by achievement or ability. In other

words, the proportions of observed to expected values in these cells were not statistically significantly different and thus these cells were not contributing to the overall statistical significance of the relationship. Based on certification type, the same approximate percentage (24.4%) of alternatively-certified and traditionally-certified teachers use the information from state or local achievement tests to a moderate extent in order to group students into different instructional groups by achievement or ability (see Table 6).

Level 4: Use Information from State or Local Achievement Tests to a Significant Extent

Based on the examination of the standardized residuals for the cells, there were statistically significantly: 1) more alternatively-certified teachers ($SR = 14.4$); and 2) less traditionally-certified teachers ($SR = -5.6$) who use the information from state or local achievement tests to a significant extent (level 4) in order to group students into different instructional groups by achievement or ability. Based on certification type, approximately 16.1% of traditionally-certified teachers and about 17.6% of alternatively-certified teachers use the information from state or local achievement tests to a significant extent in order to group students into different instructional groups by achievement or ability (see Table 6).

Level 5: Use Information from State or Local Achievement Tests to a Great Extent

Based on the examination of the standardized residuals for the cells, there were

statistically significantly more alternatively-certified teachers ($SR = 5.8$) who use the information from state or local achievement tests to a great extent (level 5) in order to group students into different instructional groups by achievement or ability. The proportion of traditionally-certified teachers ($SR = -2.3$) who use the information from state or local achievement tests to a great extent in order to group students into different instructional groups by achievement or ability was similar to what was expected (i.e., this cell was not contributing to the statistically significant chi square results). Based on certification type, approximately 10.4% of traditionally-certified teachers and about 10.9% of alternatively-certified teachers use the information from state or local achievement tests to a great extent in order to group students into different instructional groups by achievement or ability (see Table 6)

Summary of Research Question Three

In summary, the results generally suggested that statistically significantly: a) less alternatively-certified teachers do not use the information from state or local achievement tests to any extent (level 1); b) less alternatively-certified teachers and more traditionally-certified teachers use the information from state or local achievement tests to a minor extent (level 2); c) more alternatively-certified teachers and less traditionally-certified teachers use the information from state or local achievement tests to a significant extent (level 4) and: d) more alternatively-certified teachers use the information from state or local achievement tests to a great extent (level 5) in order to group students into different instructional groups by achievement or ability. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers

who use the information from state or local achievement tests to a moderate extent (level 3) in order to group students into different instructional groups by achievement or ability.

Table 6
Uses Information from State or Local Achievement Tests for Grouping Students by Certification Type (Frequencies, Percentages within Columns, and Standardized Residuals)

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		<u>Total</u>
		<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	
Uses Information – Grouping Students	Not at all (1)	$n = 60584$ (29.8%) $SR = -7.5$	$n = 411298$ (30.9%) $SR = 2.9$	$n = 471882$ (30.7%)
	Minor (2)	$n = 35077$ (17.3%) $SR = -8.7$	$n = 242574$ (18.2%) $SR = 3.4$	$n = 277651$ (18.1%)
	Moderate (3)	$n = 49594$ (24.4%) $SR = .3$	$n = 324629$ (24.4%) $SR = -.1$	$n = 374223$ (24.4%)
	Significant (4)	$n = 35754$ (17.6%) $SR = 14.4$	$n = 214565$ (16.1%) $SR = -5.6$	$n = 250319$ (16.3%)

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		<u>Total</u>
		<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	
	Great (5)	<i>n</i> = 22177 (10.9%) <i>SR</i> = 5.8	<i>n</i> = 139012 (10.4%) <i>SR</i> = -2.3	<i>n</i> = 161189 (10.5%)

Research Question Four

Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice?

A chi square test of association was conducted to evaluate the extent teachers use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice varied depending on whether they were alternatively-certified or traditionally-certified. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .001 (i.e., $.05/5=.001$). The null hypothesis was that there is not an association between the variables, and the alternative hypothesis is that there is an association between the variables. The independent variable was whether a teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that teachers use the information from state or local

achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice with five levels from “not at all” to “to a great extent.”

The extent to which a teacher uses the information from state or local achievement tests to assess areas where he or she needs to strengthen his or her content knowledge or teaching practice was statistically significantly related to whether a teacher was alternatively-certified or traditionally-certified, Pearson $\chi^2(4, \text{weighted } N = 1535263) = 1938.795, p < .001, \text{phi} = .036$. The assumption of five expected frequencies per cell was met. However, using Cohen’s (1998) guidelines for interpretation, the phi statistic, a measure of effect size, indicates a small effect. This suggests that the statistical significance may be an artifact of the large sample size.

Review of Standardized Residuals

Standardized residuals were reviewed to determine the cells that were contributing to the overall statistically significant relationship. Standardized residuals that are greater than +/- 3.29 suggest that cell is statistically significantly contributing to the relationship between the variables. Additionally, the sign of the residual suggests whether the observed frequency is greater than the expected frequency (i.e., positive value) or less than the expected frequency (i.e., negative value) (Lomax & Hahs-Vaughn, in progress).

Level 1: Do Not Use the Information from State or Local Achievement Tests to any Extent

Based on examination of the standardized residuals for the cells, there were statistically significantly: 1) more alternatively-certified teachers ($SR = 24.7$); and 2) less traditionally-certified teachers ($SR = -9.6$) who do not use the information from state or local achievement tests to any extent (level 1) in order to assess areas where they need to strengthen their content knowledge or teaching practice. Based on certification type, approximately 8.1% of traditionally-certified teachers and about 9.9% of alternatively-certified teachers do not use the information from state or local achievement tests to any extent in order to assess areas where they need to strengthen their content knowledge or teaching practice (see Table 7).

Level 2: Use Information from State or Local Achievement Tests to a Minor Extent

Based on examination of the standardized residuals for the cells, there were statistically significantly: 1) more alternatively-certified teachers ($SR = 25.8$); and 2) less traditionally-certified teachers ($SR = -10.1$) who use the information from state or local achievement tests to a minor extent (level 2) in order to assess areas where they need to strengthen their content knowledge or teaching practice. Based on certification type, approximately 7.6% of traditionally-certified teachers and about 9.4% of alternatively-certified teachers use the information from state or local achievement tests to a minor extent in order to assess areas where they need to strengthen their content knowledge or teaching practice (see Table 7).

Level 3: Use Information from State or Local Achievement Tests to a Moderate Extent

Based on examination of the standardized residuals for the cells, there were statistically significantly: 1) less alternatively-certified teachers ($SR = -12.7$); and 2) more traditionally-certified teachers ($SR = 5.0$) who use the information from state or local achievement tests to a moderate extent (level 3) in order to assess areas where they need to strengthen their content knowledge or teaching practice. Based on certification type, approximately 23.1% of traditionally-certified teachers and about 21.6% of alternatively-certified teachers use the information from state or local achievement tests to a moderate extent in order to assess areas where they need to strengthen their content knowledge or teaching practice (see Table 7).

Level 4: Use Information from State or Local Achievement Tests to a Significant Extent

Based on examination of the standardized residuals for the cells, there were equal proportions of alternatively certified ($SR = .0$) and traditionally-certified teachers ($SR = .0$) who use the information from state or local achievement tests to a significant extent (level 4) in order to assess areas where they need to strengthen their content knowledge or teaching practice. In other words, the proportions of observed to expected values in these cells were not statistically significantly different and thus these cells were not contributing to the overall statistical significance of the relationship. Based on certification type, the same approximate percentage (34.0%) of alternatively-certified and traditionally-certified teachers use the information from state or local achievement tests to a significant extent in order to assess areas where they need to strengthen their content knowledge or teaching practice (see Table 7).

Level 5: Use Information from State or Local Achievement Tests to a Great Extent

Based on examination of the standardized residuals for the cells, there were statistically significantly: 1) less alternatively-certified teachers ($SR = -15.8$); and 2) more traditionally-certified teachers ($SR = 6.2$) who use the information from state or local achievement tests to a great extent (level 5) in order to assess areas where they need to strengthen their content knowledge or teaching practice. Based on certification type, approximately 27.2% of traditionally-certified teachers and about 25.1% of alternatively-certified teachers use the information from state or local achievement tests to a great extent in order to assess areas where they need to strengthen their content knowledge or teaching practice (see Table 7).

Summary of Research Question Four

In summary, the results generally suggested that statistically significantly: a) more alternatively-certified teachers and less traditionally-certified teachers do not use the information from state or local achievement tests to any extent (level 1); b) more alternatively-certified teachers and less traditionally-certified teachers use the information from state or local achievement tests to a minor extent (level 2); c) less alternatively-certified teachers and more traditionally-certified teachers use the information from state or local achievement tests to a moderate extent (level 3) and; d) less alternatively-certified teachers and more traditionally-certified teachers use the information from state or local achievement tests to a great extent (level 5) in order to assess areas where they need to strengthen their content knowledge or teaching practice. There were equal proportions of alternatively certified and traditionally-certified

teachers who use the information from state or local achievement tests to a significant extent (level 4) in order to assess areas where they need to strengthen their content knowledge or teaching practice.

Table 7
Uses Information from State or Local Achievement Tests to Assess Weak Areas by Certification Type (Frequencies, Percentages within Columns, and Standardized Residuals)

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		<u>Total</u>
		<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	
Uses Information – Assess Weak Areas	Not at all (1)	<i>n</i> = 20084 (9.9%) <i>SR</i> = 24.7	<i>n</i> = 107468 (8.1%) <i>SR</i> = -9.6	<i>n</i> = 127552 (8.3%)
	Minor (2)	<i>n</i> = 19098 (9.4%) <i>SR</i> = 25.8	<i>n</i> = 100693 (7.6%) <i>SR</i> = -10.1	<i>n</i> = 119791 (7.8%)
	Moderate (3)	<i>n</i> = 43807 (21.6%) <i>SR</i> = -12.7	<i>n</i> = 307875 (23.1%) <i>SR</i> = 5.0	<i>n</i> = 351682 (22.9%)
	Significant (4)	<i>n</i> = 69126 (34.0%) <i>SR</i> = .0	<i>n</i> = 453279 (34.0%) <i>SR</i> = .0	<i>n</i> = 522405 (34.0%)

<u>Question</u>	<u>Response</u>	<u>Certification Type</u>		<u>Total</u>
		<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	
Uses Information – Assess Weak Areas	Great (5)	<i>n</i> = 51071 (25.1%) <i>SR</i> = -15.8	<i>n</i> = 362762 (27.2%) <i>SR</i> = 6.2	<i>n</i> = 413833 (27.0%)

Research Question Five

Is there a statistically significant relationship between whether teachers are alternatively-certified or traditionally-certified and the extent to which they use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems?

A chi square test of association was conducted to evaluate whether the extent teachers use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems varied depending on whether they were alternatively-certified or traditionally-certified. Applying the Bonferroni to control for the increased possibility of a Type I error, the test was conducted using an alpha of .001 (i.e., $.05/5 = .001$). The null hypothesis was that there is not an association between the variables, and the alternative hypothesis is that there is an association between the variables. The independent variable was whether a teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that teachers use the information from state or local achievement tests to adjust

their curriculum in areas where their students encountered problems with five levels from “not at all” to “to a great extent.”

The extent to which a teacher uses the information from state or local achievement tests to adjust his or her curriculum in areas where his or her students encountered problems was statistically significantly related to whether a teacher was alternatively-certified or traditionally-certified, Pearson $\chi^2(4, \text{weighted } N = 1535263) = 496.187, p < .001, \text{phi} = .018$. The assumption of five expected frequencies per cell was met. However, using Cohen’s (1998) guidelines for interpretation, the phi statistic, a measure of effect size, indicates a small effect. This suggests that the statistical significance may be an artifact of the large sample size.

Review of Standardized Residuals

Standardized residuals were reviewed to determine the cells that were contributing to the overall statistically significant relationship. Standardized residuals that are greater than +/- 3.29 suggest that cell is statistically significantly contributing to the relationship between the variables. Additionally, the sign of the residual suggests whether the observed frequency is greater than the expected frequency (i.e., positive value) or less than the expected frequency (i.e., negative value) (Lomax & Hahs-Vaughn, in progress).

Level 1: Do Not Use the Information from State or Local Achievement Tests to any Extent

Based on examination of the standardized residuals for the cells, there were statistically significantly: 1) more alternatively-certified teachers ($SR = 15.5$); and 2) less traditionally-certified teachers ($SR = -6.1$) who do not use state or local achievement tests to any extent (level 1) in order to adjust their curriculum in areas where their students encountered problems. Based on certification type, approximately 6.6% of traditionally-certified teachers and about 7.6% of alternatively-certified teachers do not use the information from state or local achievement tests to any extent in order to adjust their curriculum in areas where their students encountered problems (see Table 8).

Level 2: Use Information from State or Local Achievement Tests to a Minor Extent

Based on the examination of the standardized residuals for the cells, there were statistically significantly: 1) less alternatively-certified teachers ($SR = -10.7$); and 2) more traditionally-certified teachers ($SR = 4.2$) who use the information from state or local achievement tests to a minor extent (level 2) in order to adjust their curriculum in areas where their students encountered problems. Based on certification type, approximately 6.0% of traditionally-certified teachers and about 5.3% of alternatively-certified teachers use the information from state or local achievement tests to a minor extent in order to adjust their curriculum in areas where their students encountered problems (see Table 8).

Level 3: Use Information from State or Local Achievement Tests to a Moderate Extent

Based on the examination of the standardized residuals for the cells, there were statistically significantly more alternatively-certified teachers ($SR = 5.5$) who use the information from state or local achievement tests to a moderate extent (level 3) in order to adjust their curriculum in areas where their students encountered problems. The proportion of traditionally-certified teachers ($SR = -2.1$) who use the information from state or local achievement tests to a moderate extent in order to adjust their curriculum in areas where their students encountered problems was similar to what was expected (i.e., this cell was not contributing to the statistically significant chi square results). Based on certification type, approximately 20.0% of traditionally-certified teachers and about 20.6% of alternatively-certified teachers use the information from state or local achievement tests to a moderate extent in order to adjust their curriculum in areas where their students encountered problems (see Table 8).

Level 4: Use Information from State or Local Achievement Tests to a Significant Extent

Based on the examination of the standardized residuals for the cells, there were statistically significantly less alternatively-certified teachers ($SR = -6.7$) who use the information from state or local achievement tests to a significant extent (level 4) in order to adjust their curriculum in areas where their students encountered problems. The proportion of traditionally-certified teachers ($SR = 2.6$) who use the information from state or local achievement tests to a significant extent in order to adjust their curriculum in areas where their students encountered problems was similar to what was expected (i.e., this cell was not contributing to the statistically

significant chi square results). Based on certification type, approximately 36.9% of traditionally-certified teachers and about 35.9% of alternatively-certified teachers use the information from state or local achievement tests to a significant extent in order to adjust their curriculum in areas where their students encountered problems (see Table 8).

Level 5: Use Information from State or Local Achievement Tests to a Great Extent

Based on the examination of the standardized residuals for the cells, there were similar observed to expected proportions of alternatively-certified teachers ($SR = .4$) and traditionally-certified teachers ($SR = -.1$) who use the information from state or local achievement tests to a great extent (level 5) in order to adjust their curriculum in areas where their students encountered problems. In other words, the proportions of observed values in these cells were not statistically significantly different from what was expected and thus these cells were not contributing to the overall statistical significance of the relationship. Based on certification type, the same approximate percentage (30.5%) of alternatively-certified and traditionally-certified teachers use the information from state or local achievement tests to a great extent in order adjust their curriculum in areas where their students encountered problems (see Table 8).

Summary of Research Question Five

In summary, the results generally suggested that statistically significantly: a) more

alternatively-certified teachers and less traditionally-certified teachers who do not use state or local achievement tests to any extent (level 1); b) less alternatively-certified teachers and more traditionally-certified teachers who use the information from state or local achievement tests to a minor extent (level 2); c) more alternatively-certified teachers who use the information from state or local achievement tests to a moderate extent (level 3) and; d) less alternatively-certified teachers who use the information from state or local achievement tests to a significant extent (level 4) in order to adjust their curriculum in areas where their students encountered problems. The proportion of: a) traditionally-certified teachers who use the information from state or local achievement tests to a moderate extent (level 3) and; b) traditionally-certified teachers who use the information from state or local achievement tests to a significant extent (level 4) in order to adjust their curriculum in areas where their students encountered problems was not statistically significant. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use the information from state or local achievement tests to a great extent (level 5) in order to adjust their curriculum in areas where their students encountered problems.

Table 8
Uses Information from State or Local Achievement Tests to Adjust Curriculum by Certification Type (Frequencies, Percentages within Columns, and Standardized Residuals)
Certification Type

<u>Question</u>	<u>Response</u>	<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	<u>Total</u>
Uses Information – Adjust Curriculum	Not at all (1)	$n = 15515$ (7.6%) $SR = 15.5$	$n = 88003$ (6.6%) $SR = -6.1$	$n = 103518$ (6.7%)

<u>Certification Type</u>				
<u>Question</u>	<u>Response</u>	<u>Alternatively-Certified</u>	<u>Traditionally-Certified</u>	<u>Total</u>
	Minor (2)	<i>n</i> = 10826 (5.3%) <i>SR</i> = -10.7	<i>n</i> = 79834 (6.0%) <i>SR</i> = 4.2	<i>n</i> = 90660 (5.9%)
	Moderate (3)	<i>n</i> = 41928 (20.6%) <i>SR</i> = 5.5	<i>n</i> = 266507 (20.0%) <i>SR</i> = -2.1	<i>n</i> = 308435 (20.1%)
	Significant (4)	<i>n</i> = 72846 (35.9%) <i>SR</i> = -6.7	<i>n</i> = 491480 (36.9%) <i>SR</i> = 2.6	<i>n</i> = 564326 (36.8%)
	Great (5)	<i>n</i> = 62071 (30.5%) <i>SR</i> = .4	<i>n</i> = 406253 (30.5%) <i>SR</i> = -.1	<i>n</i> = 468324 (30.5%)

Summary

Chapter four presented the findings of this research study. This chapter commenced with

a descriptive analysis of the population sample. Then, an interpretation of analysis of each research question was offered.

CHAPTER FIVE - CONCLUSIONS

Introduction

Chapter five will summarize research findings and discuss the significance and limitations of those results. Also, this chapter will offer recommendations for program evaluation and future research related to collecting and reporting outcomes evidence of teacher preparation program quality.

The results of this study examined whether certification type (specifically alternative certification or traditional certification) is related to instructional practices that have been shown to relate to the quality of education received by public school students. The research offers to the educational community important knowledge regarding teacher preparation and its relationship to the quality of education.

Research Question One

Educational research has suggested that standards-based instruction has a positive relationship with student achievement (Lauer et al., 2005; Thompson, 2009). This research study investigated whether teacher preparation has a relationship with standards-based instructional practice. A chi square test of association was conducted to evaluate whether the extent teachers use state or district standards to guide instructional practice in their main teaching assignment varied depending on whether they were alternatively-certified or traditionally-certified. The

independent variable was whether the teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that the teacher used state or district standards to guide instructional practice in their main teaching assignment with five levels from “not at all” to “to a great extent.”

The results generally suggested that statistically significantly: a) more alternatively certified teachers and less traditionally certified teachers do not use standards to any extent (level 1); b) less alternatively certified and more traditionally certified teachers use standards to a minor extent (level 2); c) more alternatively-certified teachers and less traditionally-certified teachers use standards to a moderate extent (level 3); and d) less alternatively-certified teachers use state or district standards to a great extent (level 5) in order to guide instructional practice in their main teaching assignment. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use state or district standards to a significant extent (level 4) in order to guide instructional practice in their main teaching assignment. While the chi square test of association resulted in a significant finding, the phi statistic indicates a small effect, suggesting little practical significance and that the statistical significance may be an artifact of the large sample size. When the standardized residuals were interpreted, there was no clear direction or pattern in terms of whether teachers who were traditionally certified self-reported that they use standards to guide instructional practice to a larger extent than alternatively certified teachers (or vice versa). In this research study, there is not enough evidence to suggest a relationship between teacher preparation and the extent teachers use state or district standards to guide instructional practice in their main teaching assignment.

Research Question Two

Educational research has suggested that ability grouping has a positive relationship with student achievement (Hendricks, 2009; Lou et al., 1997; Saunders, 2005; Taylor, 2007). This research study investigated whether teacher preparation has a relationship with this instructional practice. A chi square test of association was conducted to evaluate whether the proportion of teachers who use groupings of students in their classrooms to teach students who learn at different rates varied depending on whether they were alternatively-certified or traditionally-certified. The independent variable was whether the teacher was alternatively-certified or traditionally-certified. The dependent variable was whether they use groupings of students in their classroom to teach students who learn at different rates.

The results generally suggested that statistically significantly more alternatively certified teachers do not use groupings of students in their classroom to teach students who learn at different rates. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use groupings of students in their classroom to teach students who learn at different rates. While the chi square test of association resulted in a significant finding, the phi statistic indicates a small effect, suggesting little practical significance and that the statistical significance may be an artifact of the large sample size. When the standardized residuals were interpreted, there was no clear direction or pattern in terms of whether teachers who were traditionally certified self-reported that they use groupings of students to a larger extent than alternatively certified teachers (or vice versa). In this research study, there is not enough evidence to suggest a relationship between teacher preparation and whether the teacher uses groupings of students in their classroom to teach students who learn at different rates.

Research Question Three

Educational research has suggested that data-driven instruction has a positive relationship with student achievement (Bambrick-Santoyo, 2005; Corcoran & Silander, 2009; Noyce, Perda, & Traver, 2000, Stecker, Fuchs, & Fuchs, 2005). This research study investigated whether teacher preparation has a relationship with this instructional practice, specifically the use of information from state or local achievement tests. In addition, this research question included another research-based instructional practice, ability-grouping (Hendricks, 2009; Lou et al., 1997; Saunders, 2005; Taylor, 2007). A chi square test of association was conducted to evaluate whether the extent teachers use the information from state or local achievement tests to group students into different instructional groups by achievement or ability varied depending on whether they were alternatively-certified or traditionally-certified. The independent variable was whether the teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that the teacher used the information from state or local achievement tests to group students into different instructional groups by achievement or ability with five levels from “not at all” to “to a great extent.”

The results generally suggested that statistically significantly: a) less alternatively-certified teachers do not use the information from state or local achievement tests to any extent (level 1); b) less alternatively-certified teachers and more traditionally-certified teachers use the information from state or local achievement tests to a minor extent (level 2); c) more alternatively-certified teachers and less traditionally-certified teachers use the information from state or local achievement tests to a significant extent (level 4) and: d) more alternatively-certified teachers use the information from state or local achievement tests to a great extent (level 5) in order to group students into different instructional groups by achievement or ability. There

were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use the information from state or local achievement tests to a moderate extent (level 3) in order to group students into different instructional groups by achievement or ability. While the chi square test of association resulted in a significant finding, the phi statistic indicates a small effect, suggesting little practical significance and that the statistical significance may be an artifact of the large sample size. When the standardized residuals were interpreted, there was a direction or pattern which indicated that alternatively-certified teachers self-reported that they use the information from state or local achievement tests in order to group students into different instructional groups by achievement or ability to a larger extent than traditionally-certified teachers (or vice versa); there is still very little relationship between the two variables as suggested by the phi correlation coefficient.

Research Question Four

Educational research has suggested that data-driven instruction has a positive relationship with student achievement (Bambrick-Santoyo, 2005; Corcoran & Silander, 2009; Noyce, Perda, & Traver, 2000, Stecker, Fuchs, & Fuchs, 2005). This research study investigated whether teacher preparation has a relationship with this instructional practice, specifically the use of information from state or local achievement tests. A chi square test of association was conducted to evaluate whether the extent teachers use the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice varied depending on whether they were alternatively-certified or traditionally-certified. The independent variable was whether the teacher was alternatively-certified or

traditionally-certified. The dependent variable was the extent that the teacher uses the information from state or local achievement tests to assess areas where they need to strengthen their content knowledge or teaching practice with five levels from “not at all” to “to a great extent.”

The results generally suggested that statistically significantly: a) more alternatively-certified teachers and less traditionally-certified teachers do not use the information from state or local achievement tests to any extent (level 1); b) more alternatively-certified teachers and less traditionally-certified teachers use the information from state or local achievement tests to a minor extent (level 2); c) less alternatively-certified teachers and more traditionally-certified teachers use the information from state or local achievement tests to a moderate extent (level 3) and; d) less alternatively-certified teachers and more traditionally-certified teachers use the information from state or local achievement tests to a great extent (level 5) in order to assess areas where they need to strengthen their content knowledge or teaching practice. There were equal proportions of alternatively certified and traditionally-certified teachers who use the information from state or local achievement tests to a significant extent (level 4) in order to assess areas where they need to strengthen their content knowledge or teaching practice. While the chi square test of association resulted in a significant finding, the phi statistic indicates a small effect, suggesting little practical significance and that the statistical significance may be an artifact of the large sample size. When the standardized residuals were interpreted, there was no clear direction or pattern in terms of whether teachers who were traditionally certified self-reported that they use the information from state or local achievement tests in order to assess areas where they need to strengthen their content knowledge or teaching practice to a larger extent than alternatively certified teachers (or vice versa). In this research

study, there is not enough evidence to suggest a relationship between teacher preparation and the extent teachers use the information from state or local achievement tests in order to assess areas where they need to strengthen their content knowledge or teaching practice.

Research Question Five

Educational research has suggested that data-driven instruction has a positive relationship with student achievement (Bambrick-Santoyo, 2005; Corcoran & Silander, 2009; Noyce, Perda, & Traver, 2000, Stecker, Fuchs, & Fuchs, 2005). This research study investigated whether teacher preparation has a relationship with this instructional practice, specifically the use of information from state or local achievement tests. A chi square test of association was conducted to evaluate whether the extent teachers use the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems varied depending on whether they were alternatively-certified or traditionally-certified. The independent variable was whether the teacher was alternatively-certified or traditionally-certified. The dependent variable was the extent that the teacher uses the information from state or local achievement tests to adjust their curriculum in areas where their students encountered problems with five levels from “not at all” to “to a great extent.”

The results generally suggested that statistically significantly: a) more alternatively-certified teachers and less traditionally-certified teachers who do not use state or local achievement tests to any extent (level 1); b) less alternatively-certified teachers and more traditionally-certified teachers who use the information from state or local achievement tests to a minor extent (level 2); c) more alternatively-certified teachers who use the information from

state or local achievement tests to a moderate extent (level 3) and; d) less alternatively-certified teachers who use the information from state or local achievement tests to a significant extent (level 4) in order to adjust their curriculum in areas where their students encountered problems. The proportion of: a) traditionally-certified teachers who use the information from state or local achievement tests to a moderate extent (level 3) and; b) traditionally-certified teachers who use the information from state or local achievement tests to a significant extent (level 4) in order to adjust their curriculum in areas where their students encountered problems was not statistically significant. There were similar proportions of alternatively-certified teachers and traditionally-certified teachers who use the information from state or local achievement tests to a great extent (level 5) in order to adjust their curriculum in areas where their students encountered problems. While the chi square test of association resulted in a significant finding, the phi statistic indicates a small effect, suggesting little practical significance and that the statistical significance may be an artifact of the large sample size. When the standardized residuals were interpreted, there was no clear direction or pattern in terms of whether teachers who were traditionally certified self-reported that they use the information from state or local achievement tests in order to adjust their curriculum in areas where their students encountered problems to a larger extent than alternatively certified teachers (or vice versa). In this research study, there is not enough evidence to suggest a relationship between teacher preparation and the extent teachers use the information from state or local achievement tests in order to adjust their curriculum in areas where their students encountered problems.

Summary of Findings

Overall, while there were statistically significant relationships between certification type

and various instructional practices, the effect sizes were very small (ranging from -.005 to .036). This suggests that the statistical significance may be an artifact of the large sample size and that there may be little practical significance. Except for the third research question, the standardized residuals indicated no clear direction or pattern in terms of whether teachers who were traditionally certified self-reported that they used the instructional practices to a larger extent than alternatively certified teachers (or vice versa). Even though there appeared to be a pattern to the results of this question, the negligible effect size still suggests very little relationship between the variables.

Discussion

In relation to student achievement, research indicates that teacher education and quality is more important than smaller classrooms, teacher salary increases, and teacher experience (Darling-Hammond, 2000a; Darling-Hammond, 2000b). Studies conducted by Harold Wenglinsky (2000) indicate that certain teacher practices, such as incorporating higher-order thinking skills and hands-on learning, positively relate to student achievement. Other educational researchers have focused on a teacher's instructional practice as a measure of effectiveness (Scherer, 2001). There is research that exists, therefore, that certain instructional practices in the classroom are related to increased student performance

The findings of this study suggested statistically significant but, based on phi coefficients and no clear direction in standardized residuals, weak relationships between certification type (alternative or traditional) and instructional practice. As a correlational study, findings of this research study cannot support drawing causal conclusions. This suggests that there was not a

strong relationship between teacher quality (as measured by effective instructional practices) and type of teacher preparation program (alternative or traditional) for this population.

This study did not examine the relationship between certification type and student performance but rather looked at the relationship between certification type and self-reported instructional practice. However, previous empirical research has suggested evidence of the relationship between instructional practice and student achievement (Akiba, Chiu, & Zhuang, 2008; Anglin, 2008; Brown, 2009; Ginsburg-Block & Fantuzzo, 1998; Hall, 2005; Hilberg, Tharp, & DeGeest, 2000; Thompson, 2005). Thus while the results of this study cannot suggest a relationship between certification type and student performance, the findings may still hold value for the educational community and policymakers. Specifically, it can make suggestions for further research in teacher preparation program evaluation and effective instructional practice. The purpose of this study was to add to the research base on teacher preparation by testing for correlations between instructional practice and the teacher's preparation for the classroom. This correlational study compared alternatively-certified teachers to traditionally-certified teachers on the basis of self-reported instructional practices that can be categorized as research-based instruction. Since instructional practices have repeatedly been a proven indicator of student achievement (Akkus, Gunel, & Hand, 2007; Brown, 2009; Darling-Hammond & Youngs, 2002b; Palardy & Rumberger, 2008; Provasnik & Stearns, 2003, Stronge, Ward, Tucker, and Hindman, 2007; Timperley & Parr, 2009), the relationship to type of certification program should be examined from this area. In response to the correlation between teacher quality and student achievement noted in the review of literature, a comparison of the instructional practices of alternatively-certified teachers and traditionally-certified teachers is relevant since questions regarding the quality of preparation that alternative certification programs offer still exists.

According to the Laczko-Kerr and Berliner (2003), educators from these programs have less knowledge of curriculum, learning theory, student motivation, content relevancy, and lesson planning than traditionally-certified teachers.

The objective of this educational research study was to determine if the type of certification (alternative versus traditional) is related to instructional elements that may be related to the quality of education received by public school students. This study differed from previous studies conducted (Alhamisi, 2008; Boe, Shin, & Cook, 2007; Decker, et al., 2004; Feistritzer, 2000; Flores, Desjean-Perrotta, & Steinmetz, 2004, Hawk & Schmidt, 1989; Jelmberg, 1996; Klagholz & Thomas B. Fordham Foundation, 2000; Lutz & Hutton, 1989; Miller, McKenna & McKenna, 1998; Nougaret, Scruggs, & Mastropieri, 2005) in that it is looking at the relationship between teacher certification methods and instructional practice.

Limitations

There were limitations to the data source given that it was an existing dataset. Also, the 1999-2000 SASS was the most recent public use data available at the time this study was conducted, although more current data would have been preferable. In addition, the data were solely quantitative. The inclusion of qualitative data may have offered a more comprehensive perspective of the respondents' instructional decisions. The data were self-report and there were no measures that allowed for fidelity checks to determine the extent to which the self-report data were valid measures of the actual classroom practices.

Another limitation to this study was that teacher experience was not controlled. Some research has expressed concern with the effects that inexperienced alternatively-certified teachers

might have in the classroom. The issues raised include whether these teachers are properly prepared for the classroom through alternative certification programs and whether they are committed to the field of education (Darling-Hammond & Youngs, 2002b; Shen, 1997). In this study, teachers were examined in aggregate, without regard to their teaching experience, and the average number of years of experience of teachers in this study was 15 years. Thus, relationships between certification type and instructional practice that vary based on teaching experience may have been obscured in this study.

The reliability of the data may be compromised due to the possible inaccuracy of self-report data. Respondents to this survey may have had an understanding of effective instructional practices and answered the questions regarding instructional practice based on that principle and not their actual behaviors. In other words, respondents from both subgroups may not be providing an accurate portrait of their instructional practice.

Recommendations

As stated before, the challenge to the educational community is to make alternative certification programs a quality system that provides school districts with much needed teachers who are well-trained, confident in their abilities, and committed to the field (Beck-Frazier, 2005). There are strategies that these programs can employ in order to focus on these goals. Coble and Azordegan (2004) assert that alternative certification programs should collaborate with public school districts and community colleges, increase the rigor of the selection and advising processes, involve higher education arts and science faculty, strengthen clinical and field experience, provide professional development, and stay informed in the educational field.

Mentoring is often cited as a crucial element to quality ACPs because it increases participants' self-efficacy (Wayman et al., 2003). Berry (2001) maintains that strong academic and pedagogical coursework, intensive field experience, and requirements that candidates meet all of the state's standards are the keys to successful ACPs.

In a study conducted of ACPs at Texas community colleges by May, Katsinas, and Moore (2003), eight recommendations were made by the researchers. These suggestions included examining competition, assessing the labor market, establishing advisory committees with members of the school district, starting small, selecting candidates carefully, and performing outcomes evaluations. Research conducted by Masci and Stotko (2006) support these assertions. They performed a program evaluation of an ACP which incorporated many of these recommendations. Participant exit surveys and certification test scores indicate that the implementation of these policies has resulted in greater participant satisfaction and higher certification test performance. Therefore, this research supports the recommendations mentioned in former educational studies (Coble & Azordegan, 2004; Wayman et. al., 2003; Berry, 2001; May, Katsinas & Moore, 2003; Masci & Stotko, 2006).

A review of literature supports the recommendation that multiple measures are needed to evaluate teacher quality and their preparation (Boyd et. al., 2007; Cohen-Vogel & Smith, 2007; Darling-Hammond, 2000b; Ediger, 2000; Flores, Desjean-Perrotta, & Steinmetz, 2004; Gimbert, Cristol, & Sene, 2007; Hawk & Schmidt, 1989; Jelmsberg, 1996; Justice, Grenier, & Anderson, 2003; Laczko-Kerr & Berliner, 2002; Miller, McKenna & McKenna, 1998; Owings et. al., 2006). One of the limitations of this research study was the inability to determine the characteristics and classification of alternative certification programs from which the teachers completed. Therefore, research which compares student achievement scores of students who

were given instruction by teachers from the various types of alternative programs would have merit. The various classifications of alternative certification programs (Troops to Teachers, emergency credentialing, alternative certification through institutions of higher education, etc.) could be used to create subsets in which the mean student achievement gains could be compared. Also, individual factors that relate to the teacher and student populations were not examined in this study. Therefore, research which included such variables as the teacher population's previous occupational experience and age at the time of entering the classroom would be informative.

Since the educational community is aware of many of the teacher behaviors that indicate teacher quality, future research should also be conducted that examines what relates to teacher implementation of successful behaviors in the classroom. In other words, the question of what other factors relate to teacher quality, and subsequently may relate to student achievement, requires further examination. For example, a teacher's occupational environment and school administration are two factors that could greatly influence instructional practice. Another recommendation is the use of a longitudinal research study that would follow teachers from both types of teacher preparation programs (alternative and traditional certification). Longitudinal results would assist in identifying whether there may be differences in instructional practices and/or student achievement between alternatively and traditionally certified teachers immediately after completion of their teacher preparation program and stability or change over time.

Summary

Chapter five summarized research findings and discussed the significance and limitations of those results. Also, this chapter offered recommendations for program evaluation and future

research related to collecting and reporting outcomes evidence of teacher preparation program quality.

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