

THE IMPACT OF TEACHER PREPARATION PROGRAM ON ACADEMIC
ACHIEVEMENT OF EIGHTH GRADE STUDENTS IN A SOUTH TEXAS SCHOOL
DISTRICT

A Dissertation

by

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This dissertation meets the standards for scope and quality of
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ABSTRACT

The purpose of the study was to examine the impact of a teacher's preparation program on the academic achievement of eighth grade students in the areas of mathematics, reading, science, and social studies. Prior to the implementation of the No Child Left Behind Act (NCLB) in 2001, the majority of classroom teachers earned their teaching certificate through traditional university teacher preparation programs. The NCLB component requiring a highly qualified teacher in every classroom was a precursor to the rapid growth of alternative teacher preparation programs.

The ex-post facto, causal-comparative study was designed to examine the impact of a teacher's preparation program on the academic achievement of 133 eighth grade students on standardized state assessments in the areas of mathematics, reading, science, and social studies. Data from the school district included raw scores for each of the State of Texas Assessment of Academic Readiness (STAAR) reporting categories in these four academic areas as well as demographic data.

Results showed that in mathematics, students of alternatively prepared teachers outperformed students of traditionally prepared teachers in geometry and spatial reasoning, and probability and statistics. In reading, there were no statistically significant differences between the two groups on the basis of any of the outcome measures. In science, students of alternatively prepared teachers outperformed students of traditionally prepared teachers in matter and energy. In social studies, students of alternatively prepared teachers outperformed students of traditionally prepared teachers in history, geography and culture, and economics, science, technology, and society.

Student achievement is a critical component of the success of a school or district. Students who are well prepared for rigorous postsecondary education will be able to meet the demand for a skilled and educated workforce in challenging careers. Failure to prepare students is a major cause of the loss of millions of jobs to other countries due to the search for educated workers. The potential impact of a teacher's preparation program on academic achievement of students is potentially valuable information, as educational outcomes strongly affect economic growth and the distribution of income.

DEDICATION

I dedicate the dissertation study to my parents. They instilled in me the importance of education and have always been my biggest supporters. They always encouraged me to continue my education, and without their love and support, this accomplishment would not have been possible. Mother and Daddy, even though you are not here to see me complete this journey, I know you would have both been so proud. On the day I walk across the stage and receive my diploma, and every day, you are with me, as I will always carry you in my heart.

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Chapter I

Introduction

Background and Setting

The increase of alternative teacher certification programs after the adoption of 2001's federal No Child Left Behind (NCLB) Act seemed to be the answer to the problem of the shortage of certified teachers, which began shortly after the implementation of the NCLB Act and continues to be an issue. Shortly after the implementation of the NCLB Act, Ingersoll (2003) stated that "severe teacher shortages, it is widely believed, are confronting our elementary and secondary schools"(p. 5). Swanson (2011) stated that "the teacher shortage is more pervasive than ever" (p. 119). O'Connor, Malow, and Bisland (2011) wrote that "the teacher shortage has and will continue to create a demand for certified teachers especially in low-performing, high-needs schools" (p. 219). It seemed as if suddenly classrooms were staffed with teachers who had little practical training in the art of teaching (Hargreaves, 2012). Add to that the NCLB Act's focus on accountability and standardized testing, and "Houston, we have a problem".

Historically, most school districts hired certified teachers who received their certifications through a teacher preparation program at a university or college. These institutions provided a foundation of content, pedagogical knowledge, classroom management, and professional development culminating in a degree earned in elementary education or secondary education with content major (Boyd, Goldhaber, Lankford, & Wyckoff, 2007). A relatively recent development in the area of teacher certification is the Alternative Certification Program. Unlike the traditional teacher preparation program that incorporates teacher preparation into an undergraduate degree, alternative certification programs include fast-track institutes, quick

transitions from the workplace and military, and district and university sponsored training programs that allow a person who holds a four year degree to become a certified teacher in an expedited manner (Van Houten, 2009). Increases in teacher demand have coincided with the growth of alternative teacher certification programs, so-named because they provide alternatives to the traditional 4-year undergraduate program path to teacher certification (Darling-Hammond, Chung, Frelow, & Fisher 2002). Data from the Texas Education Agency reflect that for the 2010-2011 school year, alternative teacher programs produced the largest number of certified teachers (TEA, 2012). However, questions and concerns over the quality and rigor of these programs have risen in light of pressure and accountability demands placed on schools and school districts by state agencies, and the focus on standardized test scores and accountability ratings (Levine, 2006).

Baines (2010) noted that the NCLB Act defined a highly qualified teacher as possessing the credentials of having a bachelor's degree, certification to teach, and proven knowledge of the subject taught. One political answer to teacher shortages has resulted in changing the definition of a highly qualified teacher to that of someone with a bachelor's degree in any area (Linek, Sampson, Gomez, Linder, Torti, Levingston, & Palmer, 2009). Boyd et al. (2007) stated that the renewed focus of U.S. education policy on the quality of classroom teachers and teaching is raising new questions about how the nation prepares and certifies its teachers. Darling-Hammond (2000) showed that teachers who have completed teacher education programs and are fully certified before they begin teaching are more successful in the classroom, have been shown to receive higher evaluations from their principals, and have students who achieve at higher levels. Linek et al. (2009) also noted that little research has been done on student achievement of alternatively certified teachers. "Certification is necessary to ensure teacher quality, because

teaching, like other professions (law, medicine, the sciences, and so forth), requires mastery of an esoteric body of substantive and pedagogical knowledge that cannot be obtained without undergoing a rigorous training program" (Peterson & Nadler, 2009, p. 70).

Scribner and Heinen (2009) described Alternative Teacher Certification Program (ATCP) as a widely used term for a variety of programs designed to train and credential teachers in expedited fashion. To receive a standard state certification in most states, prospective teachers not only must be college graduates but also must have taken a specific set of education-related courses that comprise approximately 30 credit hours of coursework. Alternative certification programs give teacher candidates a fast-track avenue to obtain certification while working in the classroom as a teacher (Suell & Piotrowski, 2006). Designed to attract more people into teaching, some states have introduced new routes into teaching that have fewer up-front requirements (Boyd et al., 2007). For instance, in Texas, the Texas Administrative Code (TAC), Title 19, Part 7, Chapter 228, §228.2, defines alternative certification as "an approved educator preparation program, specifically designed as an alternative to a traditional undergraduate certification program, for individuals already holding at least a baccalaureate degree" (TAC, 2013).

The majority of alternative teacher preparation programs share similar requirements. Scribner and Heinen (2009) listed having a bachelor's degree with a minimum of a 2.50 grade point average (GPA) in a degree program relevant to the subject area as a requirement. Upon completion of initial coursework, teachers receive a two-year provisional teaching certificate. State guidelines also stipulate that alternatively certified teacher will be assigned a mentor from the same subject and approximately the same grade level during the teacher's first two years, receive ongoing professional education from their alternative teacher preparation program during

their first year, and participate in district professional development.

Differences have been identified in the content areas of the traditional and alternative programs. Prospective teachers enrolled in alternative programs are required to complete training while working in the classroom. May, Katsinas, and Moore (2003) stated that "noncertified teachers must show evidence of working toward certification through a deficiency plan with a teacher preparation institution, participation in a district-sponsored grow-your-own program, or enrollment in an approved alternative teacher certification program" (p. 70). Kane, Rockoff, and Staiger (2007) stated that during their first years of teaching, alternative certification program participants are required to hold a bachelor's degree and pass their respective state's licensing exams, and must enroll in a teacher education program and take coursework online and at night.

Baines, McDowell, and Foulk (2001) stated that from content-area courses to field experience, the requirements for the traditional program are far more rigorous than for alternative certification. Courses in the traditional program usually begin in the sophomore year and progress over the final three to three-and-a-half years of the degree. In alternative certification, prospective teachers (who may hold any degree) take two courses in July, begin full-time solo teaching in August, and then take two more courses over the course of the year (p. 34).

Alternative teacher preparation programs have been examined in the literature. Carter and Keiler (2009) wrote that "as the newest of teacher in urban American schools are increasingly products of alternative certification, exploring what the literature has to say about alternative routes to certification becomes increasingly important" (p. 440). Scribner and Heinen (2009) noted that this emergent body of literature has found little evidence that alternative teacher certification program address teacher shortages, recruit teacher of higher quality than

traditional programs, or adequately prepare teachers. Suell and Piotrowski (2006) stated that "the major goals of alternative certification programs are to increase the quantity and quality of teachers and to increase the number of male and minority teachers" (p. 310). These authors also wrote that alternative teacher certification program candidates usually hold at least a bachelor's degree, and that these programs give potential teachers a way to quickly obtain their teaching certificate while working as a classroom teacher.

A side by side comparison of traditional and alternative teacher preparation programs identified similarities and differences among these programs. Peterson and Nadler (2009) stated that the prerequisites and requirements of alternative teacher certification programs vary widely from state to state. The authors stated that "genuine alternative certification opens the door to more minority teachers, and student learning is more rapid in states where the reform has been introduced" (p. 73).

While similarities have been noted in the traditional and alternative teacher preparation programs, more differences have been identified. Wilcox and Samaras (2009) stated that "at least 47 states have adopted some type of alternative teacher licensure route, and currently 30% of teachers enter the profession through alternative teacher education programs" (p. 174). They also stated that researchers have stressed that all alternative teacher education programs, like all traditional ones, are not the same.

The primary difference between traditional university-based teacher preparation and alternative teacher preparation programs noted in the literature is the amount of time a prospective teacher spends on gaining practical experience and application. Traditional university-based preparation programs require guided field-based learning and at least one semester of full-time student teaching, while some alternative preparation programs place a new

teacher in the classroom as the teacher of record without the benefit of prior hands-on training (Levine, 2006).

May et al. (2003) noted that in Texas, roughly 250,000 certified teachers under the retirement age of 65 had chosen to opt out of teaching, and that state policymakers were encouraging Regional Education Service Centers, school districts, four year institutions, and community colleges to become active players in alternative teacher certification. In Texas in 2007, the number of new teachers hired for classrooms who had chosen an alternative certification program was one in four (Steadman & Simmons, 2007). As evidence of the growing acceptability of alternative teacher preparation programs, the Texas Education Agency (TEA) reported that in the school year 2010 - 2011, 9,512 teachers received their teaching certificates through a university undergraduate teacher preparation program, and 12,571 teachers received their teaching certificates through an alternative teacher preparation program (TEA, 2012). In fact, Baines (2010) stated that in many states, the number of alternatively certified teachers had begun to exceed the number of teachers who graduated from traditional university teacher preparation programs. The alternative teacher preparation programs now have the authority to establish program-specific requirements for their students, allowing multiple pathways to teaching. According to Baines (2010), "the move of certification from a tightly controlled, state-regulated, university-based platform to an unregulated, market-driven free-for-all has been swift and unequivocal" (p. 154).

Boswell (2010) pointed out that the current priorities of the Texas Education Agency are to "prepare students for college, adequately address the needs of the state's changing student population, and lower attrition rates of effective teachers, in addition to conducting extensive research and policy analysis on the state's English Language Learners with the goal of improving

education for these students through policy and effective programs grounded in research" (p. 103). The need to provide the students in South Texas with the most possible effective teachers is imperative to the future success, not only of the region, but of the state and nation as well.

Statement of the Problem

Determining how much difference a teacher makes in student achievement and whether or not that difference is related to how s/he enters the teaching profession is a complicated task (Kane et al., 2007). Peterson and Nadler (2009) questioned whether alternative certification impairs student learning, and stated that "most studies show very little, if any, connection with a teacher's classroom effectiveness and certification status (p. 74). Darling-Hammond (2010) found that "certification is a significant predictor of student achievement" (p. 39). In the State of Texas, the TEA identifies three preparation routes to teacher certification, namely, Alternative, University Post-Baccalaureate, and University Undergraduate (TEA, 2012). The study took place in an urban school district in South Texas in which the impact of teacher preparation program on academic achievement had not been systematically examined.

Theoretical Framework

The theoretical framework that guided the study was Situated Cognition, which is also referred to as the Situated Learning Theory (SLT) or Cognitive Apprenticeship. Collins (1988) defined the SLT as "the notion of learning knowledge and skills in contexts that reflect the way they will be used in real life. That is, situated learning can incorporate situations from everyday life to the most theoretical endeavors" (p. 2).

Collins (1988) stated that situated learning has many benefits. When concepts are taught in a practical setting, students learn how and where to apply the knowledge in specific contexts. Students learn how to transfer the knowledge to new situations by relating these situations to the

setting in which the concept was learned. Collins also stated that situational learning fosters innovative and creative thinking on the part of the student. Students learn to be flexible in applying their knowledge to new situations. Context-embedded learning allows students to see the implications of what they have learned, and to see this knowledge used in different settings. The use of the knowledge gained in a classroom is more difficult for students to apply than knowledge gained in a concrete experience. Learning skills in the context in which they will be applied is internalized much more effectively than when the skill is presented to the student in an abstract form.

Collins (1988) also stated that the SLT uses modeling and explaining. "Modeling is showing how a process unfolds and explaining involves giving reasons why it happens that way. It is the showing and telling that is so characteristic of apprenticeship" (p. 4). Coaching, another SLT strategy, provides help directed at real difficulties, provides help at critical times, provides as much help as needed, and allows the student to see the process from a different perspective (Collins, 1988). The SLT also incorporates reflection on performance into this technique, in which the students reflect on what they did, compare their performance to others, characterize strategies, and form abstracts comparing different approaches (Collins, 1988). The final component of the SLT is articulation, which refers to the methods used to force the students to explain and think about what they are doing (Collins, 1988).

The traditional teacher preparation program incorporates at least two semesters of hands-on classroom experience for prospective teachers. In the fall semester, students are enrolled in a pre-service program which gives them credit for time spent in a K-12 classroom, working with and observing a certified teacher. In addition to the pre-service component, these students also participate in one semester of student teaching (Texas A&M University-Corpus Christi, 2012).

The components of modeling, explaining, coaching, reflection, and articulation are incorporated into the student teaching component of traditional teacher certification programs, and provide aspiring teachers with a guided, hands-on experience that is lacking in some alternative teacher preparation programs.

Other theoretical frameworks considered for the study were Kolb's Experiential Learning Theory, Mezirow's Transformative Learning Theory, and Glickman's Theory of Developmental Supervision. In Kolb's Experiential Learning Theory, learning is described as a four-step cycle based on the relationship between the concrete-abstract continuum (how individuals gather information) and the reflective-active continuum (how individuals process the information they gather) (Kolb, 1984). Learners move through four distinct modes: the concrete experience mode, the reflective observation mode, the abstract conceptualization mode, and the active experimentation mode. The theory is based on experiences and active participation in learning and the learner's interaction with the environment (Kolb, 1984).

In Transformative Learning Theory, learning is the process of affecting change in a frame of reference, which is a structure of assumptions through which we understand our experiences. Problem solving and learning can be separated into four categories: instrumental, in which the learner manipulates the environment or other people; impressionistic, in which the learner enhances one's impression on others; normative, in which learning is oriented to common values and behavioral entitlements; and communicative, in which learners understand the meaning of what is being communicated (Mezirow, 1997).

In Glickman's Theory of Developmental Supervision, three phases of supervision are identified. In Phase 1, the supervisor diagnoses the teacher in the areas of developmental levels, expertise, commitment and situation, and chooses the appropriate interpersonal approach. In

Phase 2, the supervisor uses the selected approach to assist the teacher. In Phase 3, the supervisor's control is varied according to the evidence of the teacher's ability to assume more control (Glickman, Gordon, & Ross-Gordon, 1998).

Although Kolb's Experiential Learning Theory and Mezirow's Transformative Learning Theory share some similarities with Collin's Situated Learning Theory in the areas of concrete and abstract experiences, reflection, and observation, neither of these theories include the components of coaching and modeling, which are highly applicable to the student teaching aspect of teacher certification programs. Glickman's Theory of Developmental Supervision does include varying levels of coaching and modeling within the Diagnostic, Tactical, and Strategic Phases; however, it reflects more of a supervisor-employee relationship, whereas the Situated Learning Theory reflects a teacher-student relationship as exhibited in the student teacher component of a university teacher preparation program. The Situated Learning Theory was chosen because it includes the components of coaching and modeling in addition to the components of concrete and abstract experiences, reflection, and observation. An extended period of coaching and modeling are key components of the student teaching curriculum which is incorporated into the traditional teacher preparation program.

Purpose of the Study

The purpose of the study was to examine the impact of teacher preparation program on academic achievement of eighth grade students. The eighth grade was chosen because the standardized state assessment in this grade level provides the most thorough coverage of core content areas, enabling a comprehensive examination of the potential influence of teacher preparation. The study was guided by the following research questions:

1. Is there a difference between the traditional and alternative teacher preparation

program on the basis of achievement in mathematics among eighth grade students?

2. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in reading among eighth grade students?

3. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in science among eighth grade students?

4. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in social studies among eighth grade students?

Operational Definitions

For the purpose of the study, the following operational definitions were adopted:

Traditional teacher preparation program was defined as completion of a four year undergraduate teacher preparation program at an accredited university culminating in a bachelor's degree in elementary education, secondary education, or interdisciplinary studies plus a teaching certificate upon mastery of appropriate state certification tests.

Alternative teacher preparation program was defined as the issue of a teaching certificate, upon mastery of appropriate state certification tests, to a person who already holds a bachelor's degree in any subject upon completion of the requirements of the alternative teacher preparation and certification program.

Achievement in mathematics was measured by the proportion of correct answers to questions in each of the following State of Texas Assessments of Academic Readiness (STARR) categories: 1) Numbers, operations, and quantitative reasoning; 2) Patterns, relationships, and algebraic reasoning; 3) Geometry and spatial reasoning; 4) Measurement; and 5) Probability and statistics.

Achievement in reading was measured by the proportion of correct answers to questions

in each of the following STARR categories: 1) Understanding and analysis across genres; 2) Understanding and analysis of literary texts; and 3) Understanding and analysis of informational texts.

Achievement in science was measured by the proportion of correct answers to questions in each of the following STARR categories: 1) Matter and energy; 2) Force, motion, and energy; 3) Earth and space; and 4) Organisms and environment.

Achievement in social studies was measured by the proportion of correct answers to questions in each of the following STARR categories: 1) History; 2) Geography and culture; 3) Government and citizenship; and 4) Economics, science, technology and society.

Delimitations, Limitations, and Assumptions

The study was delimited to outcome measures of achievement in mathematics, reading, science, and social studies among eighth graders in one school district. The study was delimited to 8th graders who had enrolled in eighth grade mathematics, reading (language arts), science, and social studies classes in 2011-12 school year, and for whom all four core content area teachers had been either traditionally or alternatively prepared. Due to non-probability nature of the sampling, external validity was limited to study participants. Due to non-experimental nature of the study, no causal inferences were drawn. It was assumed the data provided to the researcher by the school district and the TEA were accurate.

Significance of the Study

With an increasing number of teachers becoming certified through alternative certification programs, the quality and effectiveness of teachers produced by these programs become more and more vital, with students' standardized test scores as one of the main factors in the academic accountability of a school or district (Feistritzer, 2005). The emphasis placed on a

school or district's state rating has far-reaching implications, up to and including state takeover and loss of funding (TEA, 2012). Baines and Stanley (2004) stated that "because test performance has become the sole criteria for success, other measures such as student motivation, teacher satisfaction, and preparation for college are rarely mentioned in discussions of high-stakes accountability" (p. 9). Due to the critical role played by standardized test scores, outcomes of this study may have significant bearing on components of alternative teacher certification in the state of Texas, and may affect the hiring practices of school districts. As the school district in this study does not track teachers' route to certification, outcomes of the study may have potentially valuable insights into teacher applicants' selection for employment and may have an eventual impact on this districts' standardized test scores and accountability ratings.

Chapter II

Review of Literature

Introduction

Chapter II provides a systematic examination of the literature and research related to teacher certification and standardized testing. The purpose of the study was to compare the State of Texas Assessment of Academic Readiness (STAAR) reading, mathematics, science, and social studies objective test scores of eighth grade students with a teacher of record who received his or her teaching certificate through a traditional teacher preparation program to objective test scores of eighth grade students with a teacher of record who received his or her certification through an alternative teacher preparation program. The chapter is organized into five major categories: 1) No Child Left Behind, 2) Comparison of Teacher Preparation Programs, 3) Theoretical Framework, 4) The History of Standardized Testing in Texas, and 5) Summary.

No Child Left Behind

On January 8, 2002, President George W. Bush signed into law a re-authorization of the Elementary and Secondary Education Act, the No Child Left Behind (NCLB) Act. The purpose of the Act was to ensure that all children had a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments, by addressing the areas of accountability, funding, instruction, and teacher quality (NCLB, 2001).

Dee and Jacob (2011) stated that the NCLB Act is "arguably the most far-reaching education policy initiative in the United States over the last four decades" (p. 418). This legislation drastically increased the federal government's authority over the nation's more than 90,000 public schools. The qualifying attributes of this legislation required states to perform annual student assessments related to state academic standards to identify schools failing to make

adequate yearly progress toward the goal of having all students achieve a proficient rating in reading and mathematics by the 2013–2014 school year; federal sanctions and rewards would be enforced based on each school's Adequate Yearly Progress status (NCLB, 2001).

Section 6319(a)(2) and Section 200.55(b) of the NCLB Act require that each state educational agency receiving Title I funds is required to develop a plan to ensure that all teachers teaching in core academic subjects within the state are highly qualified by no later than the end of the 2005-2006 school year (NCLB, 2001). In this era of high standards and high expectations, having a highly qualified teacher has never been more important (NCLB, 2001). The NCLB Act (2001) stated that to be deemed highly qualified, teachers must have: 1) a bachelor's degree, 2) full state certification or licensure, and 3) prove that they know each subject they teach. The NCLB Act also allows states to develop an additional way for current teachers to demonstrate subject-matter competency and meet highly qualified teacher requirements. Proof may "consist of a combination of teaching experience, professional development, and knowledge in the subject garnered over time in the profession" (NCLB, 2001).

The NCLB Act substantially increases the testing requirements for states and sets demanding accountability standards for schools, districts, and states with measurable AYP objectives for all students and subgroups of students defined by socioeconomic background, race–ethnicity, English language proficiency, and disability (Linn, Baker, & Betebenner, 2002). The Act required that all students be assessed academically in mathematics and reading. States were tasked with improving and strengthening accountability, teaching, and learning by using state assessment systems designed to ensure that students are meeting challenging state academic achievement and content standards and increasing achievement overall, but especially for the disadvantaged (NCLB, 2001).

The NCLB Act added new federal requirements to existing local and state assessment programs. The act required that state systems incorporate seven components, namely, academic content standards, academic achievement standards, statewide assessment system, technical quality, alignment, inclusion, and reporting (Palmer and Barley, 2008). Baines (2010) stated that "the No Child Left Behind Act, whose purported purpose was to ensure that all students get highly qualified teachers, has had an unintentionally devastating effect of the quality of teacher preparation" (p. 152). However, well-intentioned the requirement of highly qualified teachers, Baines (2010) compared the disintegration of teacher preparation programs in the United States to the recent meltdown of American financial institutions (p. 152).

The implementation of the NCLB Act created an increased need for highly qualified teachers across the United States. For students in Texas, Palmer and Rangel (2011) noted that the effects of the NCLB Act, when compounded with Texas' high-stakes accountability system, created unique issues for students in Texas who are English Language Learners. Teachers of these students must teach not only the content, but also develop students' second language. Imazeki and Reschovsky (2004) noted that 1) Texas had a high-stakes accountability and standardized state testing system in place since the 1990s; and 2) Texas' federal funding for education continued to decline, which suggested that the changes mandated by the NCLB Act were seriously under-funded.

Comparison of Teacher Preparation Programs

Prior to the implementation of the NCLB Act, the majority of classroom teachers obtained their teaching certificates through the completion of a 4-year undergraduate degree at a college or university (Darling-Hammond & Sykes, 2003). The implementation of the NCLB Act increased the demand for certified teachers in classrooms across the nation. Due to the

requirement of having a highly qualified teacher in every classroom, the graduation rate of new teachers from traditional university-based teacher certification programs was soon unable to keep up with demand. Alternative teacher certification programs were originally developed as a provisional measure to fill a vacancy with an unqualified individual when no certified teacher could be found; however, these programs have since become a way to meet this demand (Baines, 2010).

In the last decade, the majority of individuals entered teaching in the traditional fashion with formal preparation from an undergraduate or graduate teacher-education program, but in recent years there has been a shift, as more and more new teachers come through alternative pathways where the rigor of the preparation ranges from excellent to nearly nonexistent (Darling-Hammond, & Baratz-Snowden, 2007). These authors also noted that skill levels of new teachers entering U.S. schools show wide variations in prior skills and experiences and also variations in their preparation programs. For instance, more and more new teachers are the product of an alternative program who have received varying degrees of preparation ranging from a few weeks to more than a year. Darling-Hammond (2006) wrote that new teachers who have applied for and received an emergency certification often have no preparation before entering the classroom to teach. In addition, new teachers hired to fill vacancies in low income urban or rural areas often have not been given much, if any, basic knowledge about students, curricular programs, or the schools to which they are assigned. The rigor of some certification programs and clinical preparation do not meet standards which would help these new teachers to be successful (Darling-Hammond, 2006).

The most significant difference between university and alternative teacher certification preparation programs noted in the review of the literature was the amount of time the teacher

candidate was required to spend in the classroom, acquiring experience and applying new knowledge to real world situations. Greiner and Smith (2006) found that student teaching was an important part of pre-service teacher preparation (p. 654), while Baines et al. (2001) wrote that "field experience is a crucial component of a teacher preparation program" (p. 34).

The traditional university teacher preparation program includes one full semester of student teaching, which is defined by the Texas Administrative Code, Title 19, Part 7, Chapter 228, Rule § 228.2, as a 12-week full-day teaching practicum in a program provided by an accredited university at a public school accredited by the TEA or a TEA-recognized private school that may lead to completion of a standard certificate (TAC, 2013). However, Darling-Hammond (2010) reported that education policies brought about by the NCLB Act had produced alternative certification programs that admitted candidates before they had completed, or even begun, formal teacher preparation. Many alternative programs provide minimal summer training before teacher candidates begin teaching, which leads to a sink-or-swim experience for the new teacher (Darling-Hammond, 2008b).

The importance of teacher preparation is twofold; that is, it has a direct impact on the effectiveness of new teachers and increases retention of new teachers, allowing them to develop into strong and effective instructors. Teacher attrition rates are significantly lower for teachers who have had more pre-teaching preparation; within 5 years, 49% of uncertified teachers left the profession as opposed to 14% of those who were certified (Darling-Hammond, 2010). In this study, Darling-Hammond also noted that other studies have shown that new teachers who did not have adequate student teaching or coursework left teaching after their first year at almost double the rate of first year teachers who had been adequately prepared through field experience and coursework (p. 37). Wayman, Foster, Mantle-Bromley, and Wilson (2003) conducted a study to

identify and compare the concerns of first year teachers who were alternatively certified with those first year teachers who had obtained their teacher certification through a traditional university program and found that one of the main areas of difference in the two programs was the amount of pedagogical preparation, which leads the authors to write that they "believe these results add to the current research on alternative licensure demanding more attention be given to the potential lack of preparation provided teachers in alternative programs" (p. 38-39).

Kane et al. (2007) studied teacher effectiveness and found no difference between alternatively and traditionally certified teachers in students' mathematics achievement. However, the authors also found that beginning teachers were less effective than more experienced teachers regardless of how they earned their teaching certificates. In addition, they found that by the third year of teaching, the effectiveness of teachers was equivalent, regardless of the preparation program.

In a study conducted by Justice, Greiner, and Anderson (2003), teachers who received their certification through an alternative or emergency certification program felt under-prepared for their first year of teaching, while teachers who received their certification through a university program felt better prepared for the classroom. Alternatively certified teachers were also more likely to leave the teaching profession than did their university certified counterparts. The absence of a student teaching component was identified as one of the main causes of underprepared first year classroom teachers (Justice et al., 2003).

One of the most important factors in raising student achievement is a highly qualified teacher (Darling-Hammond, 2007). Research shows that the teacher's subject-matter knowledge with a deep understanding of content is greatly associated with student learning (NCLB, 2001).

Analysts consistently find that the most inequitably distributed resource, and the one most predictive of student achievement, is the quality of teachers (Darling-Hammond, 2008a).

Darling-Hammond (2007) also pointed out that the United States' underinvestment in education is a major factor in the fact that we continue to rank below other industrialized nations in educational achievement. Countries in the top tier of international educational rankings achieve these high levels due to their massive investments in teacher education by providing high-quality graduate level teacher education, subsidizing teacher candidates, and providing funding to schools in order to provide coaching, seminars, classroom visits, and joint planning time for all teachers. Teacher salaries are also comparable to those of other professions.

Alternative certification programs vary widely in requirements; however, all alternative certification programs require that the candidates hold a bachelor's degree and to enroll in an alternative teacher preparation program. Baines et al. (2001) compared a typical university program and an alternative certification program in Texas for an English teaching certificate. The typical university program required a significantly greater amount of coursework, up to 1,000 hours of field experience, and a full semester of student teaching as well as more rigorous entrance requirements. Help during the first year of teaching in the university program was provided by a cooperating teacher, university field experience supervisor, and seminar professor; for the alternative program, the new teacher was dependent upon a mentor who was a fellow full time teacher (p. 35). Suell and Piotrowski (2006) noted the wide variations in alternative certification programs in their structure and content. The authors also stated that most alternative programs require that the prospective teacher take and pass their state's licensing exam, and participate in varying amounts of coursework and training while working in the classroom as a teacher.

While alternative certification programs have served the need of supplying our schools with certified teachers, the wide variations in program requirements have led to inconsistent performances from teachers who have taken this route to certification. Increasingly, alternatively certified teachers are employed to fill teaching positions in traditionally hard to fill areas such as lower socioeconomic areas or classrooms with challenging students with special needs. However, this practice may staff these schools and classrooms with underprepared new teachers (Carter & Keiler, 2009). Darling-Hammond (2007) noted that over one million of the neediest students in the United States, English language learners and students with disabilities, are served by underprepared and inexperienced teachers; while at the other end of the spectrum, affluent students are taught by teachers who are better prepared. This discrepancy further widens the achievement gap between these two groups of students. Carter and Keiler (2009) stated that due to “growing pressure for ‘highly qualified’ teachers under the NCLB Act, alternative routes to certification have become a significant source of new teachers for hard-to-staff urban schools” (p. 438).

Prior to the implementation of the NCLB Act, Johnston (1999) noted that when teachers are certified in the subject they teach, Texas students perform better on standardized state assessments. This has a direct bearing on test results in grades 3-8 and grade 10 as these standardized test scores are the basis of accountability ratings for schools and school districts. Data from the Texas Education Agency show that since fiscal year 2004-2005, alternative teacher programs have produced the largest number of certified teachers (TEA, 2012). The Texas Administrative Code defines an alternative certification program as "an approved educator preparation program, delivered by entities described in §228.20(a) of this title (relating to Governance of Educator Preparation Programs), specifically designed as an alternative to a

traditional undergraduate certification program, for individuals already holding at least a baccalaureate degree" (TAC, 2013).

Darling-Hammond, Holtzman, Gatlin, and Heilig (2005) conducted a study in Texas that examined how teacher preparation and certification influence teacher effectiveness for both Teach for America and other teachers. The study found that alternatively certified teachers were generally less effective than standard certified teachers, with the exception of student achievement of Spanish speaking students in reading, which may be attributed to a large number of Hispanic candidates recruited by the alternative program.

Current research in the area of teacher preparation programs revealed differences in traditional and alternative programs in the areas of student academic achievement and program perceptions. In her doctoral dissertation, Broadway (2010) conducted a study examining the impact of teacher certification method on student achievement in one Texas school district. Findings from the study indicated a strong relationship between method of teacher certification and academic achievement in reading, English Language Arts, and mathematics for 3rd through 11th grade students of first-year teachers, with students of traditionally certified teachers outperforming students of alternatively certified teachers. In the area of 4th and 7th grade writing, there were no differences between method of teacher certification and academic achievement of students of first-year teachers. In the area of 5th, 8th, and 11th grade science, there were no differences between method of teacher certification and academic achievement of students of first-year teachers. In the area of 8th, 10th, and 11th grade social studies, there were no differences between method of teacher certification and academic achievement of students of first-year teachers.

In her doctoral dissertation, Newville (2011) conducted a study focusing on the quality of some of the components in teacher preparation programs in traditional, field based, and alternative certification programs in a large school district in northeast Texas. The researcher found that the perceptions of teacher preparation of field based and traditional certification program participants were significantly different from the perceptions of participants in alternative programs in 9 out of the 13 areas which addressed teacher preparation. In addition, teachers from the field-based and traditional programs felt that there was a difference in the depth of preparation as compared to the alternative program. Teachers in the university program reported that their professors modeled teaching behaviors, while only some teachers in the alternative program stated that professors briefly modeled for them. Teachers from the alternative program were also found to have much less experience working with student during their preparation than did teachers in the field-based and university programs.

Wallace (2011) studied the impact of teacher certification on 7th and 8th grade students on language arts scores on standardized assessments. The results showed that the 7th grade students taught by traditionally certified teachers showed significantly higher test scores than did students taught by alternatively certified teachers. There was not a significant difference in the test score of the two groups of 8th grade students.

Although much research has been done in the area of teacher certification programs, there are still several factors that have an effect on the outcome of these studies. One is the wide variation in the requirements and pre-service training of teachers in alternative certification programs. Admission requirements and program specifications in alternative certification programs fall all along the spectrum, from very few prerequisite requirements and minimal preparation to requirements and preparations that are comparable to some university-based

programs. Much of the research shows that the more hands-on experience and practice a teacher candidate receives, the more likely s/he is to be successful in the classroom. While some of the literature shows that students' standardized test scores are no different for students who are taught by alternatively certified teachers than they are for students taught by traditionally certified teachers, the majority of the research shows that students who are taught by traditionally certified teachers outperform students who are taught by teachers who have obtained their teaching certificate through an alternative program. Scores on students' academic achievement tests have also proved to be higher when their teachers have been thoroughly and comprehensively prepared to teach and have received their teaching certificates through a university-based teacher education program.

According to the Office of Texas Comptroller's Perryman Report and Texas Letter (2011), the second fastest growing metropolitan area in Texas is the South Texas area. In its online bulletin, Windows on State Government, the Office of the Texas Comptroller documents the population growth in South Texas, which continues to grow at rates exceeding Texas as a whole, and far exceeds the growth rate of the United States (Office of Texas Comptroller, 2013). South Texas serves 11.20% of the 4.7 million students in Texas, and has added almost 70,000 students since the 2001-2002 school year. Ethnicity demographics showed that in 2012, 37.60% of Texas' population was Hispanic, whereas for that same year, the population of South Texas was 82.00% Hispanic. In 2007, 39.00% of the South Texas' population under age 25 had less than a high school diploma, compared to Texas with 21.00% and the United States at 14.00%. It was noted in the bulletin that if Texas continued on the same path, a less educated workforce might lead to lower earnings and fewer skilled workers, and might force businesses and industries in Texas to search outside of the state to find qualified employees. Positive factors are

that South Texas is fast growing and ethnically diverse, trends which are expected to continue for the next 30 years. South Texas also has a younger population, which makes improvements to the educational system critical (Office of Texas Comptroller, 2013).

Several of the recent studies examined in the literature were conducted in Texas; however, this researcher noted that the geographic area of South Texas, in which this study took place, had not been thoroughly studied. Due to the demographics unique to the region of South Texas in which the study was conducted, including a large percentage of Hispanic students and a highly mobile population, the current study may provide insight which may be beneficial to schools, school districts, and students in this area. Some students come to us with content deficiencies that may or may not be compounded by language barriers. Therefore, providing all students with the most effective teachers could be a significant factor in the overall educational success.

The History of Standardized Testing in Texas

The first formal assessment to explicitly link student assessment results to curriculum statewide was the Texas Assessment of Basic Skills (TABS). In 1979, the Texas Legislature passed a bill amending the Texas Education Code to require the TEA to adopt and administer a series of criterion-referenced assessments designed to assess basic skills competencies in mathematics, reading, and writing for students in grades 3, 5, and 9 (Texas Education Agency, 2012).

In 1984, the Texas Legislature changed the wording of the Texas Education Code from “basic skills competencies” to “minimum basic skills.” The change was seen as a mandate to increase the rigor of the assessments and to add individual student sanctions related to performance on the test. The Texas Educational Assessment of Minimum Skills (TEAMS)

replaced TABS as the new state-mandated, criterion-referenced achievement test in the subjects of reading, mathematics, and writing. The TEAMS was administered to students in grades 1, 3, 5, 7, 9, and 11, with the eleventh-grade test being an exit level assessment (Texas Education Agency, 2012).

In the late 1980s, the State Board of Education directed the TEA to make a number of changes in the assessment program. These changes, which were based on revisions of the Texas Education Code and Texas Administrative Code, included an expansion of the content being measured and a greater emphasis on the assessment of problem-solving skills, with more content directly linked to the core curriculum, the Essential Elements. The new assessment program, the Texas Assessment of Academic Skills (TAAS), was implemented in 1990. The TAAS testing program reflected the desires of both the State Board of Education and the Commissioner of Education that Texas students should attain higher levels of academic achievement. The primary purpose of assessment in Texas evolved from the collection of school-level information (TABS) to assessment of curriculum-specific minimum skills (TEAMS) to school accountability for student performance (TAAS) (Texas Education Agency, 2012). In 1999, the TEA developed a new assessment program to replace TAAS. This new assessment program, the Texas Assessment of Knowledge and Skills (TAKS), was first administered to students in the 2002–2003 school year.

According to the TEA (2012), beginning in spring 2012, the State of Texas Assessments of Academic Readiness (STAAR) replaced the Texas Assessment of Knowledge and Skills (TAKS). The STAAR program at grades 3–8 assesses the same subjects and grades that were assessed by the TAKS. At high school, however, grade-specific assessments are replaced with

12 end-of-course (EOC) assessments: Algebra I, geometry, Algebra II, biology, chemistry, physics, English I, English II, English III, world geography, world history, and U.S. history.

The review of the history of standardized testing in Texas revealed that with the implementation of each new test, the scope of the test, grade levels and subjects tested, and rigor of the test has been increased. Standardized test scores, which were initially one of the components by which schools or districts were rated, have gradually become the main factor in a school or district's accountability rating. Assessment passing standard expectations have continued to become higher and more rigorous with the implementation of each test. School districts, which fail to meet the standards set by the NCLB Act and the TEA, face increasingly harsh sanctions ranging from the withholding of federal funds to the complete takeover of the district by the TEA. Districts that have consistently not met standards and whose accountability ratings and student performance have continued to deteriorate after years of monitoring and intervention by the TEA face the distinct possibility of being shut down and having their students absorbed by the neighboring districts. Thus, the critical importance of accountability ratings in general and standardized assessment scores in particular cannot be taken lightly. As the literature shows, student success on academic assessments is related to teacher qualification.

Theoretical Framework

The impact of application of knowledge gained by experience is much greater than knowledge obtained by passive methods. In a technical report for the Office of Naval Research, Collins (1988) described a theory of learning based on the apprenticeship style of modeling, learning, and coaching, known as Cognitive Apprenticeship, Situated Cognition, or the Situated Learning Theory (SLT). Collins (1988) defined the SLT as "the notion of learning knowledge and skills in contexts that reflect the way they will be used in real life. That is, situated learning

can incorporate situations from everyday life to the most theoretical endeavors" (p. 2). Brill (2001) noted that the SLT "encourages educators to immerse learners in an environment that approximates as closely as possible context in which their new ideas and behaviors will be applied" (para. 1). Cognitive apprenticeship practices are practical educational approaches that reflect a situated perspective by seeking to contextualize the learning process (Brill, 2001). Learners not only observe skills as modeled by experts, but also practice these skills and receive coaching. As mastery level increases, the learners interact with other learners, teaching and practicing the newly acquired skills.

Meyers (2011) described situated learning as "on the job training with invaluable benefits for students in teacher preparation programs" (p 143). Students who are able to practice teaching concepts in a real-life setting are better able to internalize the concepts and build on their educational knowledge. The use of strategies such as collaboration, teamwork, reflection, and critical thinking develops and reinforces these concepts.

Situated learning involves collaboration, teamwork, leadership, reflection, critical thinking, and authentic application of concepts in which learners work together as a team, participate in shared decision-making, and learn response strategies from each other (Meyers, 2011). Learning is peer-directed rather than the typical teacher to student relationship. Participants in the SLT bring their prior knowledge to each learning experience as well as application and practice of new knowledge, and use this knowledge to solve unexpected problems and situations. Reflection and critical thinking are essential elements in the SLT. Learners reflect on their own learning and how they would transfer and apply new knowledge to unique situations. Information is presented in a meaningful context so that the learner understands the relevance of the learning goals, and skills are taught in natural context and

environments. The role of the instructor also differs from traditional classroom instruction, and requires instructors to adopt different teaching strategies and methods of content presentation (Meyers, 2011).

Brill (2001) made the observation that "learning is an act of creation that occurs in partnership with others, and that real-world practice make learning more relevant, useful, and transferable" (Definitions section, para. 4). Piretti (2008) wrote that in situated learning, knowledge is acquired through participating in activities rather than through formal lectures. Learning is not separate but is incorporated into authentic activities, and does not happen in isolation. The social aspect of situated learning is important in the acquisition of knowledge and the practical application of concepts involved in problem solving and reflection. Uline, Wilson, and Cordry (2004) wrote that "having pre-service teachers reflect on clinical experiences can improve the quality of significant learning; reflecting on the experience adds a critical dimension" (p. 456).

According to Meyer (2011), the situated learning model is becoming the basis for an increasing number of teacher preparation programs. This model is easily integrated into the teacher education curriculum and lends itself to the component of student teaching, which allows students to learn and practice concepts in a real life setting. Preparing new teachers by giving them opportunities to practice the teaching and learning process in this apprentice-style model will allow them to adapt these practices into their own classrooms. Uline et al. (2004) noted that "causing pre-service teachers to reflect on clinical experience can improve the quality of significant learning. In addition, acquiring feedback through reflective journals can shed light on the effectiveness of the theory-and-practice curriculum" (p. 456).

The implementation of situated learning is embodied in the concept of student teaching. Whitacre, Dias, and Esquierdo (2013) stated that "the student teaching experience is a critical component of the teacher preparation program" (p. 5). Teacher candidates are given numerous opportunities to practice and internalize concepts presented by their instructors throughout the latter portion of their certification training program. They work with their faculty advisors and sponsoring teachers in a true apprentice-type setting, applying information and knowledge gained in their programs to real-world classrooms and real students. They have the opportunity to practice new skills under the direct supervision of the classroom teacher who has volunteered to work with them. In addition, they are able to observe professionals in their chosen field, obtain feedback, and use reflective practices to gain insight and knowledge that they will be able to put into practice upon successful completion of the programs. Darling-Hammond (2008a) stated that reading about or being told what to do is not the optimal way for aspiring teachers to learn effective teaching strategies. The opportunity to observe expert practices and to be able to practice them under the guidance of professionals in the field of education is vital in developing a competent and effective cohort of new teachers who will be well prepared with the background and confidence to work with a diverse student population. Situated Learning Theory reflects a teacher-student relationship as exhibited in the student teacher component of a university teacher preparation program.

Summary

The re-authorization of the Elementary and Secondary Schools Act in 2002, the No Child Left Behind Act, once again raised the bar on high-stakes testing in the state of Texas. This Act required even more rigorous testing by adding new requirements to local and state assessments, and outlined sanctions and rewards for districts and schools based up on attainment of AYP

goals.

The NCLB Act also set the standards for a highly qualified teacher in every classroom. One of the outcomes of these new standards was the proliferation of alternative teacher certification programs, which were designed to meet the sudden demand for certified teachers. Prior to the implementation of the NCLB Act, the majority of teachers obtained teacher certification by attending a university-based undergraduate program in elementary education or secondary education with a core content major. A comparison of university and alternative certification programs showed a wide variation in the areas of the required coursework, screening of suitability to teach, program entry requirements, and support during the first year of teaching. However, the biggest differences were in the areas of field experience prior to teaching and length of student teaching experience. Collins (1988) described the Situated Learning Theory as an approach that employs the modeling, coaching, reflections on performance, and articulation of true apprenticeship. The theory involves teaching and practicing new skills and knowledge in contexts that reflect the way they will be implemented in real life. The Situated Learning Theory reflects a teacher-student relationship as exhibited in the student teacher component of a university teacher preparation program.

Since 1979, the state of Texas has used standardized assessment scores as one component in the measurement of district and state accountability. As each new assessment is implemented, the passing standards are reconfigured and raised to a more challenging level, and students, teachers, and districts are pressured to meet these standards. Schools and school districts must consider all factors that have an effect on test scores and accountability levels to be critical components of student success.

Chapter III

Method

Introduction

The purpose of the study was to examine the impact of teacher preparation program on academic achievement of eighth grade students. The eighth grade was chosen because the standardized state assessment in this grade level provides the most thorough coverage of core content areas and thus enables a comprehensive examination of the impact of teacher certification. The study was guided by the following research questions:

1. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in mathematics among eighth grade students?
2. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in reading among eighth grade students?
3. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in science among eighth grade students?
4. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in social studies among eighth grade students?

Research Design

The study employed an ex-post facto, causal-comparative design. In causal comparative research, the independent variable is not manipulated by the researcher as what is being studied has already occurred. The researcher attempts to identify relationships which may occur between the independent and dependent variables. Comparisons are made between the characteristic-present and the comparison groups, and the researcher speculates about possible causes or effects based on the dependent variable (Gall, Gall, & Borg, 2007). Ex-post facto studies are retrospective in nature because the researcher looks at the dependent variable first and

then studies the independent factor to determine a relationship. In retrospective studies, the researcher postdicts (tells backwards) antecedents or causes from known consequences or effects (Meltzoff, 2008). Research is done to explain or predict the outcome measure.

There are two preparation routes to teacher certification, namely, the traditional university undergraduate teacher certification program and the alternative teacher certification program. A typical university undergraduate teacher certification preparation program encompasses coursework in theory, pedagogy, content area, a field-based apprenticeship style of student teaching, and hands-on application of knowledge, which culminates in a bachelor's degree and teacher certification. A typical alternative teacher certification preparation program has the prospective teacher working in a classroom with as few as two weeks of training, and requires that the teacher completing a various number of online and/or face-to-face course hours, at the end of which the teacher is eligible to take state teacher certification tests.

Historically, traditional teacher preparation programs have been the primary source of teacher supply in most states. These programs are shaped by a combination of state regulations, the criteria of accreditation groups, and the choices made by individual programs and institutions. Alternative routes to certification typically allow teachers to enter the classroom by postponing or bypassing many of the criteria required by traditional teacher preparation programs. All alternative certifications require teachers to hold a bachelor's degree (Boyd et al., 2007).

In the study, there was one independent variable, teacher preparation program, with two levels: 1) traditional teacher certification preparation (characteristic-present group) and 2) alternative teacher certification preparation (comparison group). The outcome measures were the students' achievement scores on mathematics, reading, science, and social studies. The

independent variable was not manipulated by the researcher; thus, no causal inferences were drawn.

Subject Selection

The study took place in an urban district in South Texas. At the time of conducting the study, the district served over 38,000 students on 37 elementary, 11 middle school, six high school, and four special campuses. The students were 78.60% Hispanic, 14.40% White, 4.20% Black, 1.60% Asian, 0.10% Pacific Islander and 0.20% American Indian/Alaskan Native. The district employed 2,298 certified teachers, of whom, 960 and 23 had master's and doctoral degrees, respectively (Corpus Christi Independent School District, 2012). The district served approximately 2,700 eighth grade students. The study participants were 133 8th graders who 1) had enrolled in mathematics, reading (language arts), science, and social studies in 2011-12 school year and 2) all their four content area teachers (n = 62) had been identified by the TEA as either traditionally (n = 40) or alternatively (n = 22) prepared. The study was delimited to eighth grade students because this grade level provides a comprehensive inventory of core content areas which are assessed at the state level.

In mathematics, the characteristic-present group consisted of a non-probability sample of 89 students taught by traditionally certified teachers (n = 12), and the comparison group of 44 students taught by alternatively certified teachers (n = 6). In reading, the characteristic-present (6 teachers) and comparison (3 teachers) groups consisted of 92 and 41 students, respectively. In science, the characteristic-present (8 teachers) and comparison (8 teachers) groups had 61 and 72 students, respectively. In social studies, there were 96 and 37 students in the characteristic-present (11 teachers) and comparison (4 teachers) groups, respectively. Due to the non-probability nature of the sampling technique, external validity was limited to study participants.

Permission to conduct the study was obtained from the Institutional Review Board at Texas A&M University-Corpus Christi and the school district (Appendix A).

Instrumentation

In the state of Texas, a state accountability system for public education was established legislatively in 1993. The TAAS (Texas Assessment of Academic Skills) was implemented in 1994-2002 as a comprehensive assessment of the state-mandated curriculum in Texas. This was followed by the TAKS (Texas Assessment of Knowledge and Skills) from 2003-2011 (TEA, 2012). The state of Texas has been implementing a new standardized test since the 2011-2012 school year, namely, the State of Texas Assessments of Academic Readiness (STAAR). For eighth grade students, the STAAR measures academic achievement in the four core subject areas of mathematics, reading, science, and social studies to fulfill the mastery of the Texas Essential Knowledge and Skills (TEKS). For the purpose of the study, the 2011-2012 STAAR scores of eighth grade students were used.

The eighth grade STAAR mathematics test has five categories with a total of 56 items, measuring student knowledge of mathematics TEKS. The mathematics categories are listed in Table 1. The eighth grade STAAR reading test has three categories with a total of 52 items, measuring student knowledge of reading TEKS. The reading categories are listed in Table 2. The eighth grade STAAR science test has four categories with a total of 54 items, measuring student knowledge of science TEKS. The science categories are listed in Table 3. The eighth grade STAAR social studies test has four categories with a total of 52 items, measuring student knowledge of social studies TEKS. The social studies categories are listed in Table 4.

Table 1

STAAR Grade 8 Mathematics Categories

Categories	Number of Questions
Category 1: Numbers, Operations, and Quantitative Reasoning	11
Category 2: Patterns, Relationships, and Algebraic Reasoning	14
Category 3: Geometry and Spatial Reasoning	8
Category 4: Measurement	13
Category 5: Probability and Statistics	10
Total Questions on Test	56

Table 2

STAAR Grade 8 Reading Categories

Categories	Number of Questions
Category 1: Understanding and Analysis Across Genres	10
Reporting Category 2: Understanding and Analysis of Literary Texts	22
Reporting Category 3: Understanding and Analysis of Informational Texts	20
Total Questions on Test	52

Table 3

STAAR Grade 8 Science Categories

Categories	Number of Questions
Category 1: Matter and Energy	14
Category 2: Force, Motion, and Energy	12
Category 3: Earth and Space	14
Category 4: Organisms and Environment	14
Total Questions on Test	54

Table 4

STAAR Grade 8 Social Studies Categories

Categories	Number of Questions
Category 1: History	20
Category 2: Geography and Culture	12
Category 3: Government and Citizenship	12
Category 4: Economics, Science, Technology, and Society	8
Total Questions on Test	52

According to the TEA (2012), alignment between curriculum and assessment is central to the new STAAR student assessment system. The state gathered significant evidence to ensure that the tests are closely aligned to the grade-level content standards. Conducting external validity and linking studies was an integral part of the systematic and well-documented test development process (TEA, 2012). Validity of TAKS test content shows a relationship between

the tested content and the construct they were designed to measure. The TEA proposed a bridge study to facilitate evaluation of the STAAR test. Content alignment showed that there was sufficient shared content between the two assessments so that mapping the TAKS “Met Standard” performance standards onto the STAAR assessments would result in a meaningful interpretation. The empirical analyses map the TAKS “Met Standard” performance standards to the STAAR 2012 assessments, using student performance data (TEA, 2012).

Data Collection

The data were obtained from the school district and TEA. The data included raw scores for each of the STAAR categories as well as data on gender, ethnicity, socioeconomic status, at risk status, special education status, Limited English Proficiency status, migrant status, bilingual status, English as a Second Language status, and gifted and talented status, as well as teachers' preparation program. Permission to use the data for the purpose of the study was obtained (Appendix A).

Data Analysis

The data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS). The proportion of the total number of test questions answered correctly to the total number of questions in each of the STAAR categories was used to measure academic achievement in reading, mathematics, science, and social studies. Descriptive statistics were used to organize and summarize the data. A series of Fisher's Exact Probability Test was performed to compare the two groups on the basis of the categorical variables of gender, ethnicity, socioeconomic status, at risk status, special education status, Limited English Proficiency status, migrant status, bilingual status, English as a Second Language status, and gifted and talented status (Field, 2013). A series of Pearson's Product Moment Correlation

Coefficient was performed to examine simple relationships among various STAAR categories (Field, 2013). A series of multivariate analysis of variance (MANOVA) was performed to test whether there were statistically significant differences between the characteristic-present and the comparison group. The MANOVA extends the basic analysis of variance to situations in which more than one outcome variable has been measured, followed by univariate F tests for the purpose of post hoc analysis (Field, 2013). To examine the practical significance of the findings and report the effect size, Cohen's d was computed and described as .2=small, .5=medium, and .8=large (Cohen, 1988).

Chapter IV

Results

The purpose of the ex post facto causal-comparative study was to compare academic achievement of 8th grade students whose teachers earned teacher certification through a traditional teacher preparation program to the academic achievement of 8th grade students whose teachers earned teacher certification through an alternative teacher preparation program. Academic achievement was measured by mathematics, reading, science, and social studies 2011-2012 STAAR test scores. It was hypothesized that students who had traditionally prepared teachers would outperform students who had alternatively prepared teachers on the basis of the outcome measures. The study was guided by the following research questions:

1. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in mathematics among eighth grade students?
2. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in reading among eighth grade students?
3. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in science among eighth grade students?
4. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in social studies among eighth grade students?

The data were obtained from the school district and the TEA, coded, entered into the computer, and analyzed by using the Statistical Package for the Social Sciences (SPSS). The demographic data were obtained for the following variables: gender, ethnicity (Hispanic or Non-Hispanic), socio-economic status, at-risk status, special education status, limited English proficiency status, migrant status, bilingual status, English as a second language status, and

gifted/talented status. The level of significance was set, a priori, at .01 to reduce the probability of making Type I errors due to performing multiple tests.

Mathematics Results

A Profile of Subjects

The characteristic present group ($n = 89$) included 8th grade students whose mathematics teachers had been traditionally prepared and the comparison group ($n = 44$) included 8th grade students whose mathematics teachers had been alternatively prepared. The traditional group included more females (56.20%, $n = 50$) than males (43.80%, $n = 39$), while the alternative group included more males (56.80%, $n = 25$) than females (43.20%, $n = 19$). The group differences were not statistically significant, Fisher's Exact Test ($p = .20$). Ethnicity was coded as either Hispanic or non-Hispanic. The majority of the students in the traditional (93.30%, $n = 83$) and alternative (84.1%, $n = 37$) groups were Hispanic; group differences were not statistically significant, Fisher's Exact Test ($p = .12$). The majority of the students in both the traditional (87.60%, $n = 78$) and the alternative (70.50%, $n = 31$) groups were economically disadvantaged; group differences were not statistically significant, Fisher's Exact Test ($p = .03$). The majority of the students in both the traditional (62.90%, $n = 56$) and the alternative (63.60%, $n = 28$) groups were at-risk; group differences were not statistically significant, Fisher's Exact Test ($p = 1.00$). The majority of the students in the traditional (96.60%, $n = 86$) and alternative (90.90%, $n = 40$) groups were not special education; group differences were not statistically significant, Fisher's Exact Test ($p = .22$). The majority of the students in both the traditional (100.00%, $n = 89$) and alternative (97.70%, $n = 43$) groups were non-LEP; group differences were not statistically significant, Fisher's Exact Test ($p = .33$). All the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Results are summarized in

Table 5.

Table 5

A profile of Subjects, Mathematics

Demographic Characteristic	Traditional Group (<i>n</i> = 89)		Alternative Group (<i>n</i> = 44)	
	f	%	f	%
Gender ^a				
Male	39	43.80	25	56.80
Female	50	52.60	19	43.20
Ethnicity ^b				
Hispanic	83	93.30	37	84.10
Non-Hispanic	06	06.67	07	15.90
Socio-economic Status ^c				
Economically Disadvantaged	78	87.60	31	70.50
Non-Economically Disadvantaged	11	12.40	13	29.50
At Risk ^d				
At Risk	56	62.90	28	63.60
Non-At Risk	33	37.10	16	36.40
Special Education ^e				
Special Education	03	03.40	04	09.10
Non-Special Education	86	96.60	40	90.90
Limited English Proficiency (LEP) ^f				
LEP	00	00.00	01	02.30
Non-LEP	89	100.00	43	97.70
Migrant				
Non-Migrant	89	100.00	44	100.00
Bilingual				
Non-Bilingual	89	100.00	44	100.00
English Secondary Language (ESL)				
Non-ESL	89	100.00	44	100.00
Gifted and Talented (GT)				
Non-GT	89	100.00	44	100.00

^a Fisher's Exact $p = .20$

^b Fisher's Exact $p = .12$

^c Fisher's Exact $p = .03$

^d Fisher's Exact $p = 1.00$

^e Fisher's Exact $p = .22$

^f Fisher's Exact $p = .33$

The outcome measures included STAAR Reporting Categories for Mathematics, namely, Category 1: Numbers, Operations, and Quantitative Reasoning (11 items), Category 2: Patterns,

Relationships, and Algebraic Reasoning (14 items), Category 3: Geometry and Spatial Reasoning (8 items), Category 4: Measurement (13 items), and Category 5: Probability and Statistics (10 items). Achievement in mathematics was measured by the proportion of correct answers to total questions in each of the five Reporting Categories. The homogeneity of variances assumption, as tested by the Levene’s F test, was met for all outcome measures (Table 6). The means and standard deviations are summarized in Table 7.

Table 6

Homogeneity of Variances Assumption, STAAR Mathematics Achievement Measures

STAAR Reporting Category	df1	df2	Levene’s F	p
Category 1	1	131	2.55	.11
Category 2	1	131	.05	.82
Category 3	1	131	.01	.95
Category 4	1	131	.41	.52
Category 5	1	131	1.79	.18

Note: Category 1: Numbers, Operations, and Quantitative Reasoning
 Category 2: Patterns, Relationships, and Algebraic Reasoning
 Category 3: Geometry and Spatial Reasoning
 Category 4: Measurement
 Category 5: Probability and Statistics

Table 7

STAAR Mathematics Achievement Measures

STAAR Reporting Category	Traditional Group (<i>n</i> = 89)		Alternative Group (<i>n</i> = 44)	
	M*	SD	M*	SD
Category 1	.44	.19	.53	.16
Category 2	.36	.20	.40	.18
Category 3	.39	.20	.50	.21
Category 4	.35	.17	.39	.15
Category 5	.38	.18	.51	.21

*Proportion of correct answers

Note: Category 1: Numbers, Operations, and Quantitative Reasoning
 Category 2: Patterns, Relationships, and Algebraic Reasoning
 Category 3: Geometry and Spatial Reasoning
 Category 4: Measurement
 Category 5: Probability and Statistics

The mathematics Reporting Category test scores were correlated with each other, as shown in table 8, and MANOVA was used to compare the traditional and alternative groups on the basis of the group centroids.

Table 8

Correlation Matrix for STAAR Mathematics Category Scores

Factor	Mathematics Score 1	Mathematics Score 2	Mathematics Score 3	Mathematics Score 4	Mathematics Score 5
Mathematics Score 1	1.00	.50*	.38*	.43*	.34*
Mathematics Score 2		1.00	.38*	.56*	.48*
Mathematics Score 3			1.00	.45*	.54*
Mathematics Score 4				1.00	.43*
Mathematics Score 5					1.00

**p* < .01

The MANOVA showed that the group differences on the basis of the centroids were statistically significant, $F(5,127) = 4.05, p < .01$, favoring the alternative group. The post hoc analysis showed that the alternative group outperformed the traditional group in Reporting

Category 3: Geometry and Spatial Reasoning and Reporting Category 5: Probability and Statistics. The other pairwise comparisons were not statistically significant at the .01 level.

Results are summarized in Table 9.

Table 9

Post Hoc Analysis STAAR Mathematics Achievement Measures

STAAR Reporting Category	SS	df	MS	F
Category 1	.23	1	.23	6.90
Category 2	.05	1	.05	1.30
Category 3	.41	1	.41	9.94*
Category 4	.05	1	.05	1.91
Category 5	.50	1	.50	13.96*

* $p < .01$

Note: Category 1: Numbers, Operations, and Quantitative Reasoning
 Category 2: Patterns, Relationships, and Algebraic Reasoning
 Category 3: Geometry and Spatial Reasoning
 Category 4: Measurement
 Category 5: Probability and Statistics

Mean difference effect sizes, as computed by Cohen's d , were used to examine the practical significance of the findings. Results are summarized in Table 10.

Table 10

Mean Difference Effect Sizes, STAAR Mathematics Achievement Measures

STAAR Reporting Category	Mean Difference	p	Effect Size*
Category 1	.09	.01	.46
Category 2	.04	.26	.20
Category 3	.12	< .01	.55
Category 4	.04	.17	.24
Category 5	.13	< .01	.65

* .2 = small effect, .5 = medium effect, .8 = large effect

Note: Category 1: Numbers, Operations, and Quantitative Reasoning
 Category 2: Patterns, Relationships, and Algebraic Reasoning
 Category 3: Geometry and Spatial Reasoning
 Category 4: Measurement
 Category 5: Probability and Statistics

Reading Results

A Profile of Subjects

The characteristic present group ($n = 92$) included 8th grade students whose reading teachers had been traditionally prepared and the comparison group ($n = 41$) included 8th grade students whose reading teachers had been alternatively prepared. The traditional group included more females (55.40%, $n = 51$) than males (44.60%, $n = 41$), while the alternative group included more males (56.10%, $n = 23$) than females (43.90%, $n = 18$). The group differences were not statistically significant, Fisher's Exact Test ($p = .26$). Ethnicity was coded as either Hispanic or non-Hispanic. The majority of the students in the traditional (93.50%, $n = 86$) and alternative (82.90%, $n = 34$) groups were Hispanic; group differences were not statistically significant, Fisher's Exact Test ($p = .11$). The majority of the students in both the traditional (85.90%, $n = 79$) and the alternative (73.20%, $n = 30$) groups were economically disadvantaged; group differences were not statistically significant, Fisher's Exact Test ($p = .09$). The majority of the students in both the traditional (65.20%, $n = 60$) and the alternative (58.50%, $n = 24$) groups were at-risk; group differences were not statistically significant, Fisher's Exact Test ($p = .56$). The majority of the students in the traditional (95.70%, $n = 88$) and alternative (92.70%, $n = 38$) groups were not special education; group differences were not statistically significant, Fisher's Exact Test ($p = .68$). The majority of the students in both the traditional (98.90%, $n = 91$) and alternative (100.00%, $n = 41$) groups were non-LEP; group differences were not statistically significant, Fisher's Exact Test ($p = 1.00$). All the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Results are summarized in Table 11.

Table 11

A profile of Subjects, Reading

Demographic Characteristic	Traditional Group (<i>n</i> = 92)		Alternative Group (<i>n</i> = 41)	
	f	%	f	%
Gender^a				
Male	41	44.60	23	56.10
Female	51	55.40	18	43.90
Ethnicity^b				
Hispanic	86	93.50	34	82.90
Non-Hispanic	06	06.50	07	17.10
Socio-economic Status^c				
Economically Disadvantaged	79	85.90	30	73.20
Non-Economically Disadvantaged	13	14.10	11	26.80
At Risk^d				
At Risk	60	65.20	24	58.50
Non-At Risk	32	34.80	17	41.50
Special Education^e				
Special Education	04	04.30	03	07.30
Non-Special Education	88	95.70	38	92.70
Limited English Proficiency (LEP)^f				
LEP	01	01.10	00	00.00
Non-LEP	91	98.90	41	100.00
Migrant				
Non-Migrant	92	100.00	41	100.00
Bilingual				
Non-Bilingual	92	100.00	41	100.00
English Secondary Language (ESL)				
Non-ESL	92	100.00	41	100.00
Gifted and Talented (GT)				
Non-GT	92	100.00	41	100.00

^a Fisher's Exact *p* = .26

^b Fisher's Exact *p* = .11

^c Fisher's Exact *p* = .09

^d Fisher's Exact *p* = .56

^e Fisher's Exact *p* = .68

^f Fisher's Exact *p* = 1.00

The outcome measures included STAAR Reporting Categories for Reading, namely, Category 1: Understanding and Analysis Across Genres (10 items), Category 2: Understanding and Analysis of Literary Texts (22 items), and Category 3: Understanding and Analysis of

Informational Texts (20 items). Achievement in reading was measured by the proportion of correct answers to total questions in each of the three Reporting Categories. The homogeneity of variances assumption, as tested by the Levene's F test, was met for all outcome measures (Table 12). The means and standard deviations are summarized in Table 13.

Table 12

Homogeneity of Variances Assumption, STAAR Reading Achievement Measures

STAAR Reporting Category	df1	df2	Levene's F	p
Category 1	1	131	.30	.58
Category 2	1	131	4.04	.05
Category 3	1	131	1.00	.32

Note: Category 1: Understanding and Analysis Across Genres
 Category 2: Understanding and Analysis of Literary Texts
 Category 3: Understanding and Analysis of Informational Texts

Table 13

STAAR Reading Achievement Measures

STAAR Reporting Category	Traditional Group (n = 92)		Alternative Group (n = 41)	
	M*	SD	M*	SD
Category 1	.58	.23	.65	.23
Category 2	.50	.18	.58	.21
Category 3	.52	.19	.57	.20

*Proportion of correct answers

Note: Category 1: Understanding and Analysis Across Genres
 Category 2: Understanding and Analysis of Literary Texts
 Category 3: Understanding and Analysis of Informational Texts

The reading Reporting Category test scores were correlated with each other, as shown in table 14, and MANOVA was used to compare the traditional and alternative groups on the basis of the group centroids.

Table 14

Correlation Matrix for STAAR Reading Category Scores

Factor	Reading Score 1	Reading Score 2	Reading Score 3
Reading Score 1	1.000	.62*	.60*
Reading Score 2		1.000	.67*
Reading Score 3			1.000

* $p < .01$

The MANOVA showed that the group differences on the basis of the centroids were not statistically significant, $F(3, 129) = 2.13, p = .10$. Mean difference effect sizes, as computed by Cohen's d , were used to examine the practical significance of the findings. Results are summarized in Table 15.

Table 15

Mean Difference Effect Sizes, STAAR Reading Achievement Measures

STAAR Reporting Category	Mean Difference	p	Effect Size*
Category 1	.06	.15	.25
Category 2	.09	.01	.44
Category 3	.05	.17	.24

* .2 = small effect, .5 = medium effect, .8 = large effect

Note: Category 1: Understanding and Analysis Across Genres
 Category 2: Understanding and Analysis of Literary Texts
 Category 3: Understanding and Analysis of Informational Texts

Science Results

A Profile of Subjects

The characteristic present group ($n = 61$) included 8th grade students whose science teachers had been traditionally prepared and the comparison group ($n = 72$) included 8th grade students whose science teachers had been alternatively prepared. The traditional group included more females (57.40%, $n = 35$) than males (42.60%, $n = 26$), while the alternative group

included more males (52.80%, $n = 38$) than females (47.20%, $n = 34$). The group differences were not statistically significant, Fisher's Exact Test ($p = .30$). Ethnicity was coded as either Hispanic or non-Hispanic. The majority of the students in the traditional (97.60%, $n = 59$) and alternative (84.7%, $n = 61$) groups were Hispanic; group differences were not statistically significant, Fisher's Exact Test ($p = .04$). The majority of the students in both the traditional (86.90%, $n = 53$) and the alternative (79.20%, $n = 57$) groups were economically disadvantaged; group differences were not statistically significant, Fisher's Exact Test ($p = .26$). The traditional group included more non-at-risk students (67.20%, $n = 41$) than at-risk students (32.80%, $n = 20$), while the alternative group included more at-risk (51.40%, $n = 37$) than non-at-risk (48.60%, $n = 35$). The group differences were not statistically significant, Fisher's Exact Test ($p = .04$). The majority of the students in the traditional (93.40%, $n = 57$) and alternative (95.80%, $n = 69$) groups were not special education; group differences were not statistically significant, Fisher's Exact Test ($p = .70$). The majority of the students in both the traditional (98.40%, $n = 60$) and alternative (100.00%, $n = 72$) groups were non-LEP; group differences were not statistically significant, Fisher's Exact Test ($p = .46$). All the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Results are summarized in Table 16.

Table 16

A profile of Subjects, Science

Demographic Characteristic	Traditional Group (<i>n</i> = 61)		Alternative Group (<i>n</i> = 72)	
	f	%	f	%
Gender^a				
Male	26	42.60	38	52.80
Female	35	57.40	34	47.20
Ethnicity^b				
Hispanic	59	96.70	61	84.70
Non-Hispanic	02	03.30	11	15.30
Socio-economic Status^c				
Economically Disadvantaged	53	86.90	57	79.20
Non-Economically Disadvantaged	08	13.10	15	20.80
At Risk^d				
At Risk	20	32.80	37	51.40
Non-At Risk	41	67.20	35	48.60
Special Education^e				
Special Education	04	06.60	03	04.20
Non-Special Education	57	93.40	69	95.80
Limited English Proficiency (LEP)^f				
LEP	01	01.60	00	00.00
Non-LEP	60	98.40	72	100.00
Migrant				
Non-Migrant	61	100.00	72	100.00
Bilingual				
Non-Bilingual	61	100.00	72	100.00
English Secondary Language (ESL)				
Non-ESL	61	100.00	72	100.00
Gifted and Talented (GT)				
Non-GT	61	100.00	72	100.00

^a Fisher's Exact *p* = .30

^b Fisher's Exact *p* = .04

^c Fisher's Exact *p* = .26

^d Fisher's Exact *p* = .04

^e Fisher's Exact *p* = .70

^f Fisher's Exact *p* = .46

The outcome measures included STAAR Reporting Categories for Science, namely, Category 1: Matter and Energy (14 items), Category 2: Force, Motion and Energy (12 items), Category 3: Earth and Space (14 items), and Category 4: Organisms and Environment (14 items).

Achievement in science was measured by the proportion of correct answers to total questions in each of the four Reporting Categories. The homogeneity of variances assumption, as tested by the Levene’s F test, was met for all outcome measures (Table 17). The means and standard deviations are summarized in Table 18.

Table 17

Homogeneity of Variances Assumption, STAAR Science Achievement Measures

STAAR Reporting Category	df1	df2	Levene’s F	p
Category 1	1	131	.47	.49
Category 2	1	131	.01	.93
Category 3	1	131	.13	.72
Category 4	1	131	.36	.55

Note: Category 1: Matter and Energy
 Category 2: Force, Motion and Energy
 Category 3: Earth and Space
 Category 4: Organisms and Environment

Table 18

STAAR Science Achievement Measures

STAAR Reporting Category	Traditional Group (n = 61)		Alternative Group (n = 72)	
	M*	SD	M*	SD
Category 1	.32	.16	.42	.17
Category 2	.42	.18	.45	.18
Category 3	.45	.18	.49	.20
Category 4	.50	.17	.49	.18

*Proportion of correct answers

Note: Category 1: Matter and Energy
 Category 2: Force, Motion and Energy
 Category 3: Earth and Space
 Category 4: Organisms and Environment

The science Reporting Category test scores were correlated with each other, as shown in

table 19, and MANOVA was used to compare the traditional and alternative groups on the basis of the group centroids.

Table 19

Correlation Matrix for STAAR Science Category Scores

Factor	Science Score 1	Science Score 2	Science Score 3	Science Score 4
Science Score 1	1.00	.41*	.48*	.39*
Science Score 2		1.00	.53*	.34*
Science Score 3			1.00	.43*
Science Score 4				1.00

* $p < .01$

The MANOVA showed that the group differences on the basis of the centroids were statistically significant, $F(4,128) = 3.74$, $p < .01$, favoring the alternative group. The post hoc analysis showed that the alternative group outperformed the traditional group in Reporting Category 1: Matter and Energy. The other pairwise comparisons were not statistically significant at the .01 level. Results are summarized in Table 20.

Table 20

Post Hoc Analysis STAAR Science Achievement Measures

STAAR Reporting Category	SS	df	MS	F
Category 1	.31	1	.31	11.50*
Category 2	.03	1	.03	1.08
Category 3	.04	1	.04	1.18
Category 4	.01	1	.01	.14

* $p < .01$

Note: Category 1: Matter and Energy
 Category 2: Force, Motion and Energy
 Category 3: Earth and Space
 Category 4: Organisms and Environment

Mean difference effect sizes, as computed by Cohen's d , were used to examine the practical significance of the findings. Results are summarized in Table 21.

Table 21

Mean Difference Effect Sizes, STAAR Science Achievement Measures

STAAR Reporting Category	Mean Difference	p	Effect Size*
Category 1	.10	< .01	.60
Category 2	.03	.30	.18
Category 3	.04	.28	.19
Category 4	.01	.71	.06

* .2 = small effect, .5 = medium effect, .8 = large effect

Note: Category 1: Matter and Energy

Category 2: Force, Motion and Energy

Category 3: Earth and Space

Category 4: Organisms and Environment

Social Studies Results

A Profile of Subjects

The characteristic present group ($n = 96$) included 8th grade students whose social studies teachers had been traditionally prepared and the comparison group ($n = 37$) included 8th grade students whose social studies teachers had been alternatively prepared. The traditional group included more females (55.20%, $n = 53$) than males (44.80%, $n = 43$), while the alternative group included more males (56.80%, $n = 21$) than females (43.20%, $n = 16$). The group differences were not statistically significant, Fisher's Exact Test ($p = .25$). Ethnicity was coded as either Hispanic or non-Hispanic. The majority of the students in the traditional (93.80%, $n = 90$) and alternative (81.10%, $n = 30$) groups were Hispanic; group differences were not statistically significant, Fisher's Exact Test ($p = .05$). The majority of the students in both the traditional (87.50%, $n = 84$) and the alternative (70.30%, $n = 26$) groups were economically disadvantaged; group differences were not statistically significant, Fisher's Exact Test ($p = .04$). The traditional group included more non-at-risk students (62.50%, $n = 60$) than at-risk students (37.50%, $n = 36$), while the alternative group included more at-risk (56.80%, $n = 21$) than non-

at-risk (43.20%, $n = 16$). The group differences were not statistically significant, Fisher's Exact Test ($p = .05$). The majority of the students in the traditional (96.90%, $n = 93$) and alternative (89.20%, $n = 33$) groups were not special education; group differences were not statistically significant, Fisher's Exact Test ($p = .09$). The majority of the students in both the traditional (99.00%, $n = 95$) and alternative (100.00%, $n = 37$) groups were non-LEP; group differences were not statistically significant, Fisher's Exact Test ($p = 1.00$). All the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Results are summarized in Table 22.

The outcome measures included STAAR Reporting Categories for social studies, namely, Category 1: History (20 items), Category 2: Geography and Culture (12 items), Category 3: Government and Citizenship (12 items), and Category 4: Economics, Science, Technology, and Society (8 items). Achievement in social studies was measured by the proportion of correct answers to total questions in each of the four Reporting Categories. As can be seen in Table 23, the homogeneity of variances assumption, as tested by the Levene's F test, was not met for all outcome measures. The means and standard deviations are summarized in Table 24.

Table 22

A profile of Subjects, Social Studies

Demographic Characteristic	Traditional Group (<i>n</i> = 96)		Alternative Group (<i>n</i> = 37)	
	f	%	f	%
Gender ^a				
Male	43	44.80	21	56.80
Female	53	55.20	16	43.20
Ethnicity ^b				
Hispanic	90	93.80	30	81.10
Non-Hispanic	06	06.30	07	18.90
Socio-economic Status ^c				
Economically Disadvantaged	84	87.50	26	70.30
Non-Economically Disadvantaged	12	12.50	11	29.70
At Risk ^d				
At Risk	36	37.50	21	56.80
Non-At Risk	60	62.50	16	43.20
Special Education ^e				
Special Education	03	03.10	04	10.80
Non-Special Education	93	96.90	33	89.20
Limited English Proficiency (LEP) ^f				
LEP	01	01.00	00	00.00
Non-LEP	95	99.00	37	100.00
Migrant				
Non-Migrant	96	100.00	37	100.00
Bilingual				
Non-Bilingual	96	100.00	37	100.00
English Secondary Language (ESL)				
Non-ESL	96	100.00	37	100.00
Gifted and Talented (GT)				
Non-GT	96	100.00	37	100.00

^a Fisher's Exact *p* = .25

^b Fisher's Exact *p* = .05

^c Fisher's Exact *p* = .04

^d Fisher's Exact *p* = .05

^e Fisher's Exact *p* = .09

^f Fisher's Exact *p* = 1.00

Table 23

Homogeneity of Variances Assumption, STAAR Social Studies Achievement Measures

STAAR Reporting Category	df1	df2	Levene's F	p
Category 1	1	131	10.23	< .01
Category 2	1	131	5.37	.02
Category 3	1	131	.01	.95
Category 4	1	131	6.78	.01

Note: Category 1: History
 Category 2: Geography and Culture
 Category 3: Government and Citizenship
 Category 4: Economics, Science, Technology, and Society

Table 24

STAAR Social Studies Achievement Measures

STAAR Reporting Category	Traditional Group (n = 96)		Alternative Group (n = 37)	
	M*	SD	M*	SD
Category 1	.32	.14	.46	.20
Category 2	.39	.16	.50	.23
Category 3	.37	.16	.45	.16
Category 4	.28	.17	.50	.22

*Proportion of correct answers

Note: Category 1: History
 Category 2: Geography and Culture
 Category 3: Government and Citizenship
 Category 4: Economics, Science, Technology, and Society

The social studies Reporting Category test scores were correlated with each other, as shown in table 25, and MANOVA was used to compare the traditional and alternative groups on the basis of the group centroids.

Table 25

Correlation Matrix for STAAR Social Studies Category Scores

Factor	Social Studies Score 1	Social Studies Score 2	Social Studies Score 3	Social Studies Score 4
Social Studies Score 1	1.00	.56*	.53*	.55*
Social Studies Score 2		1.00	.28*	.43*
Social Studies Score 3			1.00	.39*
Social Studies Score 4				1.00

* $p < .01$

The MANOVA showed that the group differences on the basis of the centroids were statistically significant, $F(4,128) = 10.01, p < .01$, favoring the alternative group. The post hoc analysis showed that the alternative group outperformed the traditional group in Reporting Category 1: History, Reporting Category 2: Geography and Culture, and Reporting Category 4: Economics, Science, Technology, and Society. The other pairwise comparison was not statistically significant at the .01 level. Results are summarized in Table 26.

Table 26

Post Hoc Analysis STAAR Social Studies Achievement Measures

STAAR Reporting Category	SS	df	MS	F
Category 1	.53	1	.53	20.86*
Category 2	.34	1	.34	9.90
Category 3	.17	1	.17	6.60
Category 4	1.27	1	1.27	36.97

* $p < .01$

Note: Category 1: History
 Category 2: Geography and Culture
 Category 3: Government and Citizenship
 Category 4: Economics, Science, Technology, and Society

Mean difference effect sizes, as computed by Cohen's d , were used to examine the practical significance of the findings. Results are summarized in Table 27.

Table 27

Mean Difference Effect Sizes, STAAR Social Studies Achievement Measures

STAAR Reporting Category	Mean Difference	p	Effect Size*
Category 1	.14	< .01	.80
Category 2	.11	< .01	.55
Category 3	.08	< .05	.45
Category 4	.22	< .01	1.06

* .2 = small effect, .5 = medium effect, .8 = large effect

Note: Category 1: History

Category 2: Geography and Culture

Category 3: Government and Citizenship

Category 4: Economics, Science, Technology, and Society

As reported earlier, the homogeneity of variances assumption was not met for all outcome measures of social studies. The square roots of the original measures were computed to transform the data, which is recommended when raw data have heterogeneous variances (Field, 2009). Results remained the same; group differences were statistically significant, $F(4,128) = 8.72, p < .01$, favoring the alternative group, and post hoc analysis (Table 28) showed that the differences were due to Category 1.

Table 28

Post Hoc Analysis STAAR Social Studies Transformed Achievement Measures

STAAR Reporting Category	SS	df	MS	F
Category 1	.30	1	.30	17.87*
Category 2	.17	1	.17	8.30
Category 3	.12	1	.12	6.45
Category 4	.93	1	.93	29.49

* $p < .01$

Note: Category 1: History

Category 2: Geography and Culture

Category 3: Government and Citizenship

Category 4: Economics, Science, Technology, and Society

Summary of Results

Contrary to what had been hypothesized, analysis of the data showed that the 8th graders whose teachers earned their teacher certification through an alternative teacher preparation program performed at a higher achievement level on the majority of tested objectives in mathematics, science, and social studies than did the 8th graders whose teachers earned their teacher certification through a traditional university teacher preparation program on the basis of observed and adjusted scores for outcome measures. There were no statistically significant differences between the scores of the traditional and alternative groups in reading.

Chapter V

Summary, Conclusions, and Discussion

Introduction

"The gauge of student success, the chances for a school's survival, and the indicator of quality for a teacher preparation program have become dependent upon how good a number looks on a chart " (Baines, 2010, p. 160). The purpose of the NCLB Act, implemented in 2002, was to improve education for all children, particularly for children of color, children living in poverty, new English learners, and children with disabilities. It was intended to raise achievement and close the achievement gap by setting test-score targets for specific subgroups of students, requiring 100 percent proficiency by 2014; these targets are tied to school reconstitutions and closures, and transfer of students (Darling-Hammond, 2007).

One component of the NCLB Act was to have a "highly qualified teacher" in every classroom. Under the NCLB Act, a teacher is highly qualified in a core academic area if s/he holds a bachelor's degree, a teaching license, and demonstrates knowledge in every subject area in which she teaches. The original intent of the legislation was to have every teacher deemed highly qualified by 2006 (Eppley, 2009). The mandate of having a highly qualified teacher was a primary factor in the shortage of certified teachers which began shortly after the implementation of the NCLB Act (Ingersoll, 2003). O'Connor, et al. (2011) noted that the teacher shortage continues to create a demand for certified teachers, especially in high need areas. One of the effects of the teacher shortage has been the growth of alternative certification programs, which provide an alternate route to teaching for individuals holding a bachelor's degree (Darling-Hammond, 2000). Heilig, Cole, and Springel (2011) wrote that since 2000, alternative routes to the classroom have continually gained momentum. Questions and concerns

over the quality and rigor of these programs have risen in light of pressure and accountability demands placed on schools and school districts by state agencies, and the focus on standardized test scores and accountability ratings (Levine, 2006).

Rebell and Hunter (2004) noted that "educators know that qualified and effective teachers are the most important building blocks for improving student achievement, especially that of "at-risk" students" (p. 691). Heilig et al. (2011) pointed out that effective teachers can have a tremendous impact on student achievement. Furthermore, they noted that "education has long been a determining factor, if not the most important factor, of adult success, life stability, and earning opportunity" (p. 391). Research shows that expert teachers are the most important, and the most inequitably distributed, school resource (Darling-Hammond, 2007).

In this study, it was hypothesized that eighth grade students whose teachers had earned their teaching certification through a traditional teacher preparation program would outperform eighth grade students whose teacher had earned their teaching certificate through an alternative teacher preparation on the basis of the 2011-2012 STAAR test in the areas of mathematics, reading, science, and social studies. The research questions guiding the study were:

1. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in mathematics among eighth grade students?
2. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in reading among eighth grade students?
3. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in science among eighth grade students?
4. Is there a difference between the traditional and alternative teacher preparation program on the basis of achievement in social studies among eighth grade students?

Summary of Results

Mathematics

The characteristic-present group consisted of 89 eighth grade students whose teachers had earned their teaching certification through a traditional teacher preparation program. This group had more females (56.20%, n = 50) than males (43.80%, n = 39), and the majority were Hispanic (93.30%, n = 83), economically disadvantaged (87.60%, n = 78), and at-risk (62.90%, n = 56). The comparison group consisted of 44 eighth grade students whose teachers had earned their teaching certification through an alternative teacher preparation program. This group had more males (56.80%, n = 25) than females (43.20%, n = 19), and the majority were Hispanic (84.10%, n = 37), economically disadvantaged (70.50%, n = 31), and at-risk (63.60%, n = 28). The majority of students in both groups were not special education and non-LEP. All of the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Achievement in mathematics was measured by the proportion of correct answers to questions in each of five reporting categories. Analysis of quantitative data revealed that there were statistically significant differences between the two groups, favoring the students whose teachers had earned their teaching certification through an alternative teacher preparation program.

With respect to achievement in mathematics, the alternative group outperformed the traditional group on the basis of Category 3: Geometry and Spatial Reasoning and Category 5: Probability and Statistics. The test scores for Category 1: Numbers, Operations, and Quantitative Reasoning, Category 2: Patterns, Relationships, and Algebraic Reasoning, and Category 4: Measurement showed no statistically significant group differences.

Reading

The characteristic-present group consisted of 92 eighth grade students whose teachers

had earned their teaching certification through a traditional teacher preparation program. This group had more females (55.40%, n = 51) than males (44.60%, n = 41), and the majority were Hispanic (93.50%, n = 86), economically disadvantaged (85.90%, n = 79), and at-risk (65.20%, n = 60). The comparison group consisted of 41 eighth grade students whose teachers had earned their teaching certification through an alternative teacher preparation program. This group had more males (56.10%, n = 23) than females (43.90%, n = 18), and the majority were Hispanic (82.90%, n = 34), economically disadvantaged (73.20%, n = 30), and at-risk (58.50%, n = 24). The majority of students in both groups were not special education and non-LEP. All of the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Achievement in reading was measured by the proportion of correct answers to questions in each of three reporting categories. Analysis of quantitative data revealed that there were no statistically significant differences between the two groups.

Science

The characteristic-present group consisted of 61 eighth grade students whose teachers had earned their teaching certification through a traditional teacher preparation program. This group had more females (57.40%, n = 35) than males (42.60%, n = 26), and the majority were Hispanic (97.60%, n = 59), economically disadvantaged (86.90%, n = 53), and non at-risk (62.90%, n = 56). The comparison group consisted of 72 eighth grade students whose teachers had earned their teaching certification through an alternative teacher preparation program. This group had more males (52.80%, n = 38) than females (47.20%, n = 34), and the majority were Hispanic (84.70%, n = 61), economically disadvantaged (79.20%, n = 57), and at-risk (51.40%, n = 37). The majority of students in both groups were not special education and non-LEP. All of the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented.

Achievement in science was measured by the proportion of correct answers to questions in each of four reporting categories. Analysis of quantitative data revealed that there were statistically significant differences between the two groups, favoring the students whose teachers had earned their teaching certification through an alternative teacher preparation program.

With respect to achievement in science, the alternative group outperformed the traditional group on the basis of Category 1: Matter and Energy. The test scores for Category 2: Force, Motion, and Energy, Category 3: Earth and Space, and Category 4: Organisms and Environment showed no statistically significant group differences.

Social Studies

The characteristic-present group consisted of 96 eighth grade students whose teachers had earned their teaching certification through a traditional teacher preparation program. This group had more females (55.20%, n = 53) than males (44.80%, n = 43), and the majority were Hispanic (93.80%, n = 90), economically disadvantaged (87.50%, n = 84), and non at-risk (62.50%, n = 60). The comparison group consisted of 37 eighth grade students whose teachers had earned their teaching certification through an alternative teacher preparation program. This group had more males (56.80%, n = 21) than females (43.20%, n = 16), and the majority were Hispanic (81.10%, n = 30), economically disadvantaged (70.30%, n = 26), and at-risk (56.80%, n = 21). The majority of students in both groups were not special education and non-LEP. All of the students in both groups were non-migrants, non-bilingual, non-ESL, and non-gifted/talented. Achievement in social studies was measured by the proportion of correct answers to questions in each of four reporting categories. Analysis of quantitative data revealed that there were statistically significant differences between the two groups, favoring the students whose teachers had earned their teaching certification through an alternative teacher preparation program.

With respect to social studies, the alternative group outperformed the traditional group on the basis of Category 1: History, Objective 2: Geography and Culture, and Category 4: Economics, Science, Technology, and Society. The test scores for Category 3: Government and Citizenship, showed no statistically significant group differences.

Conclusions

The reader is cautioned that due to the non-experimental nature of the study, no causal inferences were drawn. Based on the results, the study's hypothesis was found untenable. It was concluded that 8th graders in classes in which the teachers of record earned their teaching certificates through traditional teacher preparation programs did not do better than did the students whose teachers earned their certificates through alternative teacher preparation programs on academic achievement in mathematics, science, and social studies. Specifically, group differences on the basis of academic achievement in mathematics, science, and social studies were statistically significant, favoring the alternative teacher preparation group. Group differences on the basis of academic achievement in reading were not statistically significant.

Discussion

National mandates to increase student achievement took on renewed urgency after the implementation of the NCLB Act. The standards associated with the NCLB represent an unprecedented and Herculean challenge for our nation's schools, and serves as the most rigorous and exacting of standards-based strategies yet enacted for reforming schools (Simpson, Lacava, & Sampson Graner, 2004). Benchmark goals for all students in reading and mathematics were increased each year until 100 percent of elementary and secondary students were required to meet proficiency goals by 2014. Financial and organizational consequences and sanctions were outlined in the NCLB Act for schools and districts failing to meet achievement goals. These

consequences and sanctions consist of progressive steps of loss of federal funding and reorganization and closure of substandard schools and districts. Schools that perform well may receive public recognition and financial rewards but those whose students perform poorly could receive sanctions and even be subject to state takeover (Simpson et al., 2004). Berry and Herrington (2011) observed that schools and districts failing to attain these educational standards would be subjected to school-level interventions by school, district, and state administrators and if progress was not made for several years, the schools could be subject to staffing changes, restructuring, or closing.

As of 2014, student achievement on standardized accountability measures had not reached the 100% goal set by the NCLB Act. Many may wonder if the Act would ever become a reality by improving academic achievement among low-performing students in high-poverty schools (Forte, 2010). Therefore, any factor that potentially impacts student achievement takes on critical importance.

One of the unintended effects of the NCLB Act was a shortage of certified teachers. To address it, alternative teacher preparation programs were designed to meet this need by providing a means of bringing increased numbers of highly-qualified candidates into the classroom. Although the research on this controversial issue remains unclear, there are scholars and educators who have criticized alternative certification programs (Simpson et al., 2004). Darling-Hammond and Youngs (2002), two major supporters of the traditional teacher preparation program, provided empirical evidence that traditional teacher preparation programs were clearly superior to alternative preparation programs. However, these authors also noted that many of the research findings in this area had mixed outcomes. In fact, Peterson and Nadler (2009) stated that "most studies show very little, if any, connection with a teacher's classroom effectiveness

and certification status" (p. 74). Boyd et al., (2007) noted "the lack of evidence on the effect of almost any aspect of teacher preparation on the performance of students" (p. 59). Gimbert, Cristol, and Sene (2007) stated that "it is now clear from the literature that the relationship between teacher preparation and student performance is one of the most aggressively debated issues among those who study global teacher education programs and related issues" (p. 249). Many research studies conducted to determine the effect of teacher preparation program on student academic achievement have provided inconclusive or inconsistent results. The current study was conducted because there was a need to evaluate the effectiveness of teacher preparation program on student academic achievement on standardized assessments.

Once in the forefront of education, the USA now lags behind other countries in the quality of education provided to our children due to underinvestment in education. Tienken (2013) stated that U.S. eighth grade students ranked seventh in mathematics and ninth in science. Steven (2013) noted that in 2011, Singapore was ranked first in eighth grade math; in comparison, the United States was ranked ninth. Cavanaugh (2012) noted that "economists have long seen a connection between the strength of nations' education systems and their long-term economic prosperity" (p. 5). Klein and Rice (2012) stated that "measured against global standards, far too many U.S. schools are failing to teach students the academic skills and knowledge they need to compete and succeed" (p. 3).

Darling-Hammond (2008b) noted that many young American students, notably those of color or low income, do not receive even the minimum education needed to become literate or to compete in the job market. This is concerning as nearly 70% of the job market requires some form of post-secondary education or training. Darling-Hammond also noted that while the demands of our workforce have increased, there has been a decrease in the percentage of high

school graduates who receive a standard diploma, and that the number of these graduates decreases for minority students. This has caused a drain in our nation's economy instead of contributing to our national well-being.

Darling-Hammond (2008b) also wrote that "students' access to well qualified teachers can be a critical determinant of whether they succeed on the state tests often required for promotion, placement into more academically challenging classes, and graduation from high school" (p. 323). Darling-Hammond (2007) stated that "The notion that we can remain a world-class economy while under educating large portions of our population - in particular, students of color and new immigrants, who are fast becoming a majority in our public schools - is untenable" (p 42).

The goal of the study was to determine if a teacher's preparation program had an impact on student achievement on state assessments in mathematics, reading, science and social studies. Standardized testing in reading was included in the study as reading ability has been shown to affect student achievement in all academic areas tested at the eighth grade level. Nelson-Royes (2013) stated that "because reading is a fundamental skill, students who were inefficient readers suffered cumulative deficiencies across many content areas that required reading as a prerequisite skill, such as social studies, math, and science" (p. 50). Crawford, Tindal, and Stieber (2001) noted that the importance of proficient reading for successful test performance in mathematics has been well established. Fisher, Ross, and Grant (2010) stated that "the background knowledge students gained through wide reading helped them integrate information from science lectures and labs into their overall understanding" (p. 25).

Contrary to the researcher's hypothesis, the alternative group outperformed the traditional group in reporting categories for mathematics, science, and social studies. With respect to

mathematics, the alternative group outperformed the traditional group in Geometry and Spatial Reasoning and in Probability and Statistics. With respect to reading, there were no statistically significant differences between the two groups in any of the outcome measures. With respect to science, the alternative group outperformed the traditional group in Matter and Energy. With respect to social studies, the alternative group outperformed the traditional group in History, Geography and Culture, and Economics, Science, Technology, and Society. There were no statistically significant differences between the two groups on the basis of reading scores.

The literature reveals certain aspects of alternative teacher preparation programs that may make some concerned individuals believe that teachers who are prepared by such programs may be more successful in the classroom than are the teachers who have taken the traditional route. Mitchell and Romero (2010) stated that participants in alternative teacher preparation programs "tend to be older, people of color, more men, have academic degrees other than education, and have experiences in other occupations" (p. 4). The authors also noted that alternative preparation programs are quicker, less expensive, and provide superior training than do traditional programs.

Scribner and Akiba (2010) suggested that prior career experience in fields other than education, such as engineering or business, may be a factor in an alternatively certified teacher's classroom success. Teachers who enter teaching as a second career and participate in an alternative teacher preparation program may bring a wealth of prior knowledge, career and life experiences, a level of maturity, and even military experience that provide them with a practical and solid foundation and a higher level of confidence than their younger and less experienced counterparts from traditional university teacher preparation programs.

Stronge, Ward, and Grant (2011) examined factors that are instrumental in making good teachers and found that personal qualities such as affective skills, teachers who show that they care about students, and teachers who establish connections with student are likely to have

students who perform well in the classroom. Fewer classroom disruptions, better classroom management skills, and better relationships with students were also found to be related to students' higher academic performance. Ripley (2010) noted that in a study of Teach for America teachers, great teachers set high goals, assertively recruited students and their families, maintained focus, and planned and worked continuously. Great teachers also had a history of perseverance and a high level of life satisfaction.

Participants in alternative preparation programs are reported to be older than traditional college students, likely to make more money teaching than in previous jobs, and express intent to remain in the field (Sindelar, Dewey, Rosenberg, Corbett, Denslow & Lotfinia, 2012). Xu, Hannaway, and Taylor (2011) conducted a study on the Teach for America (TFA) alternative teacher preparation program and found that TFA teachers are more effective, as measured by student test performance, than traditional teachers, and suggested that TFA teachers are more effective than experienced secondary school teachers and are particularly strong in mathematics and science classes.

Implications

For the USA to maintain its position of economic power in the world's hierarchy, we must find innovative ways to prepare our students to fill the demands for a skilled and educated workforce. Autor (2010) noted several concerns in this area. In the 1950s and 1960s, the level of educational achievement rose to keep up with the rising demand for skill. However, since the late 1970s, this has not been the case, with the decline in education levels more prevalent in males than females, which has led to inequitable wages. Another significant change is the strong polarization in the job market in the USA over the last two decades. Growth in the job market has been in high-skill, high-wage occupations that require post-secondary education, such as

professional, technical, and managerial occupations. Growth in the job market has also been in low-skill, low-wage occupations that require minimal education such as food service, personal care, and protective services.

Shultz and Hanushek (2012) noted that current U.S. students are no longer competitive with students in the developed world, and that an improved education system would lead to a dramatically different future for the U.S., because educational outcomes strongly affect economic growth and the distribution of income. Holzer (2012) stated that workers with more postsecondary education and training experience lower rates of unemployment than those with less education and training. Hout (2012) wrote that "Education makes life better. People who pursue more education and achieve it make more money, live healthier lives, divorce less often, and contribute more to the functioning and civility of their communities than less educated people do" (p. 27).

Levin (2012) wrote that "the relationship between education and earnings has been measured statistically by relating educational attainments and work experience to earnings. Almost invariably, a large expected increase in earnings is associated with additional years of education" (p. 272). Autor (2010) also noted that the rising demand for a highly educated workforce in combination with a reduced supply of such workers is contributing to earning inequalities. The declining demand for middle-skill jobs is compounded by workers that do not obtain postsecondary education. He noted that, in particular, the number of males attaining higher levels of education has declined, and for males without a four-year degree, wages have remained the same or decreased over the last three decades. Among his recommendations are that more young adults be encouraged to pursue higher education, as many jobs now demand

college-educated workers; another recommendation is improvements in K-12 education that will prepare more students for postsecondary education.

Levin (2012) stated that "Higher graduation rates can be linked directly to economic participation and performance, and that high school graduates earned a substantial amount more than similar high school dropouts" (p. 274). Shultz and Hanushek (2012) wrote that the human capital produced by our K-12 school system is a key component of our economic future. Steven (2013) observed that the failure of the US educational system to educate a skilled workforce is a major cause of the loss of millions of jobs in the country and wrote that the outsourcing of the US jobs to other countries is due to the search for educated workers and not the search for cheap labor.

Carnivale, Smith, and Strohl (2010) stated that entry-level requirements for today's jobs are almost all higher than such requirements in the past, and that the demand for workers with a postsecondary education will continue to grow. They also stated that by 2018, 30 million new jobs would require at least some college education, and that the USA would produce 3 million less college educated workers than would be needed. The authors predicted that by 2018, 63% of all new hires would require college or postsecondary preparation. Therefore, the effectiveness of the teachers who prepare these students for postsecondary education is critical.

Cibulka (2009) stated that "the issue is not alternative certification versus traditional routes. Multiple pathways to becoming a teacher, both within and outside of higher education institutions, should be applauded if they are of high quality" (p. 8). Daggett (2005) wrote that "the NCLB Act has required every district, school, superintendent, principal, and teacher in this country to look at new and different ways of educating their students if they are to be successful in raising academic standards and student performance" (p. 2). This researcher suggests that it

would not be unreasonable to apply the same concept when considering how we train our teachers.

Recommendations for Further Research

Further research studies in this area that include a qualitative component may provide insight from teachers in the respective teacher preparation programs regarding individual experiences in each program as well as positive and negative perspectives. Feedback from participants in a qualitative component may be valuable for program administrators in both the traditional and alternative teacher preparation programs. Including students' perspectives in a qualitative component may also provide insight into best practices which may or may not be currently incorporated into the respective teacher preparation programs. A longitudinal study to document and explore the progress of new teachers from each preparation program may be helpful to determine the amount and type of support that should be provided, both from the teacher preparation programs themselves and from the school districts who may employ these teachers.

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Appendix A



Office of Assessment and Accountability

CORPUS CHRISTI INDEPENDENT SCHOOL DISTRICT

P. O. Box 110 • Corpus Christi, Texas 78403-0110
3130 Highland Avenue • Corpus Christi, Texas 78405
Office: 361-844-0396 • Fax: 361-886-9371
Website: www.ccisd.us

September 9, 2012

Barbara Brinkman
4802 Marie Street
Corpus Christi, Texas 78411

Dear Ms. Brinkman:

Formal permission is granted to you to conduct your research entitled *The Impact of Teacher Certification on the Academic Achievement of Eighth Grade Students in a South Texas School District* in the Corpus Christi Independent School District (District). This permission indicates that your proposal meets all research/evaluation and FERPA standards.

It is a pleasure to welcome you to the District as you begin this significant research initiative. At the conclusion of your work, please provide my office with a copy of the results.

Should you need additional assistance during your study or have changes in the proposal, please contact me at 361-844-0396, ext. 44253 and/or via e-mail at James.Gold@ccisd.us.

Sincerely,

A handwritten signature in black ink that reads 'James H. Gold'.

James H. Gold
Executive Director

JHG/mdf

cc: Mr. D. Scott Elliff
Bernadine Cervantes