

12-2013

The Effectiveness of Alternative Certification Teachers Versus Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in 9th Grade Algebra I: What Leaders Should Know

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THE EFFECTIVENESS OF ALTERNATIVE CERTIFICATION TEACHERS VERSUS
TRADITIONALLY TRAINED TEACHERS IN THREE SCHOOL DISTRICTS IN TEXAS ON
HISPANIC STUDENTS' SCORES
IN 9TH GRADE ALGEBRA I: WHAT LEADERS SHOULD KNOW

A Dissertation

by

ANYSIA R. TREVIÑO

Submitted to the Graduate School of the
University of Texas- Pan American
In partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

December 2013

Major Subject: Educational Leadership

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December 2013

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ABSTRACT

Treviño, Anysia R., The Effectiveness of Alternative Certification Teachers Versus Traditionally Trained Teachers on Hispanic Students' Scores in 9th grade Algebra I: What Leaders Should Know. Doctor of Education (Ed. D), December, 2013, 93 pp., 12 tables, references, 68 titles, appendices, 5.

The purpose of this quantitative study is to measure the effectiveness of alternative certification teachers versus traditionally trained teachers of 9th grade Hispanic students enrolled in Algebra I. The dependent variable, teacher effectiveness, will be measured by the students' raw score on the Texas Algebra I End Of Course (EOC) Assessment. The factors examined in this study were 1) teachers trained through a traditional teacher certification program and 2) teachers trained through an alternative certification program. The researcher examined the identified group of teachers' attendance as well as years of experience to determine if there is a correlation between set variables and student performance on Algebra I EOC. The null hypothesis for the present study were tested with an F distribution at the .05 level of significance. The researcher used a descriptive research design.

Forty teachers who have zero to twenty-four years of experience were selected from three school districts. Twenty teachers from alternative certification programs and twenty teachers from traditional teacher programs were selected from each of the three districts. The researcher used the students' raw scores on the Texas Algebra I End of Course (EOC) assessment to measure teacher effectiveness.

The review of literature on the Conceptual Framework for Study of Teacher Preparation Models identified the conceptual framework for this study. This framework was based on a correlation between the pre-training characteristics of teachers and their preparation program to the classroom practices used and student performance.

DEDICATION

This dissertation is dedicated to my family who have stood behind me and supported me throughout this entire process.

I would like to thank God for providing me the knowledge, dedication and motivation to see this journey through.

To my husband Jaime who provided me the encouragement when I was down. To my three beautiful children, Jamie, Anysha, and Christian, I pray that you always use your talents and strive to do better than you ever imagined.

And, last but not least my parents, Jose Jr. and Maria Ramirez, for your constant love, support, faith and prayers. I would not be here without you all.

ACKNOWLEDGMENTS

It is with profound gratitude that I acknowledge and thank Dr. Rosalinda Hernandez, chair of my dissertation committee for her guidance and support. Your support and encouragement carried me through.

I acknowledge and thank my committee member Dr. Maria Roberts. Your enthusiasm for research encouraged me and certainly challenged me to strive for more. You were there to lend a hand when the going got tough.

I acknowledge and thank my committee member, Dr. Miguel de los Santos for your words of wisdom. Your experience and passion are second to none. I appreciate you providing real life experiences.

I acknowledge and thank my committee member, Dr. Velma Menchaca. You are a role model who expected excellence. I am grateful for your high expectations.

I would like to thank my niece, Dr. Monica Alaniz, for supporting me every step of the way. I am so appreciative of your love and support.

I would like to thank my immediate supervisor, Dr. Gisela Saenz, for sharing her knowledge with me and allowing me to bounce off ideas from her when I needed too. Thank you for your support and encouragement.

I would sincerely like to thank the three superintendents that allowed me to collect data from their perspective school districts: Dr. Alda T. Benavides, Dr. Daniel King, and Dr. Virginia Richter. I certainly would not have a study without your support.

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CHAPTER I

INTRODUCTION

This investigation examined the effectiveness of teachers trained in an alternative certification program versus teachers trained in a traditional certification program. The research focused on forty teachers who teach 9th Grade Hispanic students in three Texas school districts. Forty teachers – 20 certified through a College/University traditional certification program and 20 certified through an Alternative Certification Program – were identified as participants. The remainder of this introduction details the following components: statement of the problem, need for the study, purpose of the study, limitations, significance of the study, definition of terms, conceptual framework and research questions to be investigated.

Statement of the Problem

In order for Texas students to graduate from high school, students must meet requirements in one of three graduation plans: Minimum, Recommended, or Distinguished. Algebra I is a required course under all three graduation plans as outlined in House Bill 3 of the Texas Administrative Code. Students must receive Algebra I credit for completion of the course as well as pass the EOC assessment to meet graduation requirements. A review of the number of failures in the Algebra I End of Course (EOC) exam reveals that the number of Hispanic students who need assistance in this content area is alarming. In 1999, the Texas Education Agency (TEA) did not require school districts to administer an EOC assessment for Algebra I. School districts that elected to assess their students in Algebra I EOC did so voluntarily. The results

indicated that only 33% of Hispanic students who took the Algebra I EOC passed the assessment in comparison to 58% of White students. Data from that study also revealed fewer Hispanic students passed the Algebra I course. The percentage of students receiving a course grade of 70 or higher, by subpopulation, was as follows: Whites 86%, African American 73%, and Hispanic 72%.

Commencing in the Spring of 2012, ninth grade students enrolled in Algebra I throughout Texas were required to undertake an Algebra I EOC assessment as specified in Texas Administrative Code Chapter 19. State data from the Spring 2012 administration of the Algebra I EOC assessment, as depicted in the STAAR Statewide Summary Report, indicates 21% percent of Hispanic students failed the assessment as opposed to 10% percent of White students. Furthermore, scale scores from the Spring 2012 administration showed a discrepancy of 217 points between the average scale score for Hispanics students (3814) and the average scale scores for White students (4031).

Secretary of Education, Richard Riley (1997) writes that conquering mathematics is a gateway to college and career success; mathematics is the language of science; and, algebra is the minimum terminology that scientists need to be successful. In addition, Secretary Riley reported that low income minority students who successfully took and master Algebra I in high school were almost three times as likely to attend college as those who did not master this subject. Quattrociocchi (2002) adds that minority students, such as Hispanics, who master Algebra I in high school, succeed in college at almost the same rate as White students. Robert Moses, (2002) a well-known civil rights activist, who started “Project Algebra” in the 1980’s to aid minority students argues that:

“Today the most urgent social issues affecting poor people and people of color is economic access. In today’s world, economic access and full citizenship depends crucially on math and science literacy. I believe that the absence of math literacy in urban and rural communities throughout the country is an urgent issue.” (as cited in Quattrociocchi, p.2)

Therefore, it is critical for Hispanic students to be successful in Algebra I. The fact that so many Hispanic students fail Algebra I, without acquiring the necessary skills to be considered college ready, is an urgent issue that has critical ramifications on a student’s academic and economic future. Understanding Algebra I is the foundation for higher levels of mathematic courses as well as the gatekeeper to college and career success for all students, particularly Hispanic students, recapitulates the need for effective mathematic teachers (Quattrociocchi, 2002).

Who is Teaching in the Classroom?

The 2007 State Plan for Meeting the Highly Qualified Teacher Goal Report for the state of Texas indicates that 7.48 % of mathematics teachers were not “highly qualified” to teach a mathematics class in 2004-2005. Therefore, TEA created a State Plan (2007) to recruit highly qualified teachers to fill vacancies in shortage areas such as mathematics and ensure that highly qualified teachers were teaching in those classrooms. By 2008 – 2009 the state had a total of 108,210 mathematics teachers teaching grades 7th – 12th, of which 107,295 met the definition of highly qualified as specified by the No Child Left Behind (NCLB) requirements (TEA, 2007). The 2010 – 2011 NCLB Highly Qualified Teachers Summary Report indicates 116,489 mathematics teachers were serving secondary students in grades 7th-12th. Of these, 115,925 were identified as highly qualified. The NCLB Highly Qualified Teachers Summary Report clearly

documents that in two years Texas increased the total number of highly qualified secondary mathematics teachers by 9.3% (8,279).

After thoughtful consideration of factors noted above, one can conclude that school districts must recruit, employ, develop, and retain highly qualified mathematics teachers who can meet the needs of Hispanic students. To do this, school districts currently have two options. The first is to recruit and employ highly qualified teachers who are prepared in a traditional teacher certification program provided by four-year institutions. The second is to recruit and employ teachers who will complete or have completed certification requirements in an Alternative Certification Program.

Need for the Study

In response to calls from hard-to-staff districts in the United States (U.S.), federal and state policy makers have attempted to ameliorate teacher shortages in core academic subjects, including mathematics, by ratifying legislation and providing financial provisions for non-traditional teacher preparation programs (Gimbert, Cristol, & Sene, 2007). Advocates for alternative certification programs emphasize that a non-traditional program can meet the demands for classroom teachers while preserving or refining instruction. According to Gimbert, Cristol, and Sene, forty-eight states and the District of Columbia have legislated non-traditional teacher preparation programs. These same researchers found that urban secondary schools, that are currently responsible for educating 40% of our limited English proficient students, 75% of minority students, and over 50% of low income families, are staffed with inexperienced and unqualified teachers.

Although much research can be found on the effects Alternative Certification teachers have on student achievement, little research has been conducted on the effects Alternative

Certification teachers have had on the academic performance of Hispanic students in the content area of mathematics, specifically the Algebra I EOC.

Since data indicates schools throughout the nation, the state, and the Rio Grande Valley (Department of Education, 2012) have a shortage of mathematics teachers, this study is of interest to school and district leaders when recruiting and hiring mathematics teachers. Darling-Hammond, Holtzman, Gatlin and Vasquez Heilig (2005) found that many inner-city and underprivileged rural districts have had to hire a growing number of individuals on emergency permits or waivers and without formal preparation for teaching. Furthermore, the research conducted by Darling-Hammond's et al. showed teachers teaching low- income and minority students in the most disadvantaged schools failed to meet the definition of highly qualified under NCLB. There is evidence that indicates low socio-economic status (SES) Hispanic students face many challenges including lack of success in mathematics classrooms (Darling-Hammond, et al.).

The shortage of qualified teachers in the field of mathematics seriously influences the quality of instruction students receive in this academic area and reduces the future earning potential of the students not receiving their education from a qualified teacher (Gimbert et al., 2007). Furthermore, Goldhaber and Brewer (2002) have recognized that “very little research exists on the effectiveness of a teacher licensure system, in terms of how well teachers subsequently teach and what works to promote positive students outcomes” (p. 129).

The evidence cited above illustrates the need for the study. Results of this study will augment the body of knowledge pertinent to traditional and alternative teacher certification programs. The findings will also provide districts useful evidence that will assist in identifying teachers who will produce the highest achievement in Algebra I. Henceforth, this study may

transform the way school districts in Texas recruit and induct mathematics teachers who work with Hispanic students.

Purpose of the Study

The purpose of this quantitative study was to determine the effectiveness of alternative certification teachers versus traditionally trained teachers of 9th grade Hispanic students enrolled in Algebra I as measured by the students' raw score on the Texas Algebra I End Of Course (EOC) Assessment. Furthermore, this study investigated if teacher attendance, years of experience and teacher evaluation ratings of teachers trained in alternative certification programs and traditional preparation programs have a direct impact on 9th grade students' performance on Algebra I EOC exam.

The investigation questions and hypotheses are as follows:

Investigation Questions

1. How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores?
2. How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores and teacher preparation program?
3. How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores, teacher preparation program and teacher attendance?
4. How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience?

A set of null hypothesis and a set of corresponding alternative null hypothesis for the study are listed below.

Null Hypotheses

H₀1: Student performance on Algebra I EOC is not a function of Teacher PDAS scores.

H₀2: Student performance on Algebra I EOC is not a function of Teacher PDAS scores and teacher preparation program.

H₀3: Student performance on Algebra I EOC is not a function of teacher PDAS scores, teacher preparation program and teacher attendance.

H₀4: Student performance on Algebra I EOC is not a function of teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience.

Alternative Hypotheses

H₁1: Student performance on Algebra I EOC is a function of Teacher PDAS scores.

H₁2: Student performance on Algebra I EOC is a function of Teacher PDAS scores and teacher preparation program.

H₁3: Student performance on Algebra I EOC is a function of teacher PDAS scores, teacher preparation program and teacher attendance.

H₁4: Student performance on Algebra I EOC is a function of teacher PDAS, teacher preparation program, teacher attendance, and teacher years of experience.

Significance of Study

According to Pillsbury (2005), most administrators ascertain that hiring teachers is the most significant decision they make. In addition, Pillsbury states that teachers have the greatest impact on students' lives; therefore, the hiring process and the selection process are critical. The Urban Teacher Collaborative (2000) conducted a national survey in all large urban districts and found that 95% of the districts had an immediate need to hire mathematics teachers. The U.S.

Department of Education (2012) report entitled “Teacher Shortage Area Nationwide Listing” lists mathematics as a shortage area in Texas schools for the last 20 years. To meet this demand, alternative certification programs have been allowed to develop diverse pathways to certify candidates with varying levels of expertise (Salinas, Kritsonis, & Herrington, 2006). In addition, Salinas, Kristsonis, and Herrington stress that NCLB and the accountability that comes with it has raised the debate on the quality of teachers coming through alternative certification routes due to expectations for increased student achievement. While the lack of secondary mathematics teachers will continue to be a burden for districts in Texas and other parts of the U. S., examining the success of alternative certification teachers may help determine how schools develop teachers to impact student performance in Algebra I End of Course.

In a study of the correlation between course performance in Algebra I and Algebra I End of Course test performance conducted by the Texas Education Agency (n. d.), data shows Hispanic students, in 2002, passed at a rate of 46.5% as opposed to White students who had a passing rate of 71.5%. In 2010 results remain unchanged; Hispanic students had a passing rate of 47% as opposed to White students who had a passing rate of 71%. Teachers’ knowledge of the content, the delivery of instruction, attendance, and experience will be critical in improving Algebra I scores for all student groups.

Since the state of Texas sanctioned alternative certification programs in 1984, the number of programs has been growing steadily (Suell & Piotrowski, 2006). Currently, Texas has 161 approved alternative certification programs (TEA, 2012). The TEA reports 14 approved alternative certification programs in the Region I area, which serves 37 school districts and nine charter schools in seven counties extending from Brownsville to Laredo, Texas. In 2009, the State Board of Educator Certification awarded 28,125 standard teacher certificates of which

12,902 were awarded to teachers who came through an alternative certification program. Information learned from these studies provoked the questions being investigated by this researcher. Answers to these questions may provide insights for better serving Hispanic students in mathematics and for preparing and supporting teachers.

Limitations

The limitations for this study include the sample size of teachers. Forty mathematic, twenty ACP and twenty traditionally trained teachers are not a complete representation of all mathematics teachers in the state of Texas. Another limitation is the lack of a pre-assessment administered to the students of the Algebra I standards to determine a base line of content knowledge. The three school district's curriculum is not taken into consideration for the purpose of this study creating another limitation. Although it may be appealing to assume that teacher preparation programs, teacher attendance, teacher years of experience and teacher evaluation alone would determine student success on 9th grade Algebra I EOC, other factors may also account for high student achievement on the Algebra I EOC.

The research reveals what, if any, difference exists between the 9th grade Algebra I performance of students taught by teachers certified through an alternative certification program and students taught by teachers certified through a traditional teacher certification program. Furthermore, the research shows how Hispanic students' achievement levels in Algebra I, as measured by the EOC, compare between students in classes taught by alternative certification program teachers (0-24 years of experience) and those taught by traditional certification program teachers with the same level of experience in three school districts in Texas. The study used teacher attendance and teacher experience as independent variables of teacher and Hispanic student achievement levels in Algebra I as measured by 9th grade Algebra I EOC in three school districts in Texas. Finally, the researcher also used teacher evaluation ratings as covariates to

conclude if a correlation exists between the teacher evaluation ratings of alternative certification program teachers and traditionally trained program teachers and Hispanic student achievement levels in Algebra I as measured by 9th grade Algebra I EOC in three school districts in Texas.

Definition of Terms

The following terms are defined as they were used in this study.

Alternative certification program - TEA defines Alternative Certification Programs (ACPs) as a nontraditional route to certification that may allow an individual to teach while completing his/her teacher certification requirements. These programs are located in universities, school districts, education service centers, community colleges, and private entities. As of summer 2012, the TEA has approved 161 Alternative Certification Programs in the state of Texas.

Traditional Teacher Certification Program - The TEA defines a traditional certification program as follows: university-based educator preparation programs that offer courses in the content area and courses to prepare individuals to teach, in addition to providing the required number of credits to earn a degree. The length of time needed to complete a university program will vary with each individual.

Success - For the purpose of this study, success will be defined as students meeting or exceeding Level II requirements, as set by the TEA, on their Algebra I EOC assessment. To meet TEA Level II requirements, students must attain a minimum scale score of 3500 on their Algebra I EOC exam.

Algebra I End of Course (EOC) - The Algebra I End of Course is a statewide assessment that is used to determine the level of mastery of course content. The Algebra I EOC assesses a student's knowledge on: Functional Relationships, Properties and Attributes of Functions, Linear Functions, Linear Equations and Inequalities, and Quadratics and other Nonlinear Functions.

Highly Qualified Teacher - The Texas Education Agency (2013) defines a “Highly Qualified” teacher as a teacher who:

- a. Has obtained full Texas teacher certification (including certification obtained through alternative routes to certification); and
- b. Holds a minimum of a bachelor’s degree; and
- c. Has demonstrated subject matter competency in each of the academic subjects in which the teacher teaches.

Absence - Teacher absence is measured simply by counting the number of days during an instructional calendar year that a teacher is out of his/her classroom. Reasons for a teacher being absent could include: sick leave, personal leave, bereavement, or school business.

Approved Leave - Texas Education Code (TEC) 22.003 entitles all Texas teachers five days per year of state personal leave, with no limit on accumulation and no restrictions on transfer among districts. In addition, the three school districts used in the study have passed local board policy allowing for an additional five days of leave for teachers.

Years of teaching experience - TEC 153 Subsection CC defines credible years of service for teaching in Texas. For the purpose of this research, years of experience equals the number of years an individual has performed the role of classroom teacher and has been given credit in their teacher service record.

Teacher evaluation rating - For the purpose of this paper the researcher used the state approved teacher appraisal instrument ratings: Professional Development and Appraisal System (PDAS) to determine teacher effectiveness.

Exceeds Expectations - PDAS domain rating – Students in a teacher’s classroom are “consistently” engaged and successful in learning that has great depth and complexity, 90%-100% of the time.

Proficient - PDAS domain rating – Students in a teacher’s classroom are engaged and successful in learning, 80%-89% of the time.

Below Expectations - PDAS domain rating – Students in a teacher’s classroom are “occasionally” successful in learning, 50%-79% of the time.

Unsatisfactory - PDAS domain rating – Students in a teacher’s classroom are engaged and successful in learning, less than half of the time 0%-49% of the time.

Conceptual Framework

The conceptual framework for this study exemplifies the potential contribution of preparation programs to teacher practices and student performance. This conceptual framework, created by the U.S. Department of Education, highlights the possible links between (1) teacher education and work experience; (2) professional preparation and support during the early years of teaching; (3) the intermediate effects these factors might have on classroom practices, which are also influenced by the social context; and (4) the key longer-term effects on student performance and achievement (Constantine et al., 2009). The framework shows how both the pre-training characteristics of teachers and their preparation programs could be associated with

classroom practices and student outcomes.

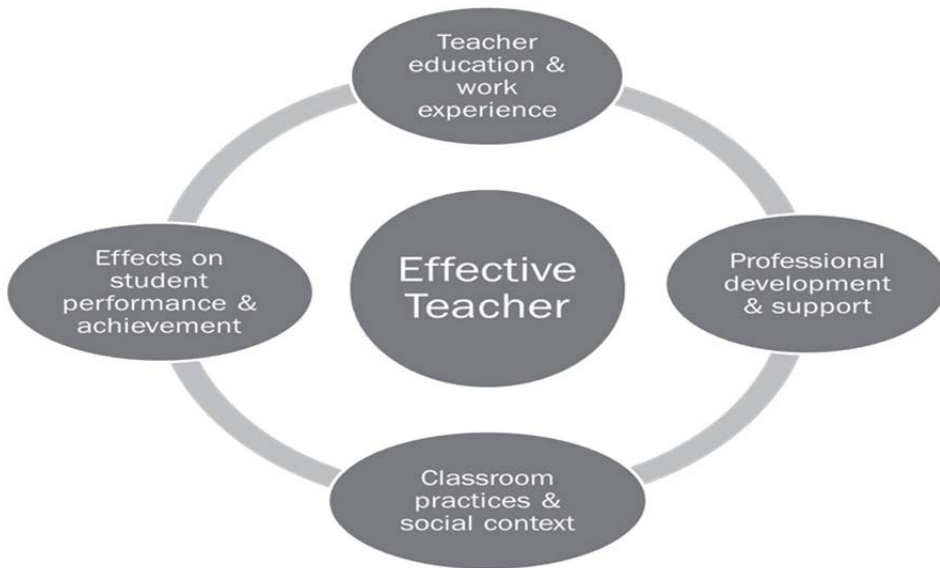


Figure 1. Conceptual framework for the study of teacher preparation models. Adapted from “An Evaluation of Teachers Trained Through Different Routes of Certification,” by J. Constantian, D. Player, T. Silva, K. Hallgren, M. Grider, J. Deke, 2009, National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

The focus of this study was to investigate the effects on student outcomes—Algebra I EOC, for students taught by teachers trained through a traditional university based teacher program versus teachers trained through an alternative certification program.

Summary

Chapter one substantiates the need for a quantitative study on the performance of 9th grade Hispanic students in the Algebra I End Of Course assessment when taught by alternative certification program teachers versus students taught by traditional certification program teachers in three school districts in Texas.

The Statement of the Problem section emphasizes the importance of Algebra I to student success in future mathematics courses and educational experiences. It also points out the importance of recruiting, employing, developing and retaining highly qualified teachers. Two options districts have for employing highly qualified teachers are provided. Districts may employ teachers who are certified through a traditional certification program or teachers certified through an alternative certification program.

The Need for Study section cites findings from studies and reports which indicate the existing shortage of mathematics teachers and the growth of alternative certification programs in response to that need. The Purpose of the Study section provides the Investigation Questions and a set of corresponding Null and Alternative Hypotheses for each Investigation Question. The Significance of the Study section elaborates on the need for having highly qualified teachers in order to meet the ever increasing accountability standards. This section sheds light on the debate regarding the effectiveness of teachers certified through alternative certification programs.

The remaining content of the Introduction includes definition of terms and a description of the conceptual framework that was utilized in this study.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter provides an overview of literature that frames this study which focuses on comparing students' success in secondary mathematics when taught by alternative certification program teachers and by traditional certification program teachers. An examination of literature on teacher shortage areas, alternative certification programs (ACP), and research conducted on the impact of ACP teachers on student achievement is provided. While much has been written about ACP's, there is a lack of information regarding the effects, if any, ACP's have on the large Hispanic student population in mathematics. Other factors that have shown to be critical to the success of students are teacher attendance, years of experience, and teacher evaluation rating.

Teacher Shortage Area

In recent years, researchers and policy makers have iterated that severe teacher shortages confront schools. Ingersoll and Smith (2003) point to a dramatic increase in the demand for new teachers resulting from two conveying demographic trends: increasing student enrollment and increasing numbers of teachers reaching retirement age. Howard (2003) found the topic of teacher shortage to be complex and extensive. Howard believes, without question that many U.S. students will experience the effects of the teacher shortage in multiple means including increased class sizes, fewer teachers in specialized contents, and overall deficiencies in teacher effectiveness. Murphy, DeArmond, and Guin (2003) find the teacher shortage problem is spread disproportionately: urban schools and those with reasonably high populations of minority and low-income students bear the brunt of the shortage; southern and western states had more

problems filling teaching slots than other parts of the country. Ingersoll (2003) agrees that the demand for teachers has increased and found that:

In the 1999-2000 school year, 58% of all schools reported at least some difficulty filling one or more teaching job openings, in one or more fields, 54% of secondary schools had job openings for English teachers and about one half of these indicated they had at least some difficulty filling these openings—representing one quarter of all secondary schools. Ingersoll further describes that 54% of secondary schools had job openings for math teachers and about four-fifths of these indicated they had at least some difficulty filling these math openings—representing about 40% of all secondary schools. Likewise, 45% of secondary schools had job openings for special education teachers and about three quarters of these indicated they had at least some difficulty filling these openings—representing 34% of secondary schools (p. 6).

Texas, as well, faces the same challenges of filling classrooms with highly qualified teachers (Texas Education Agency [TEA], 2002). The 77th Texas Legislature directed the Texas Higher Education Coordinating Board to develop a strategic plan to increase the number of certified teachers in the state as rapidly as possible. The primary goal of the strategic plan was to increase the number of fully certified teacher educators from 276,000 in 2002 to 360,000 by 2015. In 2002, the state of Texas hired 33,899 teachers who did not hold a teacher standard certificate. In addition, 56,000 teachers in Texas were teaching outside their certification area in 2002.

According to the National Center for Alternative Certification, it is the responsibility of each individual state to certify teachers in the United States. In turn, school districts are responsible for recruiting and hiring; therefore, when schools began experiencing teacher

shortages, alternative certification programs began to fill the needs in those classrooms. Alternative certification teacher programs in the U.S. were established as early as 1984. By 1998, 41 states, plus the District of Columbia, had established some type of alternative teacher certification program (ATCP), with more than 80,000 individuals licensed through ACP's (Abell, Boone, Arbaugh, Lannin, Beilfuss, Volkmann, & White, 2006).

Teacher Licensure in Texas

The edification of teachers for Texas schools has evolved significantly since the early days of the republic and initial statehood (Garrett, 2013). In 1823 the Mexican Government, which controlled Texas at the time, proposed a plan to include a competitive exam of teachers in public schools. This plan did not transform into reality according to Garrett for it was named as a reason for declaring independence. Nonetheless, the original plan to test prospective teachers remained the foundation for teacher certification for almost a century. According to the Texas State Historical Association, staffing Texas public schools in the 1800's was not easy, for few teachers were attracted to the Texas frontier. Garrett writes that a prescribed course of study for prospective teachers did not exist; individuals interested in teaching simply had to show success on a written exam.

According to the Texas State Historical Association, changes in teacher certification requirements occurred as the state developed and schools became differentiated. According to Garrett (2013), in 1878, a minimal degree of specialization became a part of the certification process in Texas. In addition, for the first time teachers were expected to have knowledge in pedagogy as well as content. By the early 1900's, teacher certification was based on college course work alone and teachers in Texas were no longer required to pass an examination to

teach. According to Garrett, by the mid 1900's, teacher certification required a minimum of a bachelor's degree as well as the completion of a teacher preparation program.

Throughout the next 30 years, teacher certification standards in Texas were refined and expanded to include specialized areas. Furthermore, A Nation at Risk in the 1980's influenced Texas teacher education programs in numerous ways to include the reinstatement of the previously abandoned concept of examination as part of the certification process (Garrett, 2013). The 1987 Standards for Teacher Education created by the TEA required all teacher preparation programs to provide a foundation for prospective teachers in three areas: general education, professional studies (pedagogy) and one or more specialized areas. Today TEA outlines the five steps to becoming a certified teacher. The five basic requirements are: 1) Obtain a bachelor's degree, 2) Complete an educator preparation program, 3) Pass the appropriate certification exam(s), 4) Submit a state application, and 5) Be fingerprinted.

Completing an educator preparation program can be done through a university based certification program or through an alternative certification program.

Alternative Teacher Certification Programs

According to the National Center for Education Information (NCEI) (2005) in post-World War II, when the flood of baby-boomers began attending schools in the early 1950's, there was a high demand for elementary school teachers throughout the United States. Nonetheless, the NCEI found that today's schools have an oversupply of elementary school teachers and the need for teachers currently is based on geographic and subject-matter specific. In addition, NCEI found that the demand for teachers was paramount in inner cities and remote rural areas of the country and specifically in high school mathematics, sciences and special education. Due to the stresses of recruiting, training, and hiring for these high-demand areas

alternative certification programs were created in the mid 1980's (NCEI). New Jersey followed by Texas were the first two states to initiate and approve legislation to certify teachers coming through a program other than a traditional teacher training program to deal with the shortage of teachers (NCAC, 2010).

According to the National Center of Education Information (NCEI, 2005) alternative teacher certification are having an impact in our educational system. In the last decade, alternative teacher certification programs have evolved as a respectful method of certifying teachers and have provided new pathways whereby individuals who have at least a bachelor's degree may enter the teaching career (NCEI). According to the National Center for Alternative Education (2010), approximately one third of newly hired teachers in Texas are coming through an alternative certification program.

Currently in the state of Texas there are 161 approved alternative certification programs that offer mathematics as a certificate (TEA, n.d). The approved alternative certification programs have similar criteria for acceptance into the program and all programs must meet state requirements including having an assigned mentor, who has teaching experience and has proven to be a successful teacher. Alternative certification programs vary in design, span of completion, and participants and it is the participant's obligation to meet with their assigned advisors, to observe the advisors, and to have the advisor observe them, states Boser and Davis Waley (1988). The National Center for Alternative Certification outlines common characteristics of non-traditional teacher certification programs: 1) hold a bachelor's degree in fields other than education, 2) rigorous screening process such as interviews, tests, and demonstrating mastery of content area, 3) field based programs, 4) experience in professional staff development before or

during teaching, 5) assigned mentor, high performance evaluation to complete program and become certified.

Alternative Certification Teacher Requirements

Darling-Hammond, Holzman, Gatlin, and Vasquez Heilig (2005) describe Teach for America (TFA) candidates as prospective teachers receiving a few weeks of training before beginning their teaching assignment. Furthermore, these researchers concluded that alternative certification teachers should be allowed the opportunity to observe other teachers, including their mentor teacher, at a minimum of once a month. However, Laczko-Kerr and Berliner (2002) find that principals and veteran teachers who could serve as mentors generally do not have the required skills, training, or time to provide novices with the quality supervision for on the job training. Descamps and Klingstendt (1984) are concerned with the training alternative certification teachers receive prior to initiation and speculate that on the job training does not provide teachers with the necessary skills for success. Darling-Hammond (2000), Howey and Zimpher (1994), Laczko-Kerr and Berliner (2002) agree that there is an inadequate amount of supervision and training provided to novice teachers at the schools. Laczko-Kerr and Berliner reference other studies where they say that many of the alternative teacher programs are poorly planned and managed, providing little in the way of professional staff development. Furthermore, they believe researchers are critical of the level of professional knowledge demonstrated by alternative certification teachers. Descamps and Klingstendts question the skills alternative certification teachers possess when challenged with poorly motivated students. Descamps and Klingstendts do not believe alternative certification teachers have the background knowledge about human behavior to empower them to prescribe and deliver appropriate instruction. Moreover, they are concerned that the alternative certified teachers, due to their lack

of training, will have a challenging time individualizing instruction to meet the academic needs of all their students. Laczko-Kerr and Berliner argue that it is dubious that someone without preparation in subject matter techniques could get in front of a class of students and be a successful teacher. This same group of scholars rejects the idea that effective teaching can be learned on the job. Their position is:

...alternative certified teachers tend to have a limited view of curriculum and a lack of understanding of students ability as well as motivation; they experience difficulty translating content knowledge into meaningful information for students to understand; they are less effective planners of instruction and they tend not to learn about teaching through their experiences (p. 17).

Furthermore, Laczko-Kerr and Berliner (2002) found, that on 39 of 40 different questions, TFA teachers rated their preparation more poorly than did those who were trained in more traditional programs. When interviewing a former alternative certification teacher, these same researchers described the training he received prior to beginning teaching as inadequate. He further stated that just eight weeks of training is not sufficient for teachers and that an alternative certification program like Teach for America perpetuates the assignment of poorly trained teachers with the most at-risk students in the country.

Suell and Piorowski (2004) identified five important factors for a successful alternative certification program: 1) strong relationship/communication between school and alternative education program, 2) worthy screening process prior to acceptance into the program, 3) strong mentoring during the school year by a proven effective teacher, 4) solid curriculum, and 5) extensive professional development and preparation prior to commencement. Gimbert, Critol, and Sene (2007) found through a recent empirical study on the impact on student performance by

non-traditional and traditionally trained teachers that non-traditional teacher preparation programs with high criteria for entry, demanding coursework requirements, and rigorous evaluation standards had similar student performance outcomes as students taught by traditional trained teachers.

ACP's Impact on Student Achievement

Darling-Hammond, Berry, and Thoreson (2001) found that a teacher's path to certification had a significant effect on student achievement, especially in mathematics. Furthermore, Boyd, Goldhaber, Lankford, and Wyckoff (2007) agreed that highly selective alternative route programs can yield effective teachers who perform equally as teachers from traditional routes after two years on the job. Glazerman, Mayer, and Decker (2006) supported the findings that Teach for America (alternative certification) teachers had a positive effect on mathematics achievement indicating that the impact on mathematics scores was about 15 % of a standard deviation. Gimbert et al. (2007) reiterated that no significant difference existed in achievement between students taught by non-traditional preparation programs (alternative certification) and those taught by their traditionally prepared counterparts. In addition, these researchers found that students taught by teachers with a bachelor's and/or master's degree in mathematics outperformed the students taught by teachers who were not credentialed in the same field. Their study cast suspicion on the assertions of the educational institutions that standard certification should be mandatory of all teachers. Furthermore, they reported that teachers with a major or minor in mathematics and science enhanced their pupil's academic performance in those content areas. They argue specifically that mathematics and science content knowledge has a substantial effect on student learning and student outcomes. Policy makers, the public and the educational community should carefully evaluate findings which supports other empirical studies that suggest that alternative certification programs when created and executed with

fidelity can produce “highly effective” teachers, who have positive bearing on student achievement. The empirical findings indicated that non-traditional teaching preparation programs (alternative program) are promising options for school districts to consider in an effort to reduce the number of teacher vacancies in mathematics classrooms in middle and high schools. As described by Glazerman et al. (2006) there was a significant statistical difference between the mathematics scores of students taught by alternative certification teachers (TFA) and those taught by traditional preparation teachers. Interestingly Goldhaber and Brewer (2000) revealed that alternative certification teachers are more likely to be minority and younger and more likely to teach in a secondary school than are teachers who holds a standard certificate.

Traditional Teacher Programs in Texas

Becoming a certified teacher in the state of Texas, through a traditional university-based program, requires different steps (TEA, 2012). An individual interested in becoming a teacher must apply to the teacher certification program at an accredited university of their choice. If the individual meets the required criteria and are accepted into the teacher program, the candidate will meet with his/her advisor to discuss goals as a teacher. According to TEA, the university-based program advises the candidate of the specific coursework, about student teaching or internship, and about tests the student must complete prior to getting certified. A teacher candidate must complete a minimum of 120 college hours in specific courses as outlined in university catalogs (UTPA, 2012). In addition, 18 out of the 120 college hours are specific to pedagogy, professional development on teaching strategies to include theory, management, learning style, basic child development, as well as learning development (UTPA). Traditional teacher preparation programs have a strong emphasizes on pedagogy with a goal of ensuring

teachers are ready to deal with all factor teachers face on a daily basis, excluding content (Shulman, 1986).

Shulman (1986) persuasively argues for the importance of attending to teachers' knowledge in studies of teaching. Shulman introduced to the educational research community an empirical model requiring four domains that comprise the professional base of teaching. These four domains are relevant to teachers' instructional practices a) subject-matter knowledge, 2) general pedagogical knowledge, c) pedagogical content knowledge, and d) knowledge of students. Borka et al. (2000) suggests that participation in both university courses and kindergarten through 12th grade field experiences are vital for preparing teachers to teach at the level of rigor being required specifically in the area of mathematics.

The Effects of Teacher Absenteeism on Student Achievement

Teacher absenteeism continues to increase dramatically in many school systems in the United States (Miller, Murnane, & Willett, 2007). The subject of teacher absenteeism is quickly becoming an important issue in the educational system largely due to its correlation with student success (Bruno, 2002). According to the Staffing Industry Report, teacher absenteeism averages between 8-10%, this is equivalent to a full academic year of instruction without a certified teacher for every student before graduating from high school (Brown & Arnell, 2012). Research shows that teachers average approximately two weeks out of the classroom per year (Brown & Arnell, 2012; Miller, Murnane & Willett, 2008). Lewis (1981) reported that nationally 75 million teacher-student contact instructional hours are lost annually due to teacher absenteeism.

Brown and Arnell (2012) believe that having a highly qualified teacher enhances the learning environment. Furthermore, Dorward, Hawkins and Smith (2000) find a direct correlation between teacher absenteeism and student achievement. Additionally, Woods and

Montagon (1997) found that teacher attendance rate has an adverse effect on student achievement. Moreover, teachers with the greatest number of absences, students' individualized standardized tests results were lower (Jacobs & Kritsonis, 2007). Brown and Arnell found teacher absenteeism may be highest in low performing schools that need consistent attendance of a certified classroom teacher the most. Clotfelter, Ladd and Vigdor (2007a) established that schools identified as having a large low socio-economic student population and a large enrollment of minority students resulted in higher teacher absences and lower student performance on standardized tests. Dell'Angela and Little (2006) reported that schools with the highest absenteeism problems were schools identified as "failing."

Miller, Murnane, and Willett (2007) found that high teacher absenteeism has a negative effect on an entire school organization and its academic performance. Wood and Montagno (1997) state that when a qualified educator is absent from the classroom, student achievement is negatively affected. Rundall (1986) and Miller, et al. (2008) concluded that teacher absences may affect student performance due to instruction being cut off as well as the interruption of classroom practices and daily procedures of the classroom. In addition, Miller, et al. (2008) found that when a teacher is absent ten days from class, student performance in mathematics is significantly reduced by 3.3 percent of a standard deviation. Clotfelter, et al. (2007a) research also found that students declined 1.7 percent of a standard deviation in mathematics when a teacher had ten days of absences. If teachers reduced their absences to less than ten days mathematics scores would increase to be above 70 percent (Brown & Arnell, 2012).

Bruno (2007) concluded that students lose interest in learning when their certified classroom teacher is frequently absent due to receiving instruction from an uncertified instructor. Substitutes lack knowledge of content as well as knowledge of each student's academic level;

therefore, making it near impossible to differentiate instruction to meet the needs of each individual student (Miller et al., 2008). Moore (2013) states when students sincerely feel that their teacher cares about them enough not to be absent and be in the class, be in the building, they will likely be more gratified and more content. She continues to say that students believing their teacher cares, leads to high academic performance on standardized tests. On the other hand, the astonishment of an unaccustomed face in their class, a new authority figure, gives students a feeling of disorientation (Rundall, 1986; Miller et al.). Moreover, students may find it difficult to form meaningful relationships with numerous and roaming substitutes (Miller et al.). Teacher absenteeism can be damaging to student's instruction and level of individual achievement (Brown & Arnell, 2012).

A decline in student achievement is the greatest consequence for teacher absences; nonetheless, it is not the only consequence (Bruno, 2002). An additional consequence to large teacher absenteeism is reduction of school resources needed to support instructional programs (Clotfelter et al., 2007a). The financial burden placed on school districts to pay for classroom substitutes as well as the teacher's day has become a major concern for Chief Financial Officers (Brown & Arnell, 2012). Moreover, there are administrative costs involved in making arrangements for substitute teachers as well as recruitment, hiring and training of substitutes (Finlayson, 2009). School districts have to spend millions of dollars annually on substitutes, which is equivalent to 1% of their total operating budgets (Woods & Montagno, 1997). Nationally, Brown and Arnell found that in 2000 the total cost of teacher absenteeism was \$25.2 billion dollars. When resources are channeled to cover substitute cost, instructional programs designed to improve student performance are compromised (Bruno).

Reasons teachers provide their supervisors for being absent include but are not limited to personal illness, family illness, bereavement, and professional development (TEC, 2013). Recently, Texas legislators approved to simply rename the state leave days as personal days, allowing teachers the flexibility to call in their approved, paid leave without specifying why they will be absent from the school (TEC). The underlying reason for teachers to call in their days may include job dissatisfaction, teacher exhaustion, and decrease in teacher morale (Bruno, 2002). Furthermore, Bruno states that teachers approaching retirement age and who have accumulated leave with the school district begin to take their days and call in absent.

The Importance of Experience

The notion is that experience, expanded over time, enriches the knowledge, abilities, and productivity of employees (Rice, 2010). The fundamental theory is that experience promotes effectiveness and that “more is better”. Rice states that in education, teacher experience is probably the key factor in personnel policies that affect current employees: this due in large part to the traditional single salary schedule. Teacher experience levels are widely studied because it is easy to measure and a vast preponderance of school systems use it to regulate teacher salaries (Goldhaber, 2002). The Texas state minimum salary schedule applies to classroom teachers, librarians and school nurses and calculated in accordance with the provisions of TEC 21.402(a) (2012) and is exclusively based on years of experience.

Teacher experience is more impactful during the first few years of teaching (Rice, 2010). Ordinarily, novice teachers are not as effective as their experienced colleagues (Clotfelter, Ladd, & Vigdor, 2007b). Early career experience has a strong influence on teacher effectiveness and the impact is stronger than the effect of most other noticeable teacher-related variables including advanced college degrees, teacher certification test scores and pupil-teacher ratio (Rice).

Clotfelter, Ladd and Vigdor found compelling evidence that teachers with more experience are more effective than those with less experience, with gains of more than 50 percent taking place during the first few years of being in the classroom. How long teacher performance continues to improve is debated among scholars. Gordon, Kane, and Staiger (2006) found large gains in teacher effectiveness between the first and second year of being in the classroom, minimal gains from the second year to the third year, and no substantial improvement after the third year of teaching.

The correlation between classroom teacher experience and student performance does receive significant attention in the empirical literature (Goe & Stickler, 2008). Researchers have found that teachers' level of experience does make a positive difference in student performance- but only for the first five years of teaching (Goe & Stickler). In addition, these scholars established that teachers in their first four to five years of teaching appear to gain incrementally in their contributions to student outcomes; nonetheless, after five years of teaching the contributions of experience to student outcomes appear to balance off. Researchers have found that experience, especially during the first couple of years in the classroom, is positively associated with student performance in mathematics (Goe & Stickler; Harris & Sass, 2007; Rockoff, 2004). Likewise, Clotfelter, Ladd, and Vigdor (2007b) concluded from their study that teacher experience has a positive effect on student performance, with larger effects in mathematics.

Given that teacher experience is analytically related to teacher productivity school districts should be meticulous of how novice teachers are assigned (Rice, 2010). According to Rice, captivating evidence finds that novice teachers with less than three years of experience are typically assigned to teach in high poverty campuses, with large number of minority students

identified at risk. In addition, Rice confirms that high poverty schools are inclined to have fewer experienced and effective teachers as measured by student achievement scores in mathematics. Contracting classroom teachers with more than five years of experience may not necessarily guarantee improvement in student performance, for other factors play a role in student success; nonetheless, there are many other additional ways experienced teachers benefit a campuses organizational health (Goe & Stickler, 2008). Therefore, Goe and Stickler recommend experience should be a critical factor to take into consideration when hiring a classroom teacher.

Professional Development and Appraisal System of Texas

Differences in teacher effectiveness are the leading factors affecting academic development of students (Sanders, 2002). Sanders argues that a teacher's effectiveness has more influence on a students' academic growth than class size, and resources. Rowan, Correnti, and Miller (2002) found that the most effective teachers have students with more growth, nine months to one year, than those students with less effective teachers. Students taught by an ineffective teacher for two consecutive years will never be able to regain the education lost (Sanders). Classroom teachers have significant influence on student academic performance (Odden, Borman, & Fermanich, 2004). There is a direct correlation between performance-based teacher evaluation ratings and student performance (Kimbel, White, Milanowski, & Borman, 2004; Odden, et al.). Teachers with the top evaluation ratings yield larger learning increases in student achievement as measured by standardized tests (Odden et al., 2004). Similarly, Milanowski (2004) found that a teacher evaluation system is able to identify which classroom teachers will have students with higher than anticipated levels of attainment as measured by test scores. The purpose of a classroom teacher's evaluation model is to measure teacher effectiveness and to improve teacher performance (Marzano, Toth, & Schooling, 2011). The

sole purpose of evaluating a classroom teacher is to determine their effectiveness, which is the leading indicator for improving student academic performance (Marzano, et al.).

Beginning with the 1997-1998 school year, all school districts in the state of Texas were given two options in selecting a method to appraise teachers: a teacher appraisal system recommended by the Commissioner of Education, the Professional Development and Appraisal System (PDAS) or a local teacher appraisal system (Chapter 150, TAC). The superintendent of each school district, with the approval of the school district board of trustees would select to use the PDAS or develop a local teacher appraisal instrument. School districts electing to develop a local appraisal instrument would need to comply with state statute. As of August 2011, (TEA, 2012) 86 % of the school districts in Texas used the PDAS instrument as the tool to measure teacher effectiveness. The foundation of the PDAS process includes a minimum of one 45-minute observation and completion of the Teacher Self-Report form. PDAS comprises of 51 criteria within eight domains reflecting the Proficiencies for Learner-Centered Instruction: A Vision of Texas Educator adopted in 1997 by the State Board of Educator Certification (SBEC). According to Chapter 150.002 of the TAC, each teacher in the state of Texas shall be appraised on the following domains: Domain I: Active, successful student participation in the learning process; Domain II: Learner-centered instruction; Domain III: Evaluation and feedback on student progress; Domain IV: Management of student discipline, instructional strategies, time and materials; Domain V: Professional communication; Domain VI: Professional development; Domain VII: Compliance with policies, operating procedures and requirements and; Domain VIII Improvement of academic performance of all students on the campus based on indicators found on the Academic Excellence Indicator System (AEIS).

According to TAC Chapter 150.1002 each of the eight domains are scored independently. The data generated and collected from observations, the Teacher Self Report Form, and other documented sources are calculated into the appraisal instrument. The data generated and collected shall describe the teacher's contributions in increasing student achievement, making the school safe and orderly, and creating a stimulating learning environment. Domains I-VIII shall receive a rating of exceeds expectations; proficient; below expectations; or unsatisfactory.

In accordance to TAC Chapter 150.1003, classroom teachers must be appraised annually, unless the teacher has been appraised as proficient or better in each domain on the most recent appraisal. If so, the teacher and school district may agree to conduct an appraisal less often, but at least once every five years in accordance to local school board policy outlining criteria to waive annual appraisal. In addition to a 45 minute formal observation, classroom walkthroughs and other observations conducted at the discretion of campus administrators will be part of the final evaluation record.

In regards to the 45 minute formal observation, TAC Chapter 150.1003(c) states that a teacher may be given advanced notice of the date and time of an appraisal, but advance notice is not required. Each school district shall establish a calendar for the appraisal of teachers which includes specific days in which a teacher cannot be formally appraised. Any documentation that will influence the teacher's summative annual appraisal report must be shared in writing with the teacher within 10 business days of the appraiser's knowledge of the occurrence. A written summative annual appraisal report shall be shared with the teacher no later than five business days before the summative conference and no later than 15 business days before the last day of instruction for students in accordance to TAC Chapter 150.1003(h). Unless waived in writing by

the teacher a summative annual appraisal report shall be held within the timeline specified on the district calendar and no later than 15 business days before the last day of instruction for students.

In accordance with Chapter 150.1004 of TAC, a teacher whose performance meets “unsatisfactory” in one or more domains or who is rated at “below expectations” in two or more domains will be designated as “a teacher in need of assistance.” When a teacher is designated as a teacher in need of assistance, the appraiser and/or teacher’s supervisor shall, in consultation with the teacher, develop an intervention plan that includes: domains that designated the teacher as a teacher in need of assistance; directives or recommendations for professional improvement activities; evidence that is used to determine successful completion of professional improvement activities; directives in changes of teacher behavior; evidence that is used to determine of teacher behavior has changed; and specific timeline for successful completion. In addition, Chapter 150.004 specifies that if a teacher fails to complete all activities outlined in the intervention plan within the timeline specified the principal may consider separation from the assignment, campus and/or district.

A teacher may request a second appraisal by another appraiser within ten days of receiving an observation summary or a written summative report in which the teacher disagrees. School districts also have a responsibility to establish and adopt written procedures to guide teachers in the grievance process.

Summary

Chapter two provided the framework for the study comparing students’ success in Algebra I End of Course when taught by alternative certification program teachers and when taught by traditional certification program teachers. An analysis of literature was conducted on teacher shortage area, teacher licensure in Texas, alternative teacher certification programs,

requirements for alternative certification teacher program, ACP's impact on student achievement, traditional teacher programs in Texas, the effects of teacher absenteeism on student achievement, the importance of experience, and the Professional Development and Appraisal System of Texas.

The review of literature found that there is a shortage of math teachers in this country especially in schools with a high population of minority and low income students. Researchers have found that students will experience the effects of the teacher shortage in numerous ways including overall deficiencies in teacher effectiveness. Due to the teacher shortage and the demand to recruit, train and hire teachers in high demand areas, such as mathematics, alternative teacher certification programs were created in Texas in the mid 1980's. The review of literature indicated that currently Texas has 161 alternative teacher certification programs and that training provided to the interns accepted into alternative certification programs vary from one program to another. The literature revealed that there are concerns with the amount and quality of the training alternative teacher certification programs provide. Numerous studies have been conducted to measure the impact alternative certification program teachers have had on student achievement. The studies reviewed revealed a positive effect alternative certification teachers have had on student performance especially in the area of mathematics.

The review of literature explained the coursework, including pedagogy, which an individual is required to complete to graduate from a traditional teacher preparation program in Texas. In addition, the effects of teacher absenteeism on student achievement were examined and found that teachers average approximately two weeks out of the classroom per year. The review of literature found that high teacher absenteeism has an adverse effect on the whole school organization and its academic performance. The importance of years of experience was

examined as well and found teacher experience to be more impactful during the first few years of teaching. Finally, the review of literature analyzed the Professional Development and Appraisal System of Texas which is the instrument used to measure teacher effectiveness in the state and is currently used by 86% of the districts to evaluate teacher performance.

CHAPTER III

METHODOLOGY

This chapter provides an overview of the research design for this study which focuses on comparing students' success in Algebra I EOC when taught by alternative certification program teachers and by traditional certification program teachers. In addition, this chapter provides information on the population and samples being collected for the purpose of this study. The researcher details the instrumentation used in the study as well as the process of data collection. This chapter concludes with the research description of the data analysis process.

Research Design

The purpose of this quantitative study was to measure the effectiveness of alternative certification teachers versus traditionally trained teachers of 9th grade Hispanic students enrolled in Algebra I, a hard-to-staff content area, in three school districts in Texas. A descriptive design was used for this study because two intact groups of subjects were formed on a basis other than random assignment. Specifically, a non-equivalent comparison group design was used in the study. Participating teachers were matched by schools based on type of classroom, years of experience, type of mathematics taught (Algebra I), grade level (9th), attendance records, and teacher preparation program. Based on Texas Education Agency (TEA) data, the participating high schools are Title I schools with approximately 85% - 96.2% economically disadvantaged student enrollment. All three school districts mirror the same demographics: 97 – 99.8 percent Hispanic and 57.3 - 73 percent English Language Learners. In this study, the dependent variable

(DV) was student performance levels in the Algebra I End of Course exam. Student performance was measured by the scale scores on the Algebra I EOC exam. The researcher inputted the raw data into SPSS 21 and ran an analysis on the data to calculate the means of the dependent variables (scores) within the independent variable categories.

As a predictive analysis, a multiple regression was used to describe data and to explain the relationship between one dependent variable (student performance on Algebra I EOC) and four independent variables (teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience). Multiple regression is a multivariate statistical technique used to analyze the relationship between a single dependent variable (DV) and several independent variables (IV). The single dependent variable (DV) is also called the Criterion Variable while the independent variables (IV) are called Predictor Variables. Multiple regression is commonly used to assess the degree of the relationship or variance between the DV and a set of IV's. When using multiple regression, researchers use the term "independent variables" to identify those variables they believe may influence the DV. When conducting a multiple regression analysis, the size of the sample is an important consideration because it will determine whether there is a significant relationship between the DV and the IVs and the generalizability of the findings. The sample size for this research is 2,553 cases.

For the purpose of this study the researcher determined the variance between Hispanic student performance on Algebra I EOC and teacher PDAS scores. Secondly, the researcher determined the variance between Hispanic student performance on Algebra I EOC and teacher PDAS scores and teacher preparation program. Thirdly, the researcher determined the variance between Hispanic student performance on Algebra I EOC and teacher PDAS scores, teacher preparation program, and teacher attendance. Finally, the researcher determined the variance

between Hispanic student performance on Algebra I EOC and teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience in three school districts in Texas. This study will help determine which group of teachers have a greater impact on 9th grade student performance on the Algebra I EOC exam.

Population and Sample

Participants were teachers with zero to twenty-four years of experience. A traditionally certified teacher is one who graduated with a degree in education and who completed a course of study through a university which included student teaching. An alternative certified teacher is one who meets the requirements of an alternative certification program, which includes a bachelor's degree with 24 hours in a specific content area. In addition, 12 out of the 24 hours must be upper division courses in said content. For the purpose of this study, a comparison group was composed of 20 ACP teachers and 20 traditionally trained teachers who teach 9th grade Algebra I. All 40 teachers hold a bachelor's degree and meet the definition of highly qualified by the State Board of Educator Certification (SBEC) in the state of Texas. The means of the scores of the students taught by alternatively certified teachers with 0-24 years of teaching experience was compared to the mean scores of students taught by traditionally certified teachers with 0-24 years of teaching experience. The desired sample was: 1000-1500 students taught by 20 alternative certified teacher and 1000-1500 students taught by 20 traditional preparation program teachers. Before gathering the data, the researcher completed the required Institutional Review Board certification process. The researcher obtained permission from the three district superintendents to conduct the study within their school districts. All data was collected by the researcher. Years of experience, teacher attendance and teacher evaluation ratings were obtained through the Office of Human Resources anonymously through identification numbers randomly

assigned to them. The Office of Human Resources gathered data on student performance and linked it to each teacher.

Instrumentation

The instrument used to assess the students' performance, in this study, was the Texas Algebra I End of Course assessment. The Texas Education Agency has established three different approved graduation plans. All three graduation plans, Minimum, Recommended, and Distinguished, requires an Algebra I credit to meet graduation requirements. Algebra I and Geometry are the only two mathematics courses that are required in all three graduation plans. Beginning the 2011-2012 school year, incoming freshmen in Texas high schools can graduate only if he/she achieves successfully passes the Algebra I course and earns a "Satisfactory" score in the Algebra I EOC. The Algebra I EOC is a 54-item assessment that measures 5 objectives: Functional relationships, Properties and Attributes of Functions, Linear Functions, and Quadric and other Nonlinear Functions. The raw score range is from 0 – 54. The scale score for the Algebra I EOC is 1366 – 6137. The state provides three methods of reporting student performance: Level 1: Unsatisfactory, Level 2: Satisfactory and Level 3: Advanced. The raw score range for the different levels are: Level 1: 0 – 19, Level 2: 20 – 41, and Level 3: 42 – 54. The scale score range for the different levels are: Level 1: 1399 – 3457, Level 2: 3500 – 4306, and Level 3: 4333 – 6137. The standards used for measuring student performance are based on Phase-In 1 criteria. To score "Advanced" a student would need to earn 42 out of the 54 items (78%) correct which would be equivalent to a scale score of 4333. To achieve "Satisfactory" a student would have to earn a raw score between 20 - 41, equivalent to a scale score between 3500-4306. A student scoring at a Level 2: "Satisfactory" received 37% (scale score: 3500) of the items correct and is considered "a passer." A raw score below 19 which is a scale score

below 3500 would constitute “unsatisfactory.” For the purpose of this study, the scale score was used as the dependent variable.

The instrument used to rate a teacher’s effectiveness, for the purpose of this research, was the evaluation system approved by the commissioner of education, Professional Development and Appraisal System (PDAS) of Texas. PDAS includes 51 criteria within eight domains reflecting the Proficiencies for Learned Centered Instruction adopted in 1997 by the State Board of Educator Certification (SBEC). The domains are: Active, Successful Student Participation; Learner-Centered Instruction; Evaluation and Feedback on Student Progress; Management of Student Discipline, Instructional Strategies, Time/Materials; Professional Development; Compliance with Policies, Operating Procedures and Requirements; and Improvement of All Students’ Academic Performance. Each domain is rated by a certified appraiser and is rated using the following categories: exceeds expectations; proficient; below expectations; and unsatisfactory. For the purpose of this study the score for PDAS was the sum of all 8 domains. Teachers rated as “Unsatisfactory” score between 0 and 40; teachers rated “Below Expectation” score between 41 and 126; teachers rated “Proficient” score between 127 and 209; and teachers rated as “Exceeds Expectations” score between a 200 and 255. The cumulative points scored by each teacher for all eight domains was used as the data source and inputted into the SPSS 21 system.

Data Collection Procedures

Permission to conduct the study was obtained from The Institutional Review Board (IRB) at the University of Texas – Pan American. A copy of the Notice for Approval is included in Appendix B. Permission from the three district superintendents was obtained to collect data from their Human Resources Departments in each school district. The superintendents’ letters for

data collection permission is included in Appendices C, D, and E. The first step in the data collection process was a meeting with district representatives to explain the study and provide them with the data form which includes all information needed for the study. Appendix A provided a guide of how district representatives could gather data and submit to the researcher. District representatives collected data for the study and informed the researcher when data was ready for collection. The researcher personally collected documents from two school districts. The third school district submitted data to the researcher electronically. Sufficient time was provided to all participating school districts to gather data. The data collection process was completed in a three week period.

Data Analysis Procedures

To determine if the dependent or criterion variables (Y_a, Y_b, Y_c) were a function of the independent or predictor variables (X) multiple linear regression analyses were used to analyze the data collected using SPSS version 21. The relationship between variables may be an accidental consequence of their relationship with other variables. Therefore, a series of regression analyses were performed to determine the combined and independent effect of the independent variables on 9th grade student performance on Algebra I EOC. A stepwise model regression analysis of all subtests was used to derive the total variance of 9th grade student performance on Algebra I EOC that was accounted for and explained by the teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience. In addition, a stepwise model was used to determine the order of significance by the independent variable. If the null hypothesis for the stepwise model procedure was rejected, the follow-up analysis was the all possible regression procedure. The null hypotheses for the present study were tested with an F distribution at the .05 level of significance.

Summary

The purpose of this quantitative study was to examine the effectiveness of alternative certification teachers versus traditionally trained teachers of 9th grade Hispanic students enrolled in Algebra I as measured by the students' raw score on the Texas Algebra I End Of Course (EOC) Assessment. Furthermore, this study investigated if teacher attendance, years of experience and teacher evaluation scores of teachers trained in alternative certification programs and traditional preparation programs had a direct impact on 9th grade students' performance on Algebra I EOC exam. This chapter explained the research design, population and sample, instrumentation, and data collection and analysis procedures used in the study.

CHAPTER IV

FINDINGS

This chapter presents the research findings from analyses of data evaluated as part of this study. Data were analyzed to determine if significant relationships existed between the dependent variable of student performance on Algebra I EOC and the independent variables, teacher PDAS score, teacher preparation program, teacher attendance and teacher years of experience in three school districts in Texas. This chapter is divided into four sections. The first section provides demographics of the case studies. The second section contains tables and charts detailing data collection, and the third section includes results of data analyses from the multiple regression model. The final section is a summary of the chapter.

Demographics of the Case Studies

A total of 2,553 student cases were used in the study. Student Algebra I EOC scores were collected from 20 traditional teachers and 20 alternative certified teaching 9th grade Algebra I in three school districts in Texas. A total of 1,337 student cases were instructed in classrooms with an ACP teacher. A total of 1,216 student cases were instructed in classrooms with a traditionally trained teacher. The teachers' years of experience varied from one to twenty-four years. Teacher absences ranged from one to forty-one days absent. Teachers' PDAS cumulative scores ranged from 143 – 245. Table 1 summarizes teacher data including the average scale scores of students in those classrooms.

Table 1

Data Summary Table

Teacher	Preparation Program	Days absent	Yrs of Exp	PDAS	Students Average Scale Scores
1	Alternative	14.5	17	172	3770.20
2	Traditional	4	2	190	3666.34
3	Alternative	1	7	200	3790.05
4	Traditional	8	16	216	3994.77
5	Traditional	5	20	208	4463.33
6	Traditional	2	2	184	3932.27
7	Traditional	8	1	176	3893.96
8	Alternative	19.5	9	183	3879.88
9	Traditional	4	2	174	3719.12
10	Traditional	8	18	200	3634.93
11	Traditional	6	24	194	3832.36
12	Traditional	13.5	15	164	3515.49
13	Alternative	21.5	3	199	3559.25
14	Traditional	41	4	209	3721.18
15	Alternative	11.5	9	166	3589.77
16	Traditional	9	20	190	3502.88
17	Alternative	15	1	179	3463.48
18	Alternative	11.5	5	211	3643.35
19	Traditional	9	2	183	3599.81
20	Alternative	15	2	221	3787.52

Table 1 (Continued)

Data Summary Table

Teacher	Preparation Program	Days absent	Yrs of Exp	PDAS	Students Average Scale score
22	Alternative	19.5	2	143	3582.08
23	Alternative	10.5	1	212	3758.04
24	Traditional	9	10	215	3618.17
25	Alternative	12.5	4	245	3770.21
26	Traditional	15	9	196	3620.37
27	Alternative	7.5	2	204	3778.96
28	Alternative	23.5	1	202	3666.03
29	Traditional	15	12	232	4052.89
30	Traditional	8	11	168	3609.26
31	Alternative	10.5	7	230	3466.59
32	Alternative	4	5	168	3382.40
33	Alternative	6	6	168	3424.77
34	Alternative	6	4	168	3817.00
35	Alternative	10	4	168	3556.95
36	Traditional	13.5	14	230	3426.28
37	Traditional	18.5	15	230	3731.65
38	Alternative	8	4	194	3505.54
39	Alternative	10	7	230	3552.04
40	Traditional	8	10	168	3188.42

Data Collection: Tables and Charts

Data gathered and analyzed found that all 40 teachers, ACP and traditionally trained, received a rating of Proficient or Exceeds Expectations on their annual evaluation, Professional Development and Appraisal System (PDAS). None of the 40 teachers in the three school districts teaching Algebra I received a below expectations or unsatisfactory rating on their PDAS evaluation instrument. However, in order to differentiate among the 2 ratings (proficient and exceeds expectations) the researcher precisely dissected the levels of proficiency as well as the levels of exceeds expectations among the teachers. Table 2 illustrates the different levels of proficiency and the different levels of exceeds expectations on PDAS teacher scores (IV_a) including student achievement on Algebra I EOC assessment (DV).

Table 2

Review of PDAS in Relation to Student Scale Scores

PDAS Ratings	Average Student Scale Score
Proficient Low 127-168	3518.46
Proficient High 169 - 209	3715.80
Exceeds Low 210-233	3703.13
Exceeds High 233-255	3825.05

Table 2 shows that there is a difference in student scales scores between teachers rated as proficient by their PDAS teacher appraisers and teachers rated at exceeds expectations. The

difference in the average student scale scores in Algebra I EOC from teachers rated as proficient to those rated as exceeds is 71.08 scale points.

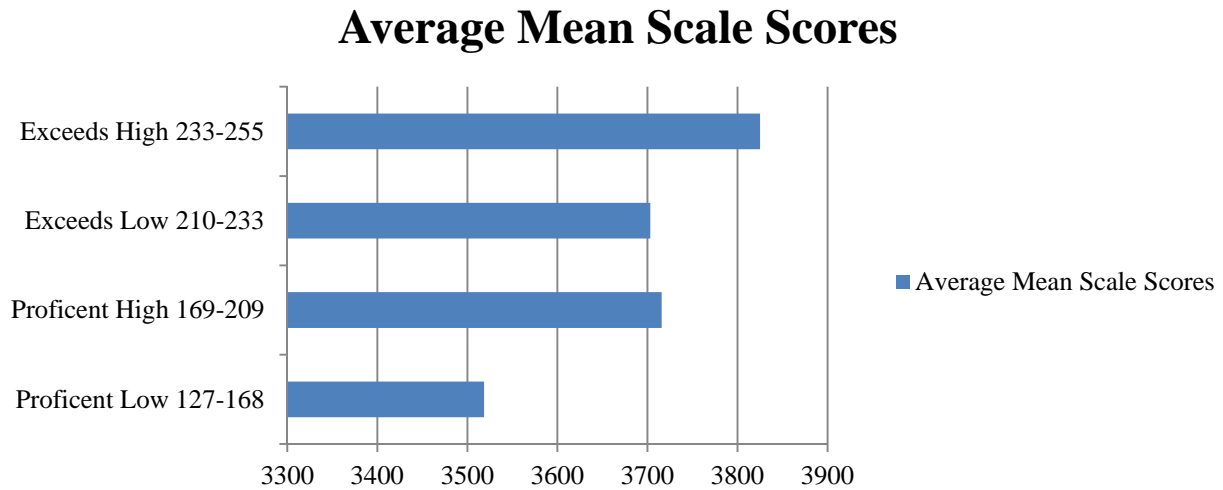


Figure 2. Students' mean scale scores by teacher PDAS evaluation scores

Figure 2 is a visual representation of Table 2 in a bar graph showing student Algebra I EOC mean scale scores results by teacher PDAS evaluation scores. The mean scale scores for students instructed by teachers evaluated at low proficient were 3518.46. The means scale score for the students whose teachers PDAS score was at a high proficient were 3715.80. Students mean scale score was 3703.13 for students instructed by teachers who were evaluated at the low exceeds level. The mean scale scores for students taught by teachers who were rated at a high exceeds were at 3825.05. The difference in Algebra I EOC students' mean scale scores between the low proficient teachers and the high exceeds teachers was 306.59 scale points.

Additional data gathered from the study include student scores by level of achievement. Table 3 compares the student's achievement (DV) levels on Algebra I EOC and average scale scores based on teacher preparation program (IV_b).

Table 3

9th Grade Algebra I EOC Results by Teacher Preparation Program (Data in Percentages)

	Alternative Certification Teachers	Traditionally Trained Teachers
Number of students	1,337	1,216
Number of students at a Level 1 (raw score of <3500)	488 (36%)	375 (31%)
Number of students at a Level 2 (raw score between 3500 – 4306)	775 (58%)	727 (60%)
Number of students at a Level 3 (raw score of > 4333)	74 (6%)	114 (9%)
Number of students at a level 2 & 3 (passers)	849 (64%)	841 (69%)
Students' Average Score Score	3632	3736

The data from Table 3 shows that 36% of the students taught by ACP teachers failed to meet the state standard (Level 2). Students taught by traditionally trained teachers failed to meet state standards at a rate of 31%. In addition, 58% of the students taught by ACP teachers meet Level 2 standards; whereas 60% of the students taught by traditionally trained teachers met those same standards. Moreover, 6% of the students instructed by an ACP teacher passing the EOC assessment at a Level 3 standard; whereas 9% of the students instructed by traditional teachers reached the Level 3 standard. The average students' scale scores varied as well between the teacher preparation programs by 104 scale points. Students instructed by ACP teachers had an average scale score of 3632 and students instructed by traditionally trained teachers had an

average scale score of 3736 in the Algebra I EOC assessment. Figure 2 depicts this information in graphic form.

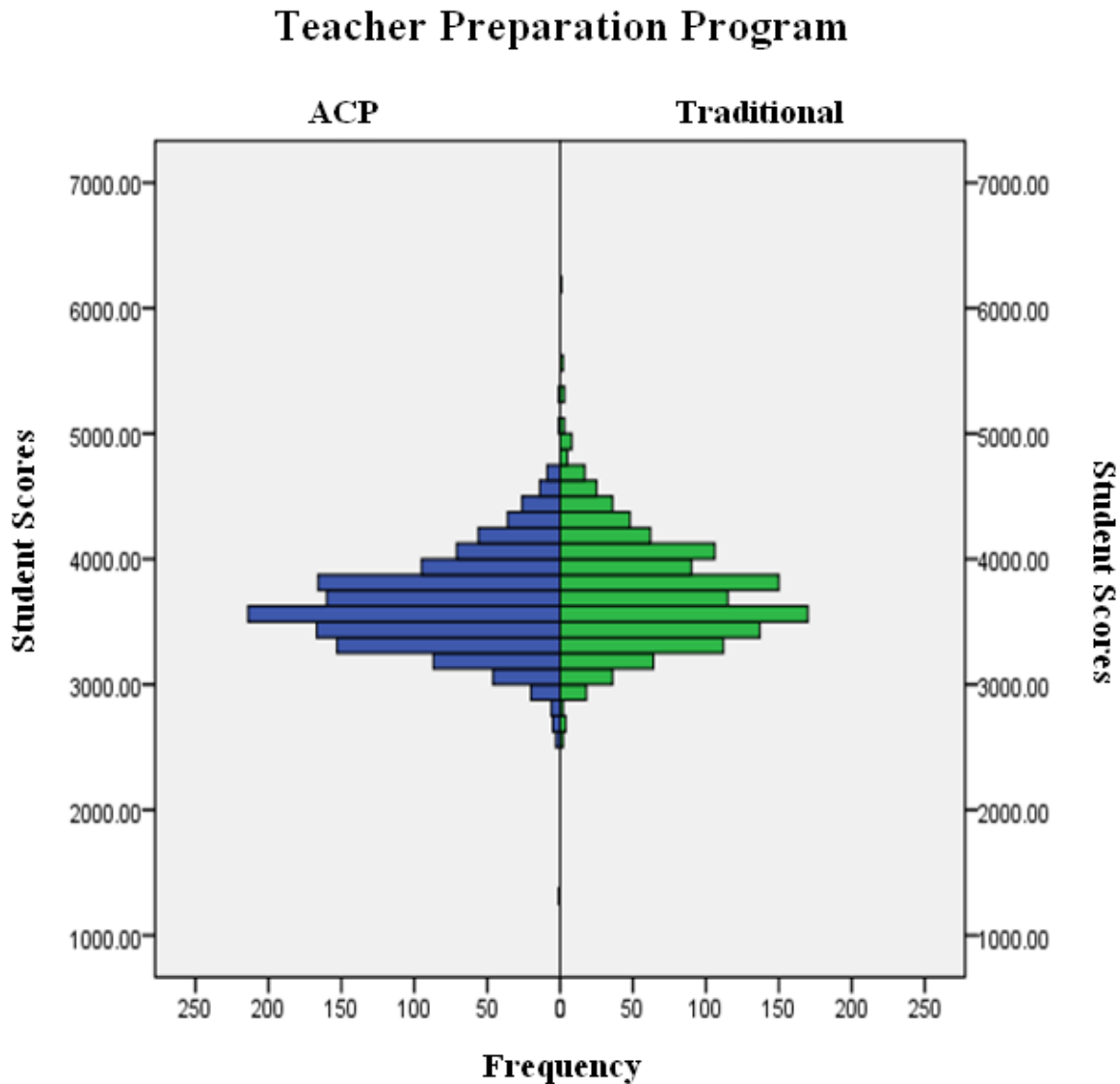


Figure 3. Frequency graph of Algebra I EOC results by teacher preparation program. Pyramid representation.

Figure 3 is a visual representation of Table 3 in a population pyramid showing students Algebra I EOC results by teacher preparation program and the frequency distribution of set scale scores. The scale scores distribution for students instructed by ACP teachers is a bell curve. The

scale scores distribution for students instructed by traditionally trained teachers is a bell curve skewed to the left.

In regards to student performance on 9th grade Algebra I EOC (DV) and teacher attendance (IV_c) the following table and graph illustrate the findings.

Table 4

9th Grade Algebra I EOC Teacher Attendance and Student Scale Scores

Type of preparation program	# of Teachers	# of teachers with 10 or more absences	% of teachers with 10 or more absences	Students' Algebra I EOC Average Scale Score
ACP	20	14	70%	3632
Traditional	20	6	30%	3736

The data collected indicates that 70% of the 9th grade Algebra I EOC ACP teachers in the three school districts missed 10 or more instructional days during the school year in which their students yield an average scale score of 3632. The data as well shows that 30% of the 9th grade Algebra I EOC traditionally trained teachers in the three school districts missed 10 or more instructional days during the school year in which their students yield an average scale score of 3736.

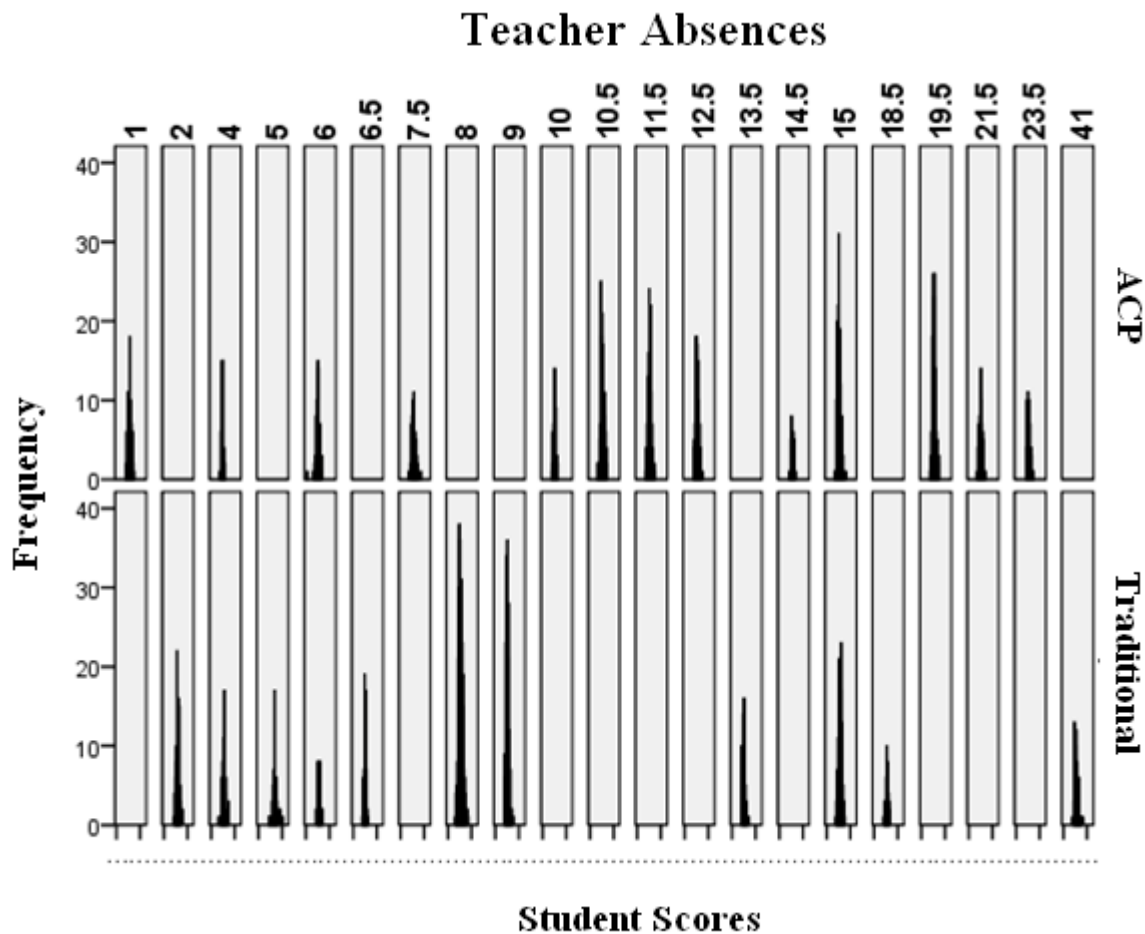


Figure 4. Frequency graph of teacher attendance by Teacher preparation program.

Figure 4 is a visual representation of Table 4. Figure 3 shows that more ACP teachers assigned to teach 9th grade Algebra I are absent 10 or more days. The graph illustrates that the majority of the traditionally trained teachers assigned to teach 9th grade Algebra I are absent 9 or less days.

Multiple Regression Analyses

A multiple regression analysis was conducted to evaluate how well the given variables predicted students' scores on the Algebra I EOC. The predictor variables were Teacher Preparation Program, Teacher Absences, Teacher Years of Experience, and Teacher PDAS

Scores, while the criterion variable was the students' Algebra I EOC scores. The linear combination of the predictor variables was significantly related to the Algebra I EOC scores, $F(4, 2548) = 30.48$, $p < .01$. The sample multiple correlations coefficient was .214, indicating that approximately 4.5 % of the variance of the student scores in the sample can be accounted for by the linear combination of the indicator variables.

In Table 5, the researcher presents indices to indicate the relative strength of the individual predictors. Three of the bivariate correlations between the predictor variables and the student scores were positive, and one was negative. In addition, three of the four indices were statistically significant ($p < .05$). The correlations between Teacher Preparation Program, Teacher Absences, and Teacher PDAS Scores and the students' Algebra I EOC scores were significant. On the basis of these correlational analyses, it is tempting to conclude that the only useful predictors for student scores are Teacher Preparation Program, Teachers Absences, and Teacher PDAS Scores. Together they account for approximately 4% of the variance of the students' scores, while the Teacher Years Experience did not appear to be significant in accounting for any variance in the students' scores. However, judgments about the relative importance of these predictors are difficult because they are correlated. The correlations among the four variables ranged from -.14 to .43, indicating weak to moderate correlations.

Table 5

The Bivariate and Partial Correlations of the Predictors with Algebra I EOC Scores

Predictors	Correlation between each predictor and the Algebra I EOC scores	Correlation between each predictor and Algebra I EOC scores controlling for other predictors
Teacher Preparation Program	.127**	.094**
Teacher Absences	-.045*	-.050*
Teacher Years Experience	.104**	.029
Teacher PDAS Scores	.166**	.163**

* $p < .05$, ** $p < .01$

Stepwise multiple regression analyses were used to answer the additional research questions. The null hypotheses for the present study were tested with an F distribution at the .05 level of significance. The research questions that guided the present study and the null hypothesis tested are as follows:

Research Question #1: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores?

Ho1: Student performance on Algebra I EOC is not a function of teacher PDAS scores.

The obtained multiple regression coefficient between student performance on Algebra I EOC and the independent teacher variable of teacher PDAS scores ($R = .17$), shown in Table 5 is statistically significant ($df = 1, 2,551$); $p (< .05)$. The data reject null hypothesis number one. The data indicates that student performance on Algebra I EOC is a function of the teacher's PDAS scores. The R square obtained in the analysis indicates that teacher PDAS scores account for 3% of the total variance on student performance on Algebra I EOC.

Table 6

Regression Analysis of Stepwise Model Between Student Performance on Algebra I EOC and Teacher PDAS Scores

Model	R	R ²	Adjusted R ²	df	F	P
Student Algebra Scores	.17	.03	.03	1, 2,551	72.22	.00

Predictor Variable: teacher PDAS scores

Dependent Variable: Student Algebra I Scores in EOC

P<.05

The standardized regression coefficients between student performance on Algebra I EOC and the predictor variable of teacher PDAS is shown in Table 6. This variable was statistically significant ($p < .05$).

Table 7

Standardized Beta Coefficients Between Student Performance on Algebra I EOC and Teacher PDAS Scores

Model	Standardized Beta Coefficient	t	P
Teacher PDAS Scores	.17	8.50	.00

Dependent Variable: student scores on Algebra I EOC

$p < .05$

Research Question #2: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores and teacher preparation program?

Ho2: Student performance on Algebra I EOC is not a function of Teacher PDAS scores and teacher preparation program.

The obtained multiple regression coefficient between student performance on Algebra I EOC and the independent teacher variables of teacher PDAS scores and teacher preparation program

($R = .214$), shown in Table 7 is statistically significant ($df = 2, 2,550$); $p (< .05)$. The data reject null hypothesis number two. The data indicates that student performance on Algebra I EOC is a function of the teacher PDAS scores and teacher preparation program. The R square obtained in the analysis indicates that teacher PDAS scores and teacher preparation program account for 4% of the total variance on student performance on Algebra I EOC.

Table 8

Regression Analysis of Stepwise Model Between Student Performance on Algebra I EOC and Teacher PDAS Scores and Teacher Preparation Program

Model	R	R ²	Adjusted R ²	df	F	P
Student Algebra Scores	.214	.04	.04	2, 2,550	56.19	.00

Predictor Variables: teacher PDAS scores and teacher preparation program

Dependent Variable: Student Algebra I Scores in EOC

$p < .05$

The standardized regression coefficient between student performance on Algebra I EOC and the predictor variables of teacher PDAS scores and teacher preparation program is shown in Table 8.

These variables are statistically significant ($p < .05$).

Table 9

Standardized Beta Coefficients Between Student Performance on Algebra I EOC and Teacher PDAS Scores and Teacher Preparation Program

Model	Standardized Beta Coefficient	t	P
Teacher PDAS Scores	.16	8.35	.00
Teacher Preparation Program	.12	6.25	.00

Dependent Variable: student scores on Algebra I EOC
 $p < .05$

Research Question #3: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores, teacher preparation program and teacher attendance?

Ho3: Student performance on Algebra I EOC is not a function of teacher PDAS scores, teacher preparation program and teacher attendance.

The obtained multiple regression coefficient between student performance on Algebra I EOC and the independent teacher variables of teacher PDAS scores, teacher preparation program and teacher attendance ($R = .214$), shown in Table 9 is statistically significant ($df = 3, 2,549$); $p (<.05)$. The data reject null hypothesis number three. The data indicates that student performance on Algebra I EOC is a function of the teacher PDAS scores, teacher preparation program, and teacher attendance. The R square obtained in the analysis indicates that teacher PDAS scores account for 4.5% of the variance on student performance on Algebra I EOC.

Table 10

Regression Analysis of Stepwise Model Between Student Performance on Algebra I EOC and Teacher PDAS Scores, Teacher Preparation Program, and Teacher Attendance

Model	R	R ²	Adjusted R ²	df	F	P
Student Algebra Scores	.214	.05	.04	3, 2,549	40.06	.00

Predictor Variables: teacher PDAS scores, teacher preparation program, and teacher attendance
 Dependent Variable: Student Algebra I Scores in EOC
 $p < .05$

The standardized regression coefficients between student performance on Algebra I EOC and the predictor variables of teacher PDAS scores, teacher preparation program, and teacher attendance is shown in Table 10. These variables were statistically significant ($p < .05$).

Table 11

Standardized Beta Coefficients Between Student Performance on Algebra I EOC and Teacher PDAS Scores, Teacher Preparation Program, and Teacher Attendance

Model	Standardized Beta Coefficient	t	P
Teacher PDAS Scores	.17	8.64	.00
Teacher Preparation Program	.12	5.91	.00
Teacher Attendance	-.05	-2.74	.01

Dependent Variable: student scores on Algebra I EOC
 $p < .05$

Research Question #4: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience?

H₀4: Student performance on Algebra I EOC is not a function of teacher PDAS, teacher preparation program, teacher attendance and teacher years of experience.

The obtained multiple regression coefficient between student performance on Algebra I EOC and the independent teacher variables of teacher PDAS scores, teacher preparation program, teacher attendance, and teachers' years of experience proved not to be statistically significant.

The data failed to reject null hypothesis number four. The data indicates that student performance on Algebra I EOC is a not a function of the teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience.

Summary

Numerous tables and graphs included in this chapter outlined the relationship between the dependent variable, student performance of the Algebra I EOC exam and the independent variables, teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience. In this regression analysis teacher PDAS scores accounted for 3% of the total variance in student scores. Moreover, when the independent variable of teacher preparation program was added to the regression equation 4% of the total variance was accounted for. However, when the independent variable of teacher attendance was added to the regression equation the total variance accounted for 4.4%. When the regression was analyzed with the independent variable, teachers' years of experience, the model removed the IV due its insignificance to students' performance on the Algebra I EOC exam. Chapter V will provide a discussion of the findings, conclusions, implications, and recommendations from the study.

Table 12

Summary of Research Questions and Null Hypotheses Tested and Decisions

Questions and Null Hypotheses	Decisions
<p>Research Question 1: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores?</p> <p>H₀1: Student performance on Algebra I EOC (Y_1) is not a function of teacher PDAS scores (X_a).</p>	Reject H ₀ 1
<p>Research Question 2: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores and teacher preparation program?</p> <p>H₀2: Student performance on Algebra I EOC (Y_2) is not a function of teacher PDAS scores (X_a) and teacher preparation program (X_b)</p>	Reject H ₀ 2
<p>Research Question 3: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores, teacher preparation program and teacher attendance?</p> <p>H₀3: Student performance on Algebra I EOC (Y_3) is not a function of teacher PDAS scores (X_a), teacher preparation program (X_b) and teacher attendance (X_c).</p>	Reject H ₀ 3

Table 12 (Continued)

Summary of Research Questions and Null Hypotheses Tested and Decisions

Questions and Null Hypotheses	Decisions
<p>Research Question 4: How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience?</p>	<p>Failed to Reject H_04</p>

CHAPTER V

DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter includes a summary of the problem, discussion of findings for the research questions, conclusions, and implications and recommendations. Information provided in this chapter will promote further understanding of the influence of teacher PDAS scores, teacher preparation program, teacher attendance and teacher years of experience on 9th grade Hispanic students Algebra I EOC results in three school districts in Texas.

Summary of the Problem

Chapter 19 of the Texas Administrative Code specifies that beginning in 2011 – 2012 all 9th graders would be required to not only receive a course credit for Algebra I but pass the EOC assessment in order to meet graduation requirements. The STAAR Statewide Summary Report for the Spring 2012 administration revealed that 21% of the Hispanic students failed the Algebra I EOC as opposed to 10% of the White students. In addition, researchers have found that Algebra I is the gatekeeper course for high school students. Secretary Riley (1997) reported that low income minority students who successfully took and mastered Algebra I in high school were three times more likely to attend college. Quattrociochi (2002) found that minority students, such as Hispanics, who mastered Algebra I in high school, succeed in college at almost the same rates as White students. The implications are clear that Hispanic students need to acquire and master the Algebra I skills to graduate and to be college and career ready. The hiring and selection process of classroom teachers is critical because teachers have the greatest impact on students' lives (Marzano, Toth, & Schooling, 2011; Pillsbury, 2005). However, the hiring of

highly qualified and effective mathematic teachers has not been easy. The research conducted by the Urban Teacher Collaborative (2000) found that 95% of the school districts have an immediate need to hire mathematic teachers. Furthermore, the U.S. Department of Education (2012) listed mathematics as a shortage content area in the state of Texas for the last 20 years. When school districts began to experience teacher shortages Alternative Certification Programs began to fill the needs in many classrooms. According to the State Board of Educator Certification under TEA, 36% of the classroom teachers in 2011 came through an Alternative Certification Program and 48% of the classroom teachers hired in 2011 came through a university based certification program. The remaining 16% of the certified teachers in the state of Texas in 2011 received a one year certificate due to meeting out of state certification requirements (TEA, 2012). During the one year period of this nonrenewable certificate, the educator must complete all appropriate tests according to SBEC. Goldhaber and Brewer (2002) have acknowledged that very little research exists on the effectiveness of a teacher preparation program in relationships to positive student performance.

The purpose of this study was to determine the effectiveness of alternative certification teachers versus traditionally trained teachers of 9th grade Hispanic students enrolled in Algebra I, as measured by the students' raw score on the Texas Algebra I End Of Course (EOC) Assessment. Furthermore, this study investigated if the independent variables such as, teacher attendance, years of experience and teacher evaluation ratings of teachers trained in alternative certification programs and traditional preparation programs had a direct impact on 9th grade students' performance on Algebra I EOC exam in three school districts in Texas. Four research questions were developed to guide the study. The findings for the research questions are discussed in the following sections.

Discussion of Findings for Research Questions

The discussion of the findings for the research questions is organized by the four research questions including the IV(s); teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience.

Student Performance in Relation to Teacher PDAS Scores

This section includes discussion of the findings on 9th grade student performance on Algebra I EOC and teacher PDAS scores in three school districts in Texas. The following research question guided this section of the study of student performance.

How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores?

This study found a significant relationship between student performance on Algebra I EOC and teacher PDAS scores. Three percent of the variance in student performance of 9th grade students in Algebra I EOC in three school districts in Texas was explained by the teacher PDAS scores. Although no teacher was rated at below expectations or unsatisfactory the teachers who were rated at the lower level of proficient had a lower student percent passing and a lower scale score mean. Teachers rated at high proficient and exceed expectations had higher percent student passing rates on the Algebra I EOC and their students had overall higher scale scores. After examining the data on the relationship between student performance on Algebra I EOC and teacher PDAS scores the researcher has concluded that the administrators in the three school districts in Texas were able to identify and rate teachers based on observations, both formal and informal, which has a direct correlation to student success on Algebra I EOC. Based on the data the researcher determined that the 9th grade students in Algebra I classrooms where teachers were rated by their appraisers at exceeds expectations on their PDAS performance

evaluation were more likely to be successful on the Algebra I EOC. Requiring teachers to share their last PDAS scores would be of benefit to administrators when they are in the process of hiring more effective Algebra I teachers based on the findings of this study.

This study contributes to the literature by Marzano, Toth, and Schooling (2011) which states that the sole purpose of evaluating a classroom teacher is to determine their effectiveness, which is the leading indicator for improving students' academic performance. Odden, Borman, and Fermanich (2004) stress that teachers have a significant influence on student's academic performance. There is a direct correlation between performance-based teacher evaluation ratings and student performance (Kimbel, White, Milanowski, & Borman, 2004; Odden, et al., 2004). Results from this study support such research as 9th grade Algebra I students in three school districts in Texas performed better on the Algebra I EOC when taught by a classroom teacher who has been rated at high proficient and exceeds expectations by their appraiser. Milanowski (2004) found that a teachers' evaluation system is able to identify which classroom teachers will have students with higher than anticipated levels of attainment as measured by test scores. Therefore, the researcher concludes that it would behoove the campus administrator to consider a teacher's PDAS scores prior to assigning a teacher to an Algebra I course.

Student Performance in Relation to Teacher PDAS Scores and Teacher Preparation Program

This section includes discussion of the findings on 9th grade student performance on Algebra I EOC and teacher PDAS scores and teacher preparation program in three school districts in Texas. The following research question guided the study of student performance.

How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores and teacher preparation program?

This study found a significant relationship between student performance on Algebra I EOC and teacher PDAS scores and teacher preparation program. Four percent of the variance in student performance of 9th grade students in Algebra I EOC in three school districts in Texas was explained by the teachers PDAS scores and teacher preparation program. Results of this study show that thirty-six percent of the students who were instructed by an ACP teacher failed to meet the Level I (did not meet) standards in the Algebra I EOC as opposed to thirty-one percent of the students who were instructed by traditionally trained teachers. In addition, fifty-eight percent of the students instructed by ACP teachers met the Level 2 (met) standards as opposed to sixty percent of the students taught by traditionally trained teachers. Six percent of the students who were taught by ACP teachers achieved a Level 3 standard, which is defined as mastering seventy-two percent of the test. Nine percent of the students who were taught by traditionally trained teachers achieved a Level 3 standard. Moreover, the research collected from 2,553 students shows mean scale score differences between students taught by ACP teachers and traditionally trained teachers. The mean scale score for students taught by ACP teachers was 102 scale points below those taught by traditionally trained teachers.

After an analysis of the findings the researcher concludes that ACP teachers know their content, as they have demonstrated mastery of the content they are teaching, and many have earned a bachelor's degree in the content area they are assigned to; however, ACP teachers lack higher levels of effectiveness in the delivery of instruction when compared to traditionally trained teachers in Algebra I. This study supports the research conducted by Descamps and Klingstendt (1984) which finds concern with the training alternative certification teachers receive prior to initiation and speculates that on the job training does not afford teachers the essential skills for success. Furthermore, this study contributes to the body of knowledge which

has found that alternative certification teachers lack specific skills needed to ensure students perform at the highest level possible. Descamps and Klingstendts do not believe alternative certification teachers have the background knowledge about human behavior to empower them to prescribe and deliver appropriate instruction. Moreover, they are concerned that the alternative certification teachers, due to their lack of training, will have a challenging time individualizing instruction to meet the academic needs of all their students. This study supports Darling-Hammond, Berry, and Thoreson (2001) research which states that a teacher's path to certification has a significant effect on student achievement, especially in mathematics.

Results from this study differ from the research of Gimbert et al. (2007) which found no significant differences exist in achievement between students taught by non-traditional preparation programs (alternative certification) and those taught by their traditionally prepared teachers. This study disputes Gimbert et al. findings that students instructed by alternative certification teachers achieve as well or better than their peers taught by traditionally certified teachers in Algebra I specifically.

Descriptive statistics from this study were consistent with findings from Borke et al. (2000) who write that participation in both university courses and kindergarten through 12th grade field experiences are vital for preparing teachers to teach at the level of rigor being required specifically in the area of mathematics. Results from this study showed that the mean scale score for students on the Algebra I EOC was higher for those taught by teachers who were trained through a traditional university-based teacher program than those taught by a teacher trained through an alternative certification program.

Student Performance in Relation to Teacher PDAS Scores, Teacher Preparation Program and Teacher Attendance

This section includes discussion of the findings on 9th grade student performance on Algebra I EOC and teacher PDAS scores, teacher preparation program and teacher attendance in three school districts in Texas. The following research question guided the study of student performance.

How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores and teacher preparation program and teacher attendance?

This study found a significant relationship between student performance on Algebra I EOC and teacher PDAS scores and teacher preparation program and teacher attendance. The variance in student performance of 9th grade students in Algebra I EOC in three school districts in Texas was explained by the teachers PDAS scores and teacher preparation program and teacher attendance was 4.4%. This study showed that 70% of the ACP teachers missed 10 or more instructional days in the school year as opposed to 30% of the traditionally trained teachers. The study also showed that a difference in Algebra I EOC average scale scores between the students instructed by ACP teachers and students taught by traditionally trained teachers exists, the scale score difference being 104 scale points.

The results of this study indicate that traditionally trained teachers more frequently adhere to the 10-day approved leave policy than alternative certification teachers in the three school districts studied. This study supports the body of literature by Dorward, Hawkins and Smith (2000) which found a direct correlation between teacher absenteeism and student achievement, with the study by Woods and Montagon (1997) stating teacher attendance rates

have an adverse effect on student achievement, and with the study by Jacobs and Kristsonis (2007) that found students' individualized standardized tests results to be lower when the number of teacher absences was high. Finally, the analysis of this study supports the research by Miller, et al. (2008) and Clotfelter, et al. (2007a) who found that when a teacher was absent ten days from class, student performance in mathematics was reduced.

In Texas teachers are allocated 5 days of approved personal leave and the majority of the school districts in Texas give teachers an additional 5 local days of approved leave as well. The data collected for this study did not include the reasons for the teacher absences. The underlying reason for teachers to call in their days may include job dissatisfaction, teacher exhaustion, and decrease in teacher morale (Bruno, 2002). After an analysis of the data the researcher can surmise that the ACP teachers were in attendance less than traditionally trained teachers. An integral part of ACP programs may not be emphasizing the importance of being in the classroom to build relationships with students and ensure content is taught.

Student Performance in Relation to Teacher PDAS Scores, Teacher Preparation Program, Teacher Attendance and Teacher Years of Experience

This section includes discussion of the findings on 9th grade student performance on Algebra I EOC and teacher PDAS scores, teacher preparation program, teacher attendance and teacher years of experience in three school districts in Texas. The following research question guided the study of student performance.

How much of the total variance of student performance on Algebra I EOC is accounted for or explained by teacher PDAS scores and teacher preparation program, teacher attendance and teacher years of experience?

This study found no significant relationship between student performance on Algebra I EOC and teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years of experience. All teachers contributing to the study had at least one year of experience. The finding from this study failed to reject the null hypothesis: Student performance on Algebra I EOC is not a function of teacher PDAS scores, teacher preparation program, teacher attendance and teacher years of experience. Researchers such as Clotfelter, Ladd, and Vigdor (2007b) and Rice (2010) have found that teacher experience is more effective during the first few years of teaching and after that it levels off. The analysis of data for this study is aligned to the study by Gordon, Kane, and Staiger (2006) which found great gains in teacher effectiveness between the first and second years of teaching, much smaller gains between the second and third and no significant improvement subsequently. This study does not support the recommendation of Goe and Stickler (2008) who believe that experience should be a critical factor to take into consideration when hiring a classroom teacher. The researcher concludes that teacher years of experience had no major impact on 9th grade students' performance on Algebra I EOC and may not be a critical factor to consider when choosing teachers for this student group.

Conclusions

The purpose of this quantitative study was to determine the effectiveness of alternative certification teachers versus traditionally trained teachers of 9th grade Hispanic students enrolled in Algebra I as measured by the students' raw score on the Texas Algebra I End Of Course (EOC) Assessment. Furthermore, this study investigated the impact, if any, teacher attendance, teacher years of experience and teacher evaluation ratings had on 9th grade students' performance on Algebra I EOC exam. The conclusion of this study, based on the data analysis and discussion of findings are summarized below.

First, there was a significant relationship between student performance on Algebra I EOC and teacher PDAS evaluation scores. Teacher PDAS scores were found to account for the greatest variance in student performance on Algebra I EOC. Teacher appraisers, though not evaluating teachers at below or unsatisfactory levels, are capable of distinguishing teachers who are performing at higher levels and whose students yield great results on the Algebra I EOC. This study found that a teacher's PDAS scores influenced the outcome of student performance on Algebra I EOC in the three school districts participating in the study.

Secondly, this study found that there was a significant relationship between a teacher's PDAS evaluation score and a teacher's preparation program on student performance of the Algebra I EOC. The findings from this study showed that a teacher's preparation program has a greater impact on 9th grade students' performance on the Algebra I EOC than teacher attendance and teacher years of experience. The conclusion of this study reveals that when you review a teacher's PDAS evaluation score and preparation program one should be able to predict how well the students will perform on the Algebra I EOC.

Thirdly, this study found that there was a significant relationship between a teacher's PDAS evaluation score and a teacher's preparation program and teacher attendance on student performance on the Algebra I EOC. The study revealed that ACP teachers assigned to teach Algebra I in these three school districts had higher absenteeism rates than traditionally trained teachers. Furthermore, the mean scale scores for students taught by ACP teachers were lower than students taught by traditionally trained teachers. This study revealed that teacher attendance was a factor in students' performance on the Algebra I EOC in these three school districts.

Finally, the data indicates that student performance on Algebra I EOC is a not a function of the teacher PDAS scores, teacher preparation program, teacher attendance, and teacher years

of experience. When teacher years of experience were calculated into the stepwise model there was no significant difference in 9th grade students' performance on Algebra I EOC. This study supported the finding of many researchers who have found that after a few years of experience, teacher performance levels off and no longer has an impact on student performance.

Implications and Recommendations

Debates will continue to be made regarding the effectiveness of both types of teacher training programs as long as there is more than one in existence. Because the state of Texas has identified mathematics as a shortage area for the last two decades, campus and district leaders will continue to struggle to find mathematics teachers to serve their students. SBEC has reported that thirty-six percent of the teachers earning certification are choosing an alternative certification route, while forty-eight percent are choosing traditional teacher training programs. Therefore, campus and district leaders have little alternative but to hire teachers trained through both routes, traditional and alternative. The dilemma for campus leaders will now be the assignment of personnel. In particular the assignment of mathematics teachers, being that 9th grade is a critical year and Algebra I is the gatekeeper course for students graduating from high school. The results from this study provided positive evidence that the students instructed by traditionally trained teachers generally had higher scale scores than students instructed by ACP teachers. It is the researcher's recommendation that campus leaders and district human resources personnel carefully evaluate the assignment of teachers to core courses based on who will help the students perform at higher levels. Research has shown that Algebra I has a direct correlation to student success in college and future earning potential for students. Therefore, the assignment of mathematic teachers should be based solely on who can produce the best results with 9th grade Algebra I students. Although the Alternative Certification Programs require potential

teacher candidates to complete 30 hours of field observation it is the researcher's recommendation to allow teacher candidates to conduct actual field experience to evaluate needs prior to the hiring process.

In addition, the difference in attendance among the two types of teacher preparation programs was significant. Seventy percent of the ACP Algebra I teachers in these 3 school districts were absent more than the allotted 10 days. It is the researcher's recommendation to provide ACP teachers with several staff development sessions on the effects teacher absences have on student performance and the importance of building positive relationships with students. Education was not the first career choice for many ACP teachers; therefore, administrators need to be prepared to face the challenge of having teachers absent in a core content area which has significant implications on a student's success in high school and has a direct correlation to college success as well. Jim Collins (2001) in his book *From Good to Great* writes that in order for an organization to be successful the organization must not just get the right people on the bus but the organization needs to get the right people on the bus, in the right seats. District and school leaders must review their data more closely to determine if they indeed have the right people in the right classrooms instructing the students. Being that Algebra I is a high-stakes accountability course, administrators must disaggregate their data by teacher to determine if assignments are yielding the best results. In addition, the study provides evidence that administrators are not comfortable in rating a teacher less than proficient; however, they are distinguishing proficient from exceeds and those rated at the higher level of exceeds are producing students with higher scale scores than the teachers evaluated at the lower level of proficient. Administrators should certainly examine the evaluations of teachers they are hiring

and not just look at the overall rating of proficient but review each domain and add the scores to determine how they “really” were rated.

While the current study was a quantitative study, it has provided opportunities for future qualitative or mixed method research. For instance, a study of the reasons the participating ACP teachers and traditionally trained teachers entered the teaching workforce, and the characteristics of each participating teacher would be beneficial to the knowledge base by providing insight into why traditional teachers were more effective than the ACP teachers in 9th grade Algebra I EOC. A qualitative study would be able to determine the reasons for the absences and the motivation behind the work. In future studies, administering a pre-assessment to students in classrooms of participating teachers would allow the researcher to analyze student growth. It is the researcher’s intent that studies such as this can help create change in how we review data and assign teachers by providing statistical evidence of the effectiveness shown by teachers. School officials can use these results and others like this to assist in making staff assignments. To be effective instructional leaders, campus and district leaders must use data to support decision-making. In this case, the assignment of teachers is a critical decision to make in determining a student’s future academic achievement and educational success. The end result should always be to provide students with the most qualified teacher.

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APPENDICES

APPENDIX A
SCHOOL DISTRICT INFORMATION FORM

APPENDIX B
NOTICE OF APPROVAL – INSTITUTIONAL REVIEW
BOARD FOR HUMAN SUBJECTS (IRB)



INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS IN RESEARCH

THE UNIVERSITY OF TEXAS - PAN AMERICAN

3201 West University Drive • Lubbock, Texas 79630-2309 • (806) 381-3002 Office • (806) 381-2040 Fax

NOTICE OF APPROVAL
Institutional Review Board for Human Subjects (IRB)
FWA#0000905

TO: Anysia Trevino
FROM: Institutional Review Board for Human Subjects in Research
DATE: July 15, 2013
RE: IRB# 2013-051-04; "The Effectiveness of Alternative Certification Teachers Versus Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in 9th Grade Algebra I: What Leaders Should Know"

The IRB protocol referenced above has been reviewed and APPROVED.

Basis for approval: Expedited, Category #7

Approval expiration date: June 11, 2014

Recruitment and Informed Consent: You must follow the recruitment and consent procedures that were approved. If your study uses an informed consent form or study information handout, you will receive an IRB-approval stamped PDF of the document(s) for distribution to subjects.

Modifications to the approved protocol: Modifications to the approved protocol (including recruitment methods, study procedures, survey/interview questions, personnel, consent form, or subject population), must be submitted in writing to the IRB at irb@utpa.edu for review. Changes must not be implemented until approved by the IRB.

Approval expiration and renewal: Your study approval expires on the date noted above. You will receive a continuing review (renewal) reminder from the IRB approximately 2-4 weeks before approval expiration. At that time you will need to fill out, sign and submit the continuing review form to irb@utpa.edu using the electronic submission form on the IRB website (<http://www.utpa.edu/irb>). If you will be interacting with subjects or working with individually identifiable private information, you need to have active IRB approval. Failure to return the form will result in your study file being closed on the approval expiration date.

Data retention: All research data and signed informed consent documents should be retained for a minimum of 3 years after completion of the study.

Approved By: _____

Dr. Patricia Gonzales
Chair, Institutional Review Board

Date: 7/15/2013

cc: Dr. Sayed Sadiq Shah, Vice Provost for Research and Sponsored Projects
cc: Dr. Rosalinda Hernandez, Assistant Professor, Educational Leadership

APPENDIX C

SUPERINTENDENT'S LETTER FOR DATA COLLECTION APPROVAL:

LA JOYA ISD



**La
Joya**
Independent School District
Superintendent of Schools
200 W. Expressway 83, La Joya, TX 78360
Tel: (956) 323-2002 Fax: (956) 323-2010

Board of Trustees
Juan José "JJ" Peña, Jr., *President*
Esperanza "Espie" Ochoa, *Vice-President*
Joel Garcia, *Secretary*
John Valente Maniz, *Member*
Jesús "Chuy" Ayendaño, *Member*
Juan José "JJ" Garza, *Member*
Oscar "Coach" Salinas, *Member*

May 7, 2013

Anysia Treviño
4613 Mile 7 Road
McAllen, Texas 78504
a.trev@yahoo.com

RE: The Effectiveness of Alternative Certification Teachers vs. Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in Algebra I: What Leaders Should Know

Dear Anysia Treviño,

I am granting permission for you to collect data on 9th grade students' scores on Algebra I End of Course exams (Spring 2013) as well as data on Algebra I teachers at La Joya ISD as part of your UTPA research project, The Effectiveness of Alternative Certification Teachers vs. Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in Algebra I: What Leaders Should Know. I understand that the Office of Human Resources and the District Test Coordinator will provide this data. All identifiable information will be absent from said data insuring the confidentiality of the study participants.

In addition, I grant permission to Anysia Treviño to analyze the results of the study.

If you have any questions regarding site permission, please contact: Elena Ochoa, Administrative Assistant to the Superintendent at 323-2005.

Sincerely,

Dr. Alda T. Bonavides
Superintendent of Schools
La Joya Independent School District

Dr. Alda T. Bonavides, Superintendent of Schools
Educational Excellence-Des Right of Every Student

APPENDIX D

SUPERINTENDENT'S LETTER FOR DATA COLLECTION APPROVAL:

PHARR-SAN JUAN-ALAMO ISD



**PHARR-SAN JUAN-ALAMO
INDEPENDENT SCHOOL DISTRICT**

Dr. Daniel King
Superintendent of Schools

May 7, 2013

Anysia Treviño
4613 Mile 7 Road
McAllen, Texas 78504
a.trev@yahoo.com

RE: The Effectiveness of Alternative Certification Teachers vs. Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in Algebra I: What Leaders Should Know

Dear Anysia Treviño,

I am granting permission for you to collect data on 9th grade students' scores on Algebra I End of Course exams (Spring 2013) as well as data on Algebra I teachers at PSJA ISD as part of your UTPA research project, The Effectiveness of Alternative Certification Teachers vs. Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in Algebra I: What Leaders Should Know. I understand that the Office of Human Resources and the District Test Coordinator will provide this data. All identifiable information will be absent from said data insuring the confidentiality of the study participants.

In addition, I grant permission to Anysia Treviño to analyze the results of the study.

If you have any questions regarding site permission, please contact Mr. Juan Alvarez, Assistant Superintendent for Human Resource Services at (956) 354-2013.

Sincerely,

Dr. Daniel King
Superintendent of Schools
PSJA Independent School District

P.O. BOX 1150/601 E. KELLY • PHARR, TEXAS 78577 • OFFICE: (956) 354-2000 FAX: (956) 354-3000

It is the policy of the Pharr-San Juan-Alamo ISD not to discriminate on the basis of sex, disability, race, color, religion, national origin or age.
Es normal del Distrito Escolar de Pharr-San Juan-Alamo no discriminar en base de sexo, inhabilidad, raza, color, religión, nacionalidad o edad.

APPENDIX E
SUPERINTENDENT'S LETTER FOR DATA COLLECTION APPROVAL:
SHARYLAND ISD

Sharyland Independent School District

1106 N. Shary Road, Mission, Texas 78572-4652

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May 8, 2013

Anysia Treviño
4613 Mile 7 Road
McAllen, Texas 78504
a.trev@yahoo.com

RE: The Effectiveness of Alternative Certification Teachers vs. Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in Algebra I: What Leaders Should Know

Dear Ms. Treviño,

I am granting permission for you to collect data on 9th grade students' scores on Algebra I End of Course exams (Spring 2013) as well as data on Algebra I teachers at Sharyland ISD as part of your UTPA research project, The Effectiveness of Alternative Certification Teachers vs. Traditionally Trained Teachers in Three School Districts in Texas on Hispanic Students' Scores in Algebra I: What Leaders Should Know. I understand that the Office of Human Resources and the District Testing Coordinator will provide this data. All identifiable information will be absent from said data insuring the confidentiality of the study participants.

In addition, I grant you permission to analyze the results of the study.

If you have any questions regarding site permission, please contact me via email (drrichter@sharylandisd.org) or by phone (956-580-5200).

Respectfully,

A handwritten signature in blue ink that reads "Dr. Virginia N. Richter".

Dr. Virginia N. Richter

SISD does not discriminate on basis of race, color, national origin, gender, religion, age or disability in employment or provision of services, programs or activities.

BIOGRAPHICAL SKETCH

Anysia R. Ramirez-Treviño received her Bachelor of Science degree in Elementary Education from the University of Texas-Pan American, Edinburg, Texas in August 1990. In August of 1990 she began her career in education. She passionately taught 5th grade at Flores Elementary. Her love of learning and teaching motivated her to pursue a Master's Degree. In August 1995, Anysia proudly earned her Master of Education from the University of Texas-Pan American, Edinburg, Texas. Anysia worked as an assistant principal for two years and an elementary principal for five years. In July 2003 she became the executive director for human resources in her school district. Her love for curriculum and instruction brought her back to working directly with principals to improve student performance. In January 2009 Anysia was named executive director for secondary education in a large school district in South Texas. Her certificates include: elementary mathematics 1st-8th, elementary self-contained 1st-8th grade, Bilingual/ESL 1st-8th grade, and a Mid-Management Administrator Certificate PK-12. Anysia earned the Doctor of Education degree from the University of Texas, Pan American in December, 2013. Anysia resides in McAllen, Texas with her husband Jaime. She is a proud mother of Jamie Danielle, Anysha Rae, and Christian Jose Treviño.