A COMPARISON OF THE TWO WAY DUAL AND DEVELOPMENTAL BILINGUAL PROGRAMS ON TAKS READING ACHIEVEMENT: IMPLICATIONS FOR SCHOOL LEADERS

A Doctoral Thesis Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Education
in Professional Leadership

by
Josefa G. Olivares

May 2013

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May 2013

Dedication

For Jalene, Matthew and Kaitlyn Olivares

I dedicate this doctoral thesis to my children, Jalene, Matthew, and Kaitlyn. You are my world and I love you more than you can ever imagine. Thank you for your unconditional love and understanding. We missed a lot of fun outings because of my school work, but at the end it was all worth it. All the encouraging notes you would leave for me around the house truly kept me motivated through this journey. Your fiery spirits inspire me and fill my soul. Thank you my loves! Always remember that I love you no matter what.

Dedicación

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Dedico esta tesis doctoral a mis hijos Jalene, Matthew y Kaitlyn Ustedes son mi mundo y los amo más de lo que puedan imaginar. Gracias por su amor y comprensión incondicional. Nos perdimos de muchas salidas divertidas por mi trabajo escolar, pero al final valió la pena. Todas esas notas de apoyo que me dejaban por la casa me mantuvieron verdaderamente motivada durante esta etapa en mi vida. Sus espíritus encendidos me inspiran y llenan mi alma. ¡Gracias mis amores! Siempre recuerden que los amo sin importar nada más.

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Josefa Dávila Olivares

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Abstract

The achievement gap between English language learners (ELLs) and English only students has been documented for decades. A study of the National Assessment of Education Progress in 2005 highlighted a 46% gap between English language learners and English-only students (NCES, 2006). With the Hispanic population growing at a rapid pace, meeting the needs of English language learners is essential. The study includes a sample of 147 students in the 5th grade who are identified as Limited English Proficient and were receiving services from either a Two Way Dual or a Developmental Bilingual Program. The sample will include the following 5th grade students who meet the following conditions: (a) students continuously enrolled in the district during the 2010-2011 school year, either in Two Way Dual or Developmental program, (b) who have been tested on the 2010 and 2011 TAKS reading test, (c) non-English language students who have been tested on the 2010 and 2011 TAKS reading test, (d) who have not been retained and (e) who did not receive special education services. The data for the 2010-2011 reading TAKS 5th grade test were retrieved from the research department of the study District. The study used an Analysis of Variance (ANOVA) to compare the means of the dependent variable (2011 TAKS Reading Test) in the independent variables three groups (Two Way Bilingual Program, Developmental Bilingual Program and the non-ELL program) and their impact at the fifth grade reading levels. The study used Chi

Square analysis with Bonferroni Alpha Adjustment test to determine if there were significant differences with the dependent variable (2011 TAKS Reading Test) in students meeting the passing standard for the independent variables three groups (Two Way Bilingual Program, Developmental Bilingual Program and the non-ELL program). The Statistical Package for the Social Sciences (SPSS) version XXI was used to process and analyze the achievement data. The study will provide district administrators, principals, and policymakers' important perspectives on the role the two programs play in the reading achievement of English language learners. The research was a quantitative study using archival reading TAKS scores. The research provided insight into which language program produces greater academic gains for English language learners, Two Way Dual or Developmental over the same time periods. The study showed the Two Way Dual Bilingual program had significantly greater gains in the 2011 reading TAKS compared to the Developmental Bilingual Program. ELL students who are in classes with non-ells students achieve at a higher level in the reading TAKS. The Chi Square analysis with Bonferroni Alpha Adjustment for RQ1 indicated that they were significant differences at $p < .025$ between two groups of the independent variable the Two Way Dual and the Developmental Bilingual Program in the dependent variable (2011 TAKS Reading test scores) at $p < .001$. The Chi Square analysis with Bonferroni Alpha Adjustment for RQ2 indicated that they were no significant differences at $p < .025$ between the independent variable with three groups (Two Way Dual, Developmental and non-ELLs and the dependent variable (2011 TAKS Reading test scores) at $p = .048$. The ANOVA for RQ1 indicated that they were significant differences at $p < .007$ on the TAKS Reading Test scale scores between the ELL students served in the Two Way Dual

and Developmental Bilingual Programs in the 5th grade with the Two Way Dual Bilingual program showing a greater gain in reading achievement. The ANOVA for RQ2 indicated that they were significant differences at $p < .030$ between the 2011 TAKS Reading test scale scores of the non-ELL students and ELL students served either in a Two Way Dual or Developmental Bilingual Programs in the 5th grade. This information will benefit school leaders, teachers, researchers, policy makers, and community leaders. This study may serve as means to make changes in the types of bilingual programs being offered in schools.

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Chapter 1
Introduction

The "American Dream" repeats itself with immigrant families time after time. I am the daughter of an immigrant family that moved to the United States of America with the sole purpose of providing me with an education, economic success, and a path to personal freedom. I was only a couple of months old when we arrived in Houston, Texas. When I became of school age, my mother enrolled me in a Kindergarten bilingual classroom because a home language survey determined that was the proper placement for me because in my house the predominant language was Spanish. I was also labeled at-risk, as I was an English language learner.

The instruction in my classes was completely in Spanish with a minimum allotment of time in English. I loved my school, teachers, and classmates; everyone spoke the same language and had a similar culture. My grades excelled in every subject, and, therefore, I felt very motivated and confident in everything I was assigned. This changed the first day of school in second grade. The teacher began the day with a reading and language arts assessment that was completely in English. This assessment was titled English as a Second Language (ESL). This exam was going to determine how much English I had mastered in the previous years so that the teacher would place me in a strategic group with students that were in the same level of English as me. I remember looking at the test and realizing I had no clue what the test consisted of. I looked around and began to cry because I knew I was going to fail the ESL assessment; I had never failed anything in school before. I failed the test, and from that day on my goal was to learn English so I could be successful on the next assessment.

I quickly learned English thanks to the support of my teachers and parents, but mostly because of my determination to learn and be successful. I remember several of my classmates struggling to learn the English language. I often wondered how many were ultimately successful, how many failed, and if, eventually, how many were successful or unsuccessful due to the Bilingual program.

Statement of the Problem

As the Hispanic population continues to grow in the United States, so does the need to be able to help Hispanic students to achieve academic success. Schools in the United States have long been the key to the "American Dream" for all immigrants (Marzano, 2003). Public education has not been able to close the Hispanic/English Language Learners achievement gap; therefore, the effectiveness of bilingual programs has been questioned for many years by researchers. In recent decades, statistics show that the number of children speaking a language other than English at home increased dramatically over the past few decades (NCES, 2006). In the United States, the majority of the student population that is English language learners is 80% Spanish speakers (Goldenberg, 2008). In 2011, the Houston Independent School district had a total student population of 203,294 and 30% were English language learners. In 2011, Texas had approximately 832,000 English language learners (ELLs) (Flores, Batalova, & Fix, 2012). According to the Texas Agency of Education, 91% of English language learners enrolled in school primary language was Spanish.

Purpose of the Study

The population in Texas is very diverse; therefore, there is a great need to seek solutions to meet the needs of English language learners. The structure and content of instructional bilingual programs differ according to a range of language models to teach English, and this in turn could influence children's literacy development. For the purpose of this study, I used two different models: 1) the Two Way Dual and 2) the Developmental Bilingual models.

The Two Way Dual program, also known as a Two-Way Bilingual Immersion Program (TWBIP), is both an additive bilingual program and a foreign language immersion program. In TWBIP classrooms, a combination of 50% native Spanish speakers and 50 % native English speakers are taught together in an effort to develop full bilingualism and biliteracy for both groups of students. All participating students receive instruction in language arts and content subjects primarily in Spanish in the early grades (K-3) with a grade specific amount of English as a Second Language/English Language Development instruction incorporated daily. English instruction is gradually increased through the grade levels (K-3), and by fourth grade instruction is presented in a 50% Spanish/50% English format. In grade five, instruction is delivered through a 40% Spanish/60% English mix. In grades four-five, the language of instruction is determined by content area. In fourth grade Language Arts, reading, and mathematics are taught in Spanish, while science, social studies, and English literature are taught in English. In fifth grade Language Arts, reading, mathematics, and science and taught in English, while social studies and Spanish literature are taught in Spanish. English language

learner students who meet exit criteria anytime in this program are reclassified as non-Limited English Proficient but may remain in the Two-Way Bilingual program with parent permission (HISD, 2011).

The Developmental Bilingual Program (DBP) is a Bilingual Program model whereby English language learners Spanish speaking students are allowed to fully develop and maintain their primary language while learning English. It is considered an additive bilingual program, and the goals of this program promote full bilingualism and biliteracy. All participating students receive instruction in Language Arts and content subjects primarily in Spanish in the early grades (K-3) with a grade specific amount of English as a Second Language instruction incorporated daily. English instruction is gradually increased through the grade levels (K-3) and by fourth grade instruction is presented in a 50% Spanish/50% English format. In grade five, instruction is delivered through a 40% Spanish/60% English mix. In grades four-five, the language of instruction is determined by content area. In fourth grade Language Arts, reading, and mathematics are taught in Spanish and science, social studies, and English literature are taught in English. In fifth grade, Language Arts, reading, mathematics, and science are taught in English and social studies and Spanish literature are taught in Spanish. ELL students who meet exit criteria anytime in this program are reclassified as non-Limited English Proficient but remain in the Developmental Bilingual Program with parent permission (HISD, 2011).

The federal government acknowledged the existence of achievement gaps and required accountability measures to close the gaps. Therefore, they authorized a new

iteration of the Elementary and Secondary Education Act of 1965 (PL89-10) with the passage of the No Child Left Behind Act (NCLB) of 2001. This legislation led educators to develop a sense of urgency that previously did not exist. The revised NCLB Act emphasized the need to ensure that children who are limited English proficient develop high levels of academic attainment in English and meet the same challenging state academic content and student academic achievement standards as all children are expected to meet (U.S Department of Education, January 2002). As a result, districts have implemented accountability systems to ensure they are working toward meeting the demands initiated by NCLB and adequately meeting the needs of their diverse learners. Improving English language learners student outcomes is an important goal for districts, particularly because as a nation schools have not been very successful in educating these students (Zacarian, 2011).

The purpose of this study was to provide research data examining the effectiveness of the Two Way Dual and Developmental Bilingual Programs as delivered to 5th grade English language learner students. Approximately 147 students from one large, urban Texas district will be included in the proposed study: 49 students each offering the dual and the development bilingual program and 49 non-English language learners. All participants must be in a Dual Language or Developmental program that service English as a Second Language (ESL), Limited English Proficient (LEP) and or Bilingual students.

Significance of the Study

In this study, it is anticipated to find differences among the selected elementary 5th grade students' ELL reading TAKS tests scores for the 2010-11 school year based on the language development program they use. It is also anticipated that statistically significant differences will be found between the students in ELL population and non-ELL population reading TAKS tests scores for the 2010-11 school year within the same district.

The National Clearinghouse for English Language Acquisition (2006) stated that the focus of No Child Left Behind was to close the achievement gap. This gap has yet to be closed for most English language learners. State tests show that ELL's academic performance is far below that of other students, oftentimes 20 to 30 points lower, and usually shows little improvement across many years than their English only classmates (Abedi & Dietel, 2004).

According to the National Center for Education Statistics (2011), achievement gaps continue to show a national average of 25 points gap between Hispanic and White public school students at grade four (Hemphill & Vanneman, 2011). The No Child Left behind Act of 2001 requires that English language learners be tested annually to determine if their school has met adequate yearly progress (AYP). According to the NCLB Act, the schools and districts that are unable to demonstrate adequate yearly progress, 87 % in reading/ Language Arts and 83 % in Mathematics for the 2012 school year, which is typically measured as a percentage of students who pass standardized state tests, corrective actions may be imposed (TEA, 2010). These may include school-wide

restructuring or requiring schools to provide parents and their children the option of transferring to another school. Schools must show that they have attained statewide goals for the percentage of English language learner students who have reached the proficiency level on reading and mathematics assessments in English and demonstrated proficiency in the English language (Hemphill & Vanneman, 2011).

Research Questions

This study examined the following research questions for a sample of English language learners who were enrolled in either a Two Way Dual and Developmental bilingual models.

Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?

Research Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the 5th grade?

Definition of Terms

The following terms were used throughout the description of this study. They were drawn from the United States Department of Education (USDE, 2005a):

Adequate yearly Progress (AYP): Per the federal No Child Left Behind Act, a minimum level of performance that students in each school and school district must achieve on an annual basis.

Assessment: The collection of data used to measure the performance of a student or group of students.

Bilingual Education (BE): A program in which students receive the majority of their instruction in their native language with English instruction as the secondary language of instruction.

Developmental Bilingual Program (DBP): ELL education that promotes full bilingualism and biliteracy in English and the child's native language through enriched and challenging curriculum and instruction. The goal of DBE programs is the full development of both the child's languages rather than the replacement of the child's mother tongue with English.

English as a second language (ESL): Instruction strategically designed to teach English to Second Language Learners.

English language learner (ELL): ELLs are students who are in the process of acquiring English as an additional language.

High-Stakes Assessments: This term represents those assessments that carry academic serious consequences for students and/or for educators. The outcomes associated with such testing may determine a student's promotion to the next grade, graduation, merit pay for teachers, or overall school rankings.

Hispanic: Term used in the United States to refer to persons with a historical and cultural relationship either with only Spain, while others with Spain and/or Portugal. Some organizations intend to encapsulate only the Spanish-speaking populations in the term Hispanic, limiting the definition to that subset, while others encapsulate Spain and Portugal in the term "Hispanic."

Limited English Proficient (LEP): Students who have been identified to have another language besides English.

Literacy instructional approach (LIA): The combination of elements, including rationale, goals and objectives, curricular content, scope and sequence, strategies, methods, materials, and assessments, used to teach literacy.

Normal Curve Equivalent (NCE): A test score reported on a scale that ranges from 1 to 99 with an average of 50. NCE's are approximately equal to percentiles. Assuming a normally distributed population, plotting the distribution of scores will result in a bell shape commonly known as a bell curve.

Reading Achievement: This term represents the standard set for proficiency demonstrated by students in reading skills, such as phonics, vocabulary, fluency, concepts, skills, and comprehension.

Second Language Learner: A student who is acquiring a language in addition to her or his native language. This term includes both English language learners and students who are learning languages other than English.

Texas Assessment of Knowledge and Skills (TAKS): Texas state assessment for students in grades three through eleven.

Two Way Dual Bilingual Program: This program (referred to elsewhere in the U.S. as a dual language program – DLP, or Two-Way immersion – TWI) is identical in design and goals to Developmental Bilingual Program (DBP) except for the program criteria that the population of students in each classroom on average is half native English speakers and half native speakers of the target language.

Limitations and Assumptions

This study was limited to (1) Spanish-speaking, bilingual students from a single school district,(2) the outcome measures of the Texas Assessment of Knowledge and Skills reading, and (3) a variety of teacher experience and qualifications from one classroom to another and from one campus to another which results in differences in instructional effectiveness.

The study assumed that (1) the bilingual program models were followed as stipulated by law; and (2) teachers employed English language learner strategies in the instruction based on the needs of the students, and (3) all teachers were English as a Second Language (ESL) or Bilingual Texas certified. This study was intended to gain insight about the effectiveness of Two Way Dual and Developmental programs in reading achievement by analyzing archival student data.

Chapter 2
Literature Review

This chapter reviews the selected literature regarding the history of bilingual education. I have included the achievement gap reflected in state and national assessments among different language learners in Texas schools, research on reading acquisition, accountability and state tests, Two Way Dual Bilingual Program, Developmental Bilingual Program, and the theoretical framework.

Introduction

Hispanics are the fastest growing segment of the United States population. According to the U.S. Census Bureau data, the Hispanic population increased by approximately 58 %, from 22 million in 1990 to 35 million in 2000, compared with an increase of about 13 % for the total U.S. population. In 2010, the U.S. Census Bureau estimated the number of Hispanics to be about 50.5 million, or about 16 % of the U.S. population, up 43 % from the 2000 census (Hemphill & Vanneman, 2011). The increase of over 15 million Hispanics from 2000 to 2010 accounted for more than half of the total population increase in the U.S. during that time (Humes, Jones, & Ramirez, 2011). Students who speak English as a second language represent a growing number of the student age population in America's public schools.

History of Bilingual Education

Historical significance can be attributed to the Common School movement of the 1800s, which focused on "Americanizing" immigrants in order to make them responsible American citizens (Wiese & Garcia, 1998). The largest number of immigrant's arrived in the United States during the early 20th century from southern, eastern and central Europe

(Ovando, 2003). Ovando, Combs and Collier, (2006) characterized bilingual education as inconsistent and contradictory. While some states authorized bilingual education, others mandated mainstream English instruction. The cultural and language diversity in small community schools established a necessity for multilingual/multicultural instruction due to the large number of immigrant families centralizing in common locations (Public Broadcasting Systems, 2001). Immigrant families struggled for linguistic and cultural power to control the schools (Ovando, 2003). This movement increased nativist fears of separatism with the only viable solution being a quick assimilation into the American way of life (Weise & Garcia, 1998). Individualism was tolerated as immigrants developed enclaves and aggressively promoted their language, religious, and cultural loyalties (Ovando, 2003).

United States government policies were developed to restrict native language instruction in efforts to show how language differences could divide the unity of the people (Ovando, 2003). As immigration began to increase, political and social uncertainty regarding loyalty of American values emerged, causing a push toward Americanization policies aimed to achieve a common American language, culture, and belief system (Baker, 2006). As a direct reaction to such concerns, states began to restrict the use of languages other than English for instruction (August & Hakuta, 1997; Fitzgerald, 1993). The Civil Rights Act of 1964 provided that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise be subjected to discrimination under any program or activity receiving federal financial assistance from the Department

of Education; thus establishing the minimum standards for the education of language minority students (TEA, 2000; Wiese & Garcia 1998).

Bilingual education is neither a single, uniform program nor a consistent methodology for teaching language to minority students; rather it is an approach that encompasses a variety of program models (Ovando et al., 2006). Some Bilingual Education programs promote bilingualism and biliteracy; other programs incorporate the students' first language to facilitate a quick transition in English (Ovando et al., 2006).

The USDE (2005a) listed types of bilingual programs that focus on developing literacy in two languages (the language spoken at home and English) as follows:

1. Two way immersion or Two Way Bilingual programs for students with an English background and students from one other language background that provide instruction in both languages, typically starting with smaller proportions of instruction in English, and gradually moving to half in each language;

2. Dual language programs for students from one language group developing full literacy skills in two languages—the first language (L1) and English, or the same as Two Way Immersion or Two Way Bilingual;

3. Late exit transitional, Developmental Bilingual, or maintenance education for student from one other language background developing some skills and proficiency in the L1 and strong skills and proficiency in the second language (L2) with instruction at lower grades in L1 gradually transitioning to English and mainstream classrooms with their English-speaking peers;

4. Early exit transitional programs for students from one other language background developing English skills as quickly as possible, without delaying learning of academic content and with instruction beginning in L1, but rapidly moving to English and mainstream with English-speaking peers as quickly as possible; and

5. Heritage language or indigenous language program for students who are non-English speakers to develop literacy in two languages with content taught in both languages by teachers fluent in both languages. (p. 25)

Table 2-1

History of Bilingual Education

Source	Study/Purpose	Findings
U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service; Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature, Washington, D.C., 2012.	This U.S. Department of Education literature review is intended to lay a foundation for the Language Instruction Educational Programs (LIEPs) study. It provides literature-based summaries for a range of topics that may factor into LIEP designs and functions, and supports school districts in their decisions about how to choose appropriate LIEPs for their students' needs. The review summarizes critical ideas, findings, concepts, debates and practices that populate the literature on LIEP design, implementation and evaluation at present.	LIEP research and discussion over the past 20 years has focused on language of instruction, and this scholarship provides a general overview of the field. Findings from recent meta-analyses and systematic syntheses indicate the bilingual approach produces more positive outcomes for English language learners than the ESL approach
Baker, C. (2006). Foundations of bilingual education and bilingualism. Clevedon, England:	This book is intended as a comprehensive and modern introduction to bilingual education, bilingualism and multilingualism.	The author explains definitional, sociological and psychological issues that are essential to

Multilingual Matters Ltd.		understanding bilingual/multilingual children, and bilingual education.
Guzman, B. (2001). The Hispanic population: Census 2000 Brief (C2KBR/01-3), US. Census Bureau. Washington, DC.	This report, part of a series that analyzes population and housing data collected by Census 2000, provides a profile of the Hispanic population in the United States.	The Hispanic population increased by 57.9 percent, from 22.4 million in 1990 to 35.3 million in 2000, compared with an overall U.S. population increase of 13.2 percent.
Humes, K.R., Jones, N.A., and Ramirez, R.R. (2011). Overview of Race and Hispanic Origin: 2010 (C2010BR-02). Retrieved 29 March 2011, from U.S. Census Bureau website: http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf	This report looks at our nation's changing racial and ethnic diversity. It is part of a series that analyzes population and housing data collected from the 2010 Census, and it provides a snapshot of race and Hispanic origin in the United States. Racial and ethnic population group distributions and growth at the national level and at lower levels of geography are presented.	More than half of the recent growth in the total population of the United States between 2000 and 2010 was due to increases in the Hispanic population.
Ovando, C. J. (2003). Bilingual education in the United States: Historical development and current issues. Bilingual Research Journal, 27(1), 1-23	This article examines the various interpretations of the historical forces that have determined language policy in the United States.	The author argues that changing political, social and economic forces rather than any consistent ideology, have shaped the nations responses to language diversity.
Wiese, A, & Garcia, E.E. (1998). The bilingual education act: Language minority students and equal	This paper traces the Bilingual Education Act (BEA) from its inception in 1968 through its most recent reauthorization in 1994 as the primary federal legislative effort to provide equal educational opportunity to language minority students.	Historically, the Common School movement of the late 1800s marked the first large scale policy efforts to

educational opportunity. Bilingual Research Journal, 22(1), 1-18.		influence education and emphasized an "Americanizing" process for immigrants in order to educate them as responsible citizens, and hence, maintain a stable government (Kaestle,1983; Malakoff & Hakuta, 1990).
Ovando, C.J., Collier, V. P., & Combs, M.C. (2003). Bilingual and esl classrooms (3rd edition). McGraw-Hill; New York, NY.	This book presents expanded coverage of key issues related to the education of English language learners in the United States such as: controversies, demographics, teaching practices, and achievement levels.	The chapters of this book are a balance of theory and practice.
Public Broadcasting System (2001). The story of American public education: Retrieved from http://www.pbs.org/kcet/publicschoolroots_in_history/bilingual.htm.	This website tells the history of Native Americans and the development of their language.	By the late 1800s policies were developed to restrict native language instruction by the federal government.
Ovando, C.J., Combs, M.C., & Collier, V. P. (2006). Bilingual and ESL classrooms (4th edition). McGraw-Hill; New York, NY.	Provides a policy overview of the development of the field of bilingualism/ESL education in the United States.	The authors analyze federal and state policies of the past four decades in language minority education, including legislation and court decisions, with a look to the future.
Baker, C. (2006). Foundations of bilingual education and bilingualism. Clevedon, England:	The purpose of this book is intended as a comprehensive and modern introduction to bilingual education, bilingualism, and multilingualism.	The authors focus on the effectiveness of bilingual programs with a focus on systems of bilingual

Multilingual Matters Ltd.		education classrooms.

Table design provided by H.J. Freiberg (1989-2012)

Achievement Gap

Closing the Hispanic achievement gap with the native culture and educational attainment remains a challenge. Bilingual programs have sought to narrow the achievement gap between native English speakers and English language learners; however, according to a large, urban district in Texas, in 2010 English language learners decreased in TAKS passing rate of two percentage points in reading. In 2011, ESL students and ELL students had lower TAKS reading passing rates as whole.

In addition to language obstacles, there are additional barriers to narrowing the achievement gap. English language learners bring a very broad range of different sociocultural backgrounds and previous schooling experiences to school (Ovando et al., 2006). According to Ovando (2003) and Ovando et al. (2006), many researchers argue that much of the difficulty English language learners' experience in school can be attributed to the apparent mismatch between the culture of the home and the classroom.

The No Child Left Behind (NCLB) Act of 2001 and the implementation of the Common Core State Standards (CCSS) across the United States placed high expectations on all learners (Honigsfeld & Giouroukakis, 2011). The Common Core State Standards (CCSS) were developed by the National Governors Association Center for Best Practices and the Council of Chief State School Officers to provide clear expectations for students to equip them with the necessary knowledge and skills for college and career readiness

(Honigsfeld & Giouroukakis, 2011). The challenge of meeting the new standards is severe for English language learners. Honigsfeld and Giouroukakis (2011) argue that when English language learners are included in state assessments, their academic performance is measured by tests that were designed for English-speaking students, and, as such, may be culturally and linguistically inappropriate for ELLs. Positive and negative effects for ELLs may result from this heightened emphasis on high stakes testing, because they are meant to raise standards for student learning (Coltrane, 2002). In the past, ELLs had not been included in high stakes standardized tests, but that practice resulted in a lack of accountability for the academic progress of such students (Coltrane, 2002). ELLs were not being held to the same high academic standards as their peers; therefore, in turn, they did not benefit from the educational reform (Coltrane, 2002).

Table 2-2

Achievement Gap

Source	Study/Purpose	Findings
Hemphill, F.C., and Vanneman, A. (2011). Achievement Gaps: *How Hispanic and white students in public school perform in mathematics and reading on the national assessment of educational progress* (NCES 2011-459). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.	This report provides detailed information on the size of the achievement gaps between Hispanic and White public school students at the national and state levels and describes how those achievement gaps have changed over time.	At the national level, reading scores increased for both groups significantly, but the achievement gap between Hispanic and White students did not change for fourth or eighth graders when comparing 1992 to 2009. From 2007 to 2009, scores did not change significantly for either group at the fourth grade. The 26-point gap for fourth graders in 2007 was not significantly different from the 25-point gap in 2009.

Houston Independent School District. (2011). *Bilingual and English as a Second Language Program Evaluation* (Publication of the Department of research and accountability HISD). Houston, TX	An annual evaluation of the academic progress of ELL students in bilingual and ESL programs in the Houston Independent School District.	Results from the study indicated both current bilingual and waived English language learners had lower passing percentages on the reading portion of the English TAKS as compared to the district as a whole. However, current bilingual students (gr.3-6) were comparable to the district in mathematics.
U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service; Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature, Washington, D.C., 2012.	What Research Says About the Bilingual Approach	Overall, findings from recent meta-analyses and systematic syntheses indicate that the bilingual approach produces more positive outcomes for ELs than the ESL approach This, however, is not a claim that bilingual approaches are invariably better than any and all ESL approaches under any condition.
Ovando, C.J., Collier, V.P., & Combs, M.C. (2003). Bilingual and ESL classrooms (3rd edition). McGraw-Hill; New York, NY.	This book presents updated research on and expanded coverage of key issues related to the education of English language learners in the United States such as: controversies, demographics, teaching practices, and achievement levels.	The chapters of this book are a balance of theory and practice. Authors state that students need extensive experience with collaborative knowledge gathering and problem solving for reasons beyond preparation for the workplace.
Honigsfeld, A., & Giouroukakis, V., (2011). High stakes assessments and English language learners. The Delta Kappa Gamma Bulletin, 6-10.	In this study the authors review recent research on standardized test preparation practices for English language learners, they also claim that	Educators spend an increasing amount of instructional time on standardized test preparation, and policy-makers continue to neglect

	employing culturally and linguistically responsive instructional strategies may lessen the stress associated with test driven instruction and improve student learning outcomes as well.	What research indicates about best instructional and assessment practices for ELLs. Instead, the authors indicate that teachers and administrators must advocate culturally and linguistically responsive practices that will recognize, value, and affirm ELLs' diverse backgrounds and unique academic needs.
Coltrane, B. (2002). English language learners and high stakes test: An overview of the issues. ERIC Digest, 1-7. Doi: ED470981	Describes the role of high stake test in which students, teachers, and administrators must account for.	Both positive and negative effects for ELLs may result from heightened emphasis on high stakes testing.

Table design provided by H.J. Freiberg (1989-2012)

Literacy Development

Literacy is a process that begins early in childhood and involves many different skills and experiences (Leasux & Geva, 2006). The process of becoming literate includes the development of oral language skills, experiences with print, an understanding of the concepts of print, and the acquisition of knowledge before receiving formal reading instruction (Leasux & Geva, 2006).

Most children are raised bilingually from birth, many more are successive bilinguals who begin exposure to their language two (L2) at a later age (Ovando & Combs, 2012). A student's first language plays a critical role in his or her English language development (Alford & Nino, 2011). These children experience a development stage of appearing to combine at least some aspects of two languages into one system, followed by several stages of appearing to combine at least some aspects of two

languages into one system (Ovando & Combs, 2012). Second language word reading ability correlates with first language word reading ability as well as a second language phonological processing skills and second language vocabulary knowledge (Gottardo, 2002).

Carlo et al. (2004) suggested that gaps in reading performance between Anglo and Hispanic children are associated with gaps in vocabulary knowledge. Vocabulary knowledge is a root cause for the intellectual challenge posed by the reading comprehension gap and the effect is reciprocal- the great vocabulary knowledge is, the easier reading becomes, while the more reading means, the larger vocabularies are (Carlo et al, 2004, p 191).

Understanding academic language and using it effectively in academic settings is essential for English language learners and native speakers of English alike (Reas & Mercuri, 2006, p 13).

Table 2-3

Literacy Development

Source	Study/Purpose	Findings
U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service; Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature, Washington, D.C., 2012.	This literature review is intended to lay a foundation for the Language Instruction Educational Programs (LIEPs) study. It provides literature-based summaries for a range of topics that may factor into LIEP designs and functions, and supports school districts in their decisions about how to choose appropriate LIEPs for their students' needs.	A great deal of scholarship about LIEPs in the past 20 years has focused on language of instruction, and this scholarship provides a general overview of the field. While findings from recent meta-analyses and systematic syntheses indicate the bilingual approach produces more positive outcomes for ELs than the ESL approach

	The review summarizes critical ideas, findings, concepts, debates and practices that populate the literature on LIEP design, implementation and evaluation at present.	
Reas, D.M., & Mercuri, S. P., (2006). Research-Based Strategies for English language learners. Heinmann; Portsmouth, NH.	In this book the authors blend theory and practice on Research-Based Strategies for English language learners.	The book is organized around the scaffolding concepts with adaptations. The book provides a theoretical framework on how English language learners learn discussing strategies and lessons.
Ovando, C.J., & Combs, M.C., (2012). Bilingual and esl classrooms (5th edition). McGraw-Hill; New York, NY.	In this book the authors weave theories of bilingualism and second language acquisition.	The author presents a review of current research on first and second language acquisition for school, including linguistic, sociocultural, and cognitive process that influence language acquisition.
Alford, B.J., & Nino, M.C., (2011). Leading Academic Achievement for English language learners: A Guide for Principals. Corwin; Thousand Oaks, CA.	This book examines successful leadership practices and strategies, embedded professional development methods and implementation models that build both a culture of high expectations for English language learners and teachers.	A student's first language plays a critical role in his or her English Language development in, a student's first language transfer to the development of the second language.
Lesaux, N. K. & Geva, E. (2006). Synthesis: Development of literacy in language minority students. In D. August & T. Shanahan (Eds.), Developing literacy in second-language learners, 53-74. Mahwah, NJ: Laurence Erlbaum	This volume reports the findings of the National Literacy Panel on Language-Minority Children and Youth.	This chapter focuses on the development of reading readiness, word-level, and text-level skills in language-minority students.

Associates.		

Table design provided by H.J. Freiberg (1989-2012)

Implications for School Leaders

Federal and state laws and regulations require school administrators and educators to set improvement standards and determine pathways to achieve them (Zacarian, 2011). The school leadership is a critical factor to ensure that English language learners are provided with an effective bilingual program. The school leaders provide direction and influences in shaping the schools culture and curriculum in order to promote academic achievement (Zacarian, 2011). School leaders need to utilize on-going educational research to provide evidence for best practices and programs that align with unique school and district needs.

Table 2-4

Implications for School Leaders

Source	Study/Purpose	Findings
Zacarian, D. (2011). Transforming Schools for English language learners: A comprehensive framework for school leaders. Thousand Oaks, CA: Corwin	The purpose of this book is to help administrators, policymakers, and stakeholders who are just beginning to work with English Language Leaners to build a school environment where they can flourish.	Discusses the process and protocols for identifying English language learners, selecting a program model, staffing model, and evaluating its effectiveness.
Thomas, W. P., & Collier, V. P. (2002). A national study of school effectiveness for language minority students' long-term academic achievement. Center for Research on Education, Diversity, and Excellence	A research that focused on analyzing the programs provided to English language	Students that remained in the bilingual program for a longer period of time, showed

(CREDE). Retrieved on June 10, 2012, from http://www.eric.ed.gov/PDFS/ED475048.pdf	learners.	higher academic achievement.

Table design provided by H.J. Freiberg (1989-2012)

Theoretical Framework

Research studies conducted in several countries show that English language learners usually require at least five years and sometimes longer to catch up to native speakers in academic English (Cummins, 2000). Cummins (2000) also argues that students who have developed academic language proficiency in one language can make use of this proficiency for learning in a second language. Thomas and Collier (2002) also found that the greater number of years students receive schooling in their first language the higher the student's English achievement has been shown to be. According to Thomas and Collier (2002), parents who refused bilingual/ESL services for their children will probably have a lower long-term academic achievement as a result. Schools must implement an enriched bilingual/ESL program that meets students' developmental needs: linguistic, academic, cognitive, emotional, social, and physical in order to have an enriched bilingual program (Thomas & Collier, 2002). The bilingual programs must be well implemented, not segregated and sustained in order to close the achievement gap between ELLs and native English speakers to be closed (Thomas & Collier, 2002).

Table 2-5

Theoretical Framework

Source	Study/Purpose	Findings
Cummins, J. (1998, February). Beyond adversarial discourse: Searching for common ground in education of bilingual students. A Presentation to the California State Board of Education, Sacramento, California. Retrieved August 25, 2012, from http://www.languagepolicy.net/archives/cummins.htm	The research discusses three issues: (a) the distinction between conversational and academic skills (b) the positive effects of bilingualism language and cognitive functioning; and (c) academic development in their first and second languages (L1 and L2).	Cummins used the term common underlying proficiency (CUP) to refer to the cognitive/academic proficiency that underlies academic performance in both languages.
Cummins, J. (2000). Language, power, and pedagogy: Bilingual children in the crossfire. Clevedon Hall, UK: Multilingual Matters, Ltd.	The purpose of this book is to link theory, research and practice as a means of contributing to the improvement of the educational practice.	Cummins first theory that explains language acquisition and has been used as a guide for implementation of English language learners programs is the interdependence theory.
Thomas, W. P., & Collier, V. P. (2002). A national study of school effectiveness for language minority students' long-term academic achievement. Center for Research on Education, Diversity, & Excellence (CREDE). Retrieved on June 10, 2012, from http://www.eric.ed.gov/PDFS/ED475048.pdf	A research that focused on analyzing the programs provided to English	Students that remained in the bilingual program for a longer period of time, showed higher academic

	language learners.	achievement.

Table design provided by H.J. Freiberg (1989-2012)

Chapter 3
Methodology

This chapter contains the methods and procedures used to conduct the study. Detailed information regarding the participants, research questions, data sources, instrumentation, research design, data analysis, limitations, and summary are presented. The purpose of this study was to provide insight into which language program, Two Way Dual or Developmental, produced greater academic gains for English language learners on existing assessment measures. As a measure of program effectiveness, this research examined students' academic success on the fifth grade Texas Assessment of Knowledge and Skills (TAKS) reading scores amongst students in schools in a large, urban school district in the Southwest U.S. The research utilized data of students who were continuously enrolled in a Two Way Dual or Developmental program in HISD during the 2010-2011 school year, either in Two Way Dual or Developmental program, (b) limited English proficiency (LEP) 5th grade students who have been tested on the 2010 and 2011 TAKS reading (English version) test (c) non-English language learners fifth grade students who have been tested on the 2010 and 2011 TAKS reading (Spanish version) test (d) who have not been retained and (e) students who did not receive special education services. Only archival data will be used; no actual student testing is required. The study also analyzed the Two Way Dual and Developmental bilingual education programs.

Participants

The District serves more than 203,000 students and encompasses 301 square miles within a large, urban center in the Southwest. It is the largest in the state and one of the largest public school systems in the nation (District, 2012). In the District, 80.4%

of students are economically disadvantaged, 62.4% are Hispanics, and 20.8% are in a Bilingual program (District, 2012).

According to the District's Research and Accountability department, it exceeds state mandates (Texas Education code §29.051) regarding Multilingual program requirements by offering four bilingual programs in addition to two English as a Second Language programs. Current state law, Texas Education Code §29.053, requires that a bilingual program be offered to English language learners (ELLs) whose home language is spoken by 20 or more students in any single elementary grade level across the district. The district's Traditional Bilingual Program (TBP) satisfies this mandate, but the district also offers two dual language programs known as Developmental Bilingual Program and the Two Way Bilingual program (District Research & Accountability, 2011). Dual language programs are offered in elementary schools for language minority students who need to enhance their English language skills (District Research & Accountability, 2011).

The participation consisted of archival data from students that were in the Two Way Dual Bilingual Program and archival data from an equal number of comparison students in a Developmental Bilingual program. Additionally, comparisons were made between the two program groups on their outcomes on the TAKS test between English language learners and non-English language learners. Existing archival data was requested from the district's research and accountability department to respond to the research questions. The samples of non-English language learners were matched demographically with the ELL samples. The Two Way Dual learners were compared to

the non-ELL, and the Developmental Program students were also compared against the non-ELL sample.

The students selected will be served in either the Dual or the Developmental Bilingual Programs but not both. The sample will include the following fifth grade students who meet the following set of criteria: (a) students continuously enrolled in the district during the 2010-2011 school year, either in Two Way Dual or Developmental program; (b) students who have been tested on the 2010 and 2011 TAKS reading test; (c) non-English language students who have been tested on the 2010 and 2011 TAKS reading test; (d) students who have not been retained; and (e) students who did not receive special education services. Only archival data will be used, no actual student testing is required.

Research Questions

This study examined the following research questions for a sample of English language learners who were enrolled in either a Two Way Dual and Developmental Bilingual models.

Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?

Research Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas

Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual and Developmental Bilingual Programs in the 5th grade?

Instrumentation

Outcome Measure: TAKS. The Texas Assessment of Knowledge and Skills (TAKS) is a state-mandated, criterion-reference test that was administered to students in Texas that attended public schools. The Texas Assessment of Knowledge and Skills (TAKS) measures a student's mastery of the state-mandated curriculum, the Texas Essential Knowledge and Skills (TEKS). The reading TAKS was administered to students in English and in Spanish dependent upon the individual student's language of instruction in reading and language arts (TEA, 2004).

Research Design and Data Analysis

From a district-wide sample, 147 students were randomly and equally selected into three cohorts of 49 students each. Cohort One were ESL students who received instruction from a Two Way Dual Language Program in the fourth and fifth grades. Cohort Two were ESL students who received instruction from a Development Bilingual Program in the fourth and fifth grades, and Cohort Three were non-ESL students who never received services in any second language program in the fourth or fifth grades. Archival reading (English version) 2011 TAKS test score data will be compared from across the three cohort groups.

Participants in this study received services from a Two Way Dual or a Developmental Bilingual Program. Once the students were identified, the sample included the following fifth grade students: (a) students continuously enrolled in the

district during the 2009-10 and 2010-2011 school year, either in a Two Way Dual or Developmental Program, (b) students who have been tested on the 2009-10 and 2010 - 2011 TAKS reading tests, (c) non-English language students who have been tested on the 2009-10 and 2010-2011 TAKS reading tests, (d) students who have not been retained and (e) students who did not receive special education services. Only archival data will be used, no additional student testing is required. The data for the 2009-10 and 2010-2011 fifth grade reading TAKS was requested from the Houston Independent School District (see Appendix A).

Special Education. IDEA (§300.39) defines special education as specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability (National Dissemination Center for Children with Disabilities, 2010). The students who received special education services between the years of 2006 through 2011 were extracted from the PEIMS data. Due to the study design, special education students were excluded from the study because the study focused specifically on the Two Way Dual or Developmental Bilingual Programs. The additional special education services received by students may confound the findings.

Study Analysis

This study used two analysis Chi-square test and an Analysis of Variance (ANOVA). Frankel and Wallen (2009) explain that a Chi-Square test is used to analyze data that are reported in categories. The Chi-square test is based on a comparison between expected frequencies and actual, obtained frequencies (Frankel & Wallen, 2009). Analysis of Variance (ANOVA) is used when there are significant differences

between the means of more than two groups (Frankel & Wallen, 2009). The Chi square test will give a percentage of what students met the passing standard of the 2011 Reading TAKS test and the Analysis of Variance (ANOVA) will give the means of each cohort that met the 2011 Reading TAKS test.

The Statistical Package for the Social Sciences (SPSS) version XXI was used to process and analyze the TAKS achievement data. This study will provide program decision makers with a perspective of the role the Two Way Dual Language program plays on English language acquisition and development with a district sample of 147 students who received the programs since the 2010-2011 school year.

The study will provide district administrators, principals, and policymakers' additional information and perspectives on the role the Two Way Dual Language and Developmental Bilingual Programs have on reading achievement with English language learners matched with a cohort of non-English language learners.

Limitations

There are several limitations that can influence the results of this study. The variables that can affect this study are: school expectations, leadership, teacher experience, parental support, professional development opportunities, school resources, school programs, and supplemental materials.

This study is limited to: (a) Spanish-speaking, bilingual students from a single school district; (b) the outcome measures of the Texas Assessment of Knowledge and Skills reading assessments; and (c) a variety of teacher experience and qualifications

from one classroom to another and from one campus to another, which results in differences in the instructional effectiveness.

The study assumed that: (a) the bilingual program models were followed as stipulated by law; and (b) teachers implemented English language learner strategies in the instruction based on the needs of the students.

This study was intended to gain insight about the effectiveness of Two Way Dual and Developmental Programs in Reading Achievement by analyzing archival student data.

Summary

Improving English language learners student outcomes is an important goal for districts, particularly because, as a nation, schools have not been very successful in educating these students (Zacarian, 2011). This study hypothesized that fifth grade Texas Assessment of Knowledge and Skills (TAKS) scores would differ depending on the type of bilingual program students received. The study intended to provide insight into which language program, Two Way Dual or Developmental, produced greater academic gains for English language learners on existing assessment measures. This study used an Analysis of Variance (ANOVA) to compare the performance of two groups of students who were served either from a: (a) Two Way Dual program or Developmental Program, and (b) non-English language learners. Performance comparisons utilized test scores on the Reading Texas Assessment of Knowledge and Skills (TAKS) to explain the types of language groups. Chapter Four will provide the data and the analyses for the findings.

Chapter 4
Results

This chapter presents the results of this study and the analysis of data examining the effectiveness of the Two Way Dual and Developmental Bilingual Programs as delivered to 5th grade English language learner students in a large, urban school district. The dependent variable was the 2011 TAKS Reading Test, and the independent variable consisted of three groups: Two Way Dual Bilingual, Developmental Bilingual, and non-ELL programs.

The Chi Square analysis with Bonferroni Alpha Adjustment was used to determine if there were significant differences with the dependent variable (2011 TAKS Reading Test) in students meeting the passing standard of 620 scale score for the independent variable with three groups (Two Way Bilingual Program, Developmental Bilingual Program, and the non-ELL program) for Research Question One "Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the fifth grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?" and Research Question two "Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the fifth grade?". The 2011 TAKS Reading Test passing standard was 620 scale score.

The Analysis of Variance (ANOVA) was used to determine if there were significant differences with the means of the independent variable with three groups

(Two-Way Bilingual Program, Developmental Bilingual Program, and the non-ELL program) with the dependent variable (2011 TAKS Reading Test) for Research Question one "Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the fifth grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?" and Research Question two "Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the fifth grade?". The means scores are an average of the scale score and not based on the passing standard (620 scale score) for the dependent variable (2011 TAKS Reading Test).

The chapter is divided into five sections: *Descriptive Characteristics of Participants, Overview of the Analysis Process, Quantitative Results, Limitations,* and a *Summary* of the chapter. The *Descriptive Characteristics of Participants* provides demographic data with the breakdown of the total participants of students in the Two Way Dual, Developmental Bilingual Program, and non-English language learners. The *Overview of the Analysis Process* provides a detailed overview of how the data was analyzed and reported. The *Quantitative Results* section provides a summary of the overall results of the statistical tests regarding Research Question one "Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the fifth grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?" and Research Question

two “Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the fifth grade?” .

Descriptive Characteristics of Participants

The study used archival data from students from a large, urban school district. The participation consisted of archival data from all 49 ELL students that participated in the Two Way Dual Bilingual Program, archival data from an equal number of comparison students chosen at random that participated in a Developmental Bilingual Program, and archival data from an equal number of comparison students chosen at random that were non-ELLs. Existing archival data was requested from the large, urban school study district research and accountability department to respond to Research Question one “Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the fifth grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?” and Research Question two “Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the fifth grade?”. The samples of non-English language learners were matched demographically with the ELL samples.

Cohort One were ESL students who received instruction from a Two Way Dual Language program in the fourth and fifth grades. Cohort Two were ESL students who

received instruction from a Development Bilingual Program in the fourth and fifth grades, and Cohort Three were non-ESL students who never received services in a second language program in the fourth or fifth grades. Archival reading (English version) 2011 TAKS test score data was compared from across the three cohort groups.

All 49 ELL students that were served in the Two Way Dual Bilingual Program were selected to participate. The students in the Developmental Bilingual Program and non-ELLs were randomly selected.

The sample included the following fifth grade students: (a) students continuously enrolled in the district during the 2009-10 and 2010-2011 school year, either in a Two Way Dual or Developmental program; (b) students who have been tested on the 2009-10 and 2010 - 2011 TAKS reading tests; (c) non-English language students who have been tested on the 2009-10 and 2010-2011 TAKS reading tests; (d) students who have not been retained; and (e) students who did not receive special education services. Only archival data was used, no additional student testing was required.

Table 4-1

Study Participants

Participants	***Retained***	***SPED***	***Hispanic***	***# of Total Participants***
Two Way Dual Bilingual Program	no	no	49	49
Developmental Bilingual Program	no	no	49	49
Non-ELL	no	no	49	49
Total				147

Overview of Analysis

Chi Square analysis with Bonferroni Alpha adjustment procedures. The Chi Square Analysis with Bonferroni Alpha Adjustment was used to analyze the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) data to determine the percentage of students that met the passing standard (620 scale score) on the dependent variable (2011 TAKS Reading test scores). The Analysis of Variance (ANOVA) was used to determine if there were significant differences between the means of the independent variable with three groups (Two Way Dual, Developmental and, non-ELLs programs) on the dependent variable (2011 TAKS Reading test scores). The ANOVA means were not based on the passing standard (620 scale score); the mean was specifically used as an overall average of the scale scores.

Frankel and Wallen (2009) explain that a Chi-Square test is used to analyze data that is reported in categories and based on a comparison between expected frequencies

and actual, obtained frequencies (Frankel & Wallen, 2009). The Chi Square analysis with Bonferroni Alpha Adjustment was used due to the multiple comparisons and to analyze the data to determine the percentage of students that met the passing standard. The following is a summary of the Chi Square analysis with Bonferroni Alpha Adjustment procedures:

1. A Chi Square analysis with Bonferroni Alpha Adjustment was used to determine whether there were statistical differences in the passing standards (620 scale score) of the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) in the dependent variable (2011 TAKS Reading test scores).
2. The Chi Square analysis with Bonferroni Alpha Adjustment determined there were significant differences between the passing standard (620 scale score) of the independent variable with three groups (Two Way Dual, Developmental and non-ELLs programs).

The Bonferroni correction is an adjustment made to P values when several dependent or independent statistical tests are being performed simultaneously on a single data set. To avoid a large number of false positives, *a* must be lowered to account for the number of comparison being performed. The Bonferroni correction is based on the idea that if an experimenter is testing a dependent or independent hypothesis on a set of data, the probability of Type I error is offset by testing each hypothesis at a statistical significance level 1/n times with it would be if one hypothesis were tested. The Bonferroni correction controls for false positives and it

can become very conservative as the number of tests increases. This increases the risk of generating false negatives (Type II errors). The risk of making erroneous, false-positive conclusions is increased when testing multiple hypotheses on a single set of data. The Bonferroni correction is a simple statistical method for justifying this risk, and its appropriate use can ensure integrity of studies in which a large number of significance tests are used (Napierala, 2010, pp. 1-3).

A Type I error is the incorrect rejection of a true null hypothesis. A Type I error is a false positive. A Type I error leads one to conclude that a thing or relationship exists when really it does not. Type II error is the failure to reject a false null hypothesis. A Type II error is a false negative. When comparing two means, concluding the means were different when in reality they were not different would be a Type I error; concluding the means were not different when in reality they were different would be a Type II error (Terrel, 2012, pp. 129-130).

The Analysis of Variance (ANOVA) was used to analyze the data to determine if there were significant differences between the means of the independent variable with three groups (Two Way Dual, Developmental and non-ELLs programs). The ANOVA data revealed that the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) had statistically significant difference at $p < .003$ between the dependent variable (2011 TAKS Reading Test scores).

Research Question Findings

The results of the analysis of the data answered each research question in the study with a statistical summary of results, tables, and narrative summation.

Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?

Research Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the 5th grade?

To evaluate the effect of the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) in the passing percentage (620 scale score) of the dependent variable (2011 TAKS Reading test scores), a Chi Square analysis with Bonferroni Alpha Adjustment was used ($p = .025$). The overall Chi Square analysis with Bonferroni Alpha Adjustment for Research Question one was significant but not for Research Question two.

To evaluate the effect of the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) on the means of the dependent variable (2011 TAKS Reading test scores), an Analysis of Variance (ANOVA) was used. ANOVA is used when there are significant differences between the means of more than two groups (Frankel & Wallen, 2009).

The following is a summary of the analysis procedures for the ANOVA:

1. An ANOVA was used to determine if there were statistical differences in the means of the independent variable with three groups (Two Way Dual,

Developmental, and non-ELLs programs) in the dependent variable (2011 TAKS Reading test scores).

2. The ANOVA determined there were significant differences between the means of the independent variable three groups (Two Way Dual, Developmental, and non-ELLs programs) in the dependent variable (2011 TAKS Reading test scores).

Quantitative Results

This section provides the quantitative results from the data collected from a large, urban school district.

The overall Chi Square analysis with Bonferroni Alpha Adjustment data revealed that the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) had statistically significant differences at $p < 0.001$ between the dependent variable (2011 TAKS Reading Test scores) for Research Question one but not for Research Question two. The Bonferroni correction was used to respond to multiple comparisons. The Bonferroni correction at $p = .05/2 = .025$ was used to judge whether the follow-up analyses was significant. Using at $p = .05/2 = .025$, the Chi Square analysis with Bonferroni Alpha Adjustment for Research Question 1 was significant but not for Research Question 2.

Table 4-2 shows that the overall significance of the independent variable with three groups (Two Way, Developmental, and non-ELLs programs) and are associated with statistically significant difference at $p < .001$ between the dependent variable (2011 TAKS Reading Test scores) for Research Question one but not for Research Question two.

Table 4-2

Chi Square Analysis with Bonferroni Alpha Adjustment Overall Significant Results

		Standard not met	Met standard	
Non-ELLS	Count	6	43	49
	% within Bilingual Code	12.2	87.8	100.0
	% within Met standard 2011	18.8	37.4	33.3
Two-Way	Count	6	43	49
	% within Bilingual Code	12.2	87.8	100.0
	% within Met Standard 2011	18.8	37.4	33.3
Developmental	Count	20	29	49
	% within Bilingual Code	40.8	59.2	100.0
	% within Met Standard 2011	62.5	25.2	33.3
Total	Count	32	115	147
	% within Bilingual Code	21.8	78.2	100.0
	% within Met Standard 2011	100.0	100.0	100.0

$X^2 = 15.659$, df = 2, p (2-tailed) $p < .001$

Table 4-3 shows the Chi Square analysis with Bonferroni Alpha Adjustment for Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests? The Chi Square analysis with Bonferroni Alpha Adjustment

indicated that they were significant differences at $p < .025$ between two groups of the independent variable, the Two-WayTwo Way Dual and the Developmental Bilingual Program, in the dependent variable (2011 TAKS Reading test scores) at $p < .001$.

Table 4-3

Research Question #1 Chi Square Analysis with Bonferroni Alpha Adjustment Results

Program		Did not meet	Met	Total
Two Way Dual	Count	6	43	49
	Expected Count	13.0	36.0	49.0
	% within Bilingual Code	12.2	87.8	100.0
	% within Met Standard 2011	23.1	59.7	50.0
	% of Total	6.1	43.9	50.0
	Std. Residual	-1.9	1.2	
Developmental	Count	20	29	49
	Expected Count	13.0	36.0	49.0
	% within Bilingual Code	40.8	59.2	100.0
	% within Met Standard 2011	76.9	40.3	50.0
	% of Total	20.4	29.6	50.0
	Std. Residual	1.9	-1.2	
Total	Count	26	72	98
	Expected Count	26.0	72.0	98.0
	% within Bilingual Code	26.5	73.5	100.0
	% within Met Standard 2011	100.0	100.0	100.0
	% of Total	26.5	73.5	100.0

$X^2 = 10.261$, df = 1, p (2-tailed) P < .001

Table 4-4 shows the Chi Square analysis with Bonferroni Alpha Adjustment for Research Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the 5th grade? The Chi Square analysis with Bonferroni Alpha Adjustment indicated that they were no significant differences at $p < .025$ between the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) and the dependent variable (2011 TAKS Reading test scores) at $p = .048$.

Table 4-4

Research Question #2 Chi Square Analysis with Bonferroni Alpha Adjustment Results

		standard not met	Met standard	total
Non-ELLs	Count	6	43	49
	Expected Count	10.7	38.3	49.0
	% within LEP Code	12.2	87.8	100.0
	% within Met Standard 2011	18.8	37.4	33.3
	% of Total	4.1	29.3	33.3
	Std. Residual	-1.4	.8	
Two Way and Developmental	Count	26	72	98
	Expected Count	21.3	76.7	98.0
	% within LEP Code	26.5	73.5	100.0
	% within Met Standard 2011	81.2	62.6	66.7
	% of Total	17.7	49.0	66.7
	Std. Residual	1.0	-.5	
Total	Count	32	115	147
	Expected Count	32.0	115.0	147.0
	% within LEP Code	21.8	78.2	100.0
	% within Met Standard 2011	100.0	100.0	100.0
	% of Total	21.8	78.2	100.0

$X^2 = 3.915$, df = 1, p (2-tailed) p = .048

Table 4-5 shows the overall Analysis of Variance (ANOVA) for the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs). It showed that there was a significant difference at $p < .003$ between the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) on the dependent variable (2011 TAKS Reading test scores).

Table 4-5

ANOVA Overall Analysis

Dependent Variable: 2011 TAKS Reading Test Scale Score					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	98421.810[a]	2	49210.905	6.141	.003
Intercept	69104915.109	1	69104915.109	8623.292	.000
Bilingual Code	98421.810	2	49210.905	6.141	.003
Error	1153980.082	144	8013.751		
Total	70357317.000	147			
Corrected Total	1252401.891	146			

The standard deviation met assumptions of normality for the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) on the dependent variable (2011 TAKS Reading test scores). In statistics and probability theory, standard deviation shows how much variation or dispersion exists from the average mean. The standard deviation is a single number that represents the spread of a distribution as with the mean every score in the distribution is used to calculate it (Frankel & Wallen, 2009).

Table 4-6 indicates the standard deviation (σ) 92.61801 for the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) for the dependent variable (2011 TAKS Reading test scale scores). The standard deviation met assumptions of normality.

Table 4-6

Statistics: Independent Variable Three Groups (Two Way Dual, Developmental, and Non-ELLs Programs

		2011 TAKS Reading test scale scores
N	Valid	147
	Missing	0
Mean		685.6395
Median		668.0000
Mode		718.00
Std. Deviation		92.61801
Skewness		.615
Std. Error of Skewness		.200
Kurtosis		.021
Std. Error of Kurtosis		.397
Range		406.00
Minimum		498.00
Maximum		904.00

Table 4-7 indicates the standard deviation (σ) 89.32317 for the non-ELL students for the dependent variable (2011 TAKS Reading test scale scores). The standard deviation met assumptions of normality.

Table 4-7

Statistics: Non-ELL Program

		2011 TAKS Reading test Scale scores
N	Valid	49
	Missing	0
Mean		708.5306
Median		699.0000
Mode		718.00
Std. Deviation		89.32317
Skewness		.681
Std. Error of Skewness		.340
Kurtosis		.353
Std. Error of Kurtosis		.668
Range		351.00
Minimum		553.00
Maximum		904.00

Table 4-8 indicates the standard deviation (σ) 89.48320 for the Two Way Dual Bilingual program for the dependent variable (2011 TAKS Reading test scale scores). The standard deviation met assumptions of normality.

Table 4-8

Statistics: Two Way Dual Bilingual Program

		2011 TAKS Reading test scale scores
N	Valid	49
	Missing	0
Mean		698.9184
Median		683.0000
Mode		655.00[a]
Std. Deviation		89.48320
Skewness		.350
Std. Error of Skewness		.340
Kurtosis		-.251
Std. Error of Kurtosis		.668
Range		374.00
Minimum		530.00
Maximum		904.00

Table 4-9 indicates the standard deviation (σ) 89.75176 for the Developmental Bilingual Program for the dependent variable (2011 TAKS Reading test scale scores). The standard deviation met assumptions of normality.

Table 4-9

Statistics: Developmental Bilingual Program

		2011 TAKS Reading test Scale scores
N	Valid	49
	Missing	0
Mean		649.4694
Median		622.0000
Mode		594.00[a]
Std. Deviation		89.75176
Skewness		1.155
Std. Error of Skewness		.340
Kurtosis		1.306
Std. Error of Kurtosis		.668
Range		406.00
Minimum		498.00
Maximum		904.00

Table 4-10 shows the Analysis of Variance (ANOVA) for Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?

The ANOVA indicated that there were significant differences at $p < .007$ between the means of two of the independent variable groups Two Way Dual and Developmental Bilingual Programs in the dependent variable (2011 TAKS Reading Test) scale scores. The Two Way Dual Bilingual program showed a greater gain in achievement than the Developmental Bilingual Program ($p < .007$).

Table 4-10

R.Q1 Analysis of Variance (ANOVA)

			Reading Scale Scores
Two Way vs. Developmental	Contrast Estimate		49.449
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		49.449
	Std. Error		18.086
	Sig.		.007
	95% Confidence Interval for Difference	Lower Bound	13.701
		Upper Bound	85.197

Table 4-11 shows the Analysis of Variance (ANOVA) for Research Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and

Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the 5th grade? The ANOVA indicated that there was a significant difference at $p < .030$ between the means the dependent variable (2011 TAKS Reading test) scale scores of the non-ELL students and ELL students that participated in a Two Way Dual or Developmental Bilingual Programs in the 5th grade. The non-ELL program showed a greater gain in achievement than the Bilingual programs at $p < .030$ (Two Way Dual and Developmental Bilingual Program).

Table 4-11

R.Q2 Analysis of Variance (ANOVA)

			Reading Scale Scores
Non-ELLs vs. ELLs	Contrast Estimate		34.337
	Hypothesized Value		0
	Difference (Estimate - Hypothesized)		34.337
	Std. Error		15.663
	Sig.		.030
	95% Confidence Interval for Difference	Lower Bound	3.378
		Upper Bound	65.295

Limitations

This study was limited to (1) Spanish-speaking, bilingual students from a single school district, (2) the outcome measures of the 2011 Reading Texas Assessment of Knowledge and Skills, (3) a variety of teacher experience and qualifications from one classroom to another and from one campus to another, which results in differences in

instructional delivery, (4) the data collected was archival, and (5) services for programs Two Way Dual Bilingual program and Developmental Bilingual Program are self-selected by parents.

The study assumed that the bilingual program models were followed as stipulated by Texas state laws including; (1) teachers employed English language learner strategies in the instruction based on the needs of the students and (2) all teachers by law were English as a Second Language (ESL) or Bilingual Texas certified. Several of the limitations, however, were mediated by the following: While a single school district was utilized, the sample size was reasonable for this type of study. The archival data used the most recent results. The achievement test (TAKS) used for this study has been validated and was used in the district and state for seven years prior to this study. The teacher experience and qualifications from one classroom to another and from one campus to another may vary, but the Two Way Dual and Developmental Bilingual Programs have been used across the district for at least seven years. The parents self-selected the program of choice for their student; however, the programs were analyzed both separately and together.

Summary

The findings of the study reported in this chapter reflect the above limitations and their possible mediations. Summaries of the quantitative results are provided in the first section followed by the characteristics of the participants and sample size (Table 4-1 and 4-2). A detailed overview of the data analysis was provided before the Chi Square analysis with Bonferroni Alpha Adjustment results and Analysis of Variance (ANOVA).

The quantitative data was collected from the research department of a large, urban district research department following the human subjects' requirements and approvals of both the district and university (see Appendix A & B). The SPSSA version XX1 was utilized for data input and analyses of the 2011 TAKS Reading Test scores achievement data. The data was analyzed utilizing the Chi Square analysis with Bonferroni Alpha Adjustment and ANOVA statistical procedures.

The Chi Square analysis with Bonferroni Alpha Adjustment was used to analyze the data to determine the percentage of students that met the passing standard (620 scale score) in the 2011 TAKS Reading Test scores. The Chi Square analysis with Bonferroni Alpha Adjustment data revealed that the three independent variables (Two Way Dual, Developmental, and non-ELLs programs) had statistically significant difference at $p < .001$ between the dependent variable (2011 TAKS Reading Test scores) for Research Question one but not for Research Question two.

The ANOVA was used to analyze the data to determine if there were significant differences between the means of the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs). The ANOVA revealed that the three independent variables (Two Way Dual, Developmental, and non-ELLs programs) had a statistically significant difference at $p < .003$ between the dependent variable (2011 TAKS Reading Test scores).

The purpose of this study was to provide research data examining the effectiveness of the Two Way Dual and Developmental Bilingual Programs as delivered to 5th grade English language learner students. Chapter 5 is divided into five sections:

Discussions, Findings and Interpretations, Implications and Recommendations for School Leaders, Recommendations for Future Research, and a Conclusion of the chapter.

Chapter 5
Conclusion

Discussions

Hispanics are the fastest growing segment of the United States population. According to the U.S. Census Bureau data, the Hispanic population increased by approximately 58%, from 22 million in 1990 to 35 million in 2000, compared with an increase of about 13% for the total U.S. population. In 2010, the U.S. Census Bureau estimated the number of Hispanics to be about 50.5 million, or about 16% of the U.S. population, up 43% from the 2000 census (Hemphill & Vanneman, 2011). The increase of over 15 million Hispanics from 2000 to 2010 accounted for more than half of the total population increase in the U.S. during that time (Humes, Jones & Ramirez, 2011). In recent decades statistics show that the number of children speaking a language other than English at home increased dramatically over the past few decades (NCES, 2006). In the United States the majority of the student populations that are English language learners are 80 percent Spanish speakers (Goldenberg, 2008). In 2011, Texas had approximately 832,000 English language learners (ELLs) (Flores et al., 2012). According to the Texas Agency of Education 91 percent of ELLs enrolled in school primary language was Spanish. State tests across North America show that ELLs academic performance is far below that of non-ELL's often times 20 to 30 points lower, and usually shows little improvement across many years than their English only classmates (Abedi & Dietel, 2004).

Students who speak English as a second language represent a growing number of the student-age population in America's public schools. As the Hispanic population

continues to grow in the United States, so does the need to be able to help Hispanic students to achieve academic success. With the results of this analysis, administrators and teachers can strategically make changes to the programs that are currently being implemented to those that have shown significantly higher means and passing percentages.

The purpose of this study was to provide research data examining the outcomes on the English version of the TAKS reading test scores in 2011 of the Two Way Dual and Developmental Bilingual Programs as delivered to fifth grade English language learner students. Approximately 147 students from one large urban Texas district were included in the study, 49 students each offering the dual and the development Bilingual program, and 49 non-English language learners. All participants were in a Dual Language or Developmental program that serviced English as a Second Language (ESL), Limited English Proficient (LEP), and or Bilingual students.

Findings and Interpretations

The student data that was requested from a large, urban district research department was the sole source of data for the study. The dependent variables consisted of the students' scale scores of the 2011 TAKS Reading test scores. The independent variable with three groups consisted of the Two Way Bilingual Program, Developmental Bilingual Program, and non-ELL program.

The Chi Square analysis with Bonferroni Alpha Adjustment was used to determine if there were significant differences in the passing standard of the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) in

the 2011 TAKS Reading test scores. The Analysis of Variance (ANOVA) was used to analyze the data to determine if there were significant differences between the means of the independent variable three groups (Two Way Dual, Developmental, and non-ELLs programs). The results of the analysis of the data answered each research question in the study with a statistical summary of results, tables, and narrative summation.

Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the fifth grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?

The Chi Square analysis with Bonferroni Alpha Adjustment indicated that they were significant differences at $p < .025$ between two groups of the independent variable the Two Way Dual and the Developmental Bilingual Program in the dependent variable (2011 TAKS Reading test scores) at $p < .001$. The students that were served in a Two Way Dual Bilingual program had a passing percentage rate of 59.7%. The students that were served in a Developmental Bilingual Program had a passing percent of 40.3%.

Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the fifth grade?

The Chi Square analysis with Bonferroni Alpha Adjustment indicated that they were no significant differences at the alpha .025 between the independent variable with

three groups (Two Way Dual, Developmental, and non-ELLs programs) and the dependent variable (2011 TAKS Reading test scores) with a $p = .048$.

The ANOVA for Research Question #1: Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the fifth grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?

The ANOVA indicated there were significant differences at $p < .007$ on the TAKS Reading Test scale scores between the ELL students served in the Two Way Dual and Developmental Bilingual Programs in the fifth grade with the Two Way Dual Bilingual program showing a greater gain in achievement. The students enrolled in a Two Way Dual Bilingual program had significant higher means compared to the students in a Developmental Bilingual Program.

The ANOVA for Research Question #2: Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the fifth grade?

The ANOVA indicated there were significant differences at $p < .030$ between the 2011 TAKS Reading test scale scores of the non-ELL students and ELL students served either in a Two Way Dual or Developmental Bilingual Programs in the fifth grade. The students enrolled in a non-ELL program had significant higher means compared to ELL students that participated in a Two Way Dual and Developmental Bilingual Program.

Table 5-1 indicates the means of the independent variable with three groups (Two Way Dual, Developmental, and non-ELLs programs) for the dependent variable (2011 TAKS Reading test scores). The data indicates that the non-ELLs had significantly higher means than the ELLs that participated in a Two Way Dual and Developmental Bilingual Programs. The data indicated that they were significant differences in the mean between the students enrolled in a Two Way Dual and Developmental Bilingual Programs. The students that were served in a Two Way Dual Bilingual program had significant higher means than those served in a Developmental program.

Table 5-1

Analysis of Variance (ANOVA)

Program	*Means of Scale Scores*
Non-ELLs	708.5306
Two Way Dual	698.9184
Developmental	649.4694

Implications and Recommendations for School Leaders

Table 5-2

Chi Square Analysis with Bonferroni Alpha Adjustment Analysis and Implications

Research Questions	Analysis Used	Analysis Results	Implications
R.Q1 Is there a statistical difference between the	Chi Square analysis with	The analysis indicated that they were significant differences	The findings indicate that the difference in the ELL students

performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?	Bonferroni Alpha Adjustment	at $p < .025$ between two groups of the independent variable the Two Way Dual and the Developmental Bilingual Program in the dependent variable (2011 TAKS Reading test scores) at $p < .001$.	served in a Two Way Dual Bilingual program had a higher passing percentage rate in the 2011 TAKS Reading test of 19.4% than those served in a Developmental Bilingual Program.
R.Q2 Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in the 5th grade?	Chi Square analysis with Bonferroni Alpha Adjustment	The Chi Square analysis with Bonferroni Alpha Adjustment indicated that they were no significant differences at $p < .025$ between the independent variable with three groups (Two Way Dual, Developmental and non-ELLs and the dependent variable (2011 TAKS Reading test scores) at $p = .048$.	The findings indicate that the ELL students that were served either in a Two Way Dual or Developmental Bilingual Programs had a higher failing percentage rate of 26.6% in the 2011 TAKS Reading test compared to 12.2% for non-ELL students of students not meeting the standard (620 scale score).

Table 5-3

ANOVA Analysis and Implications

Research Questions	Analysis Used	Analysis Results	Implications
R.Q1 Is there a statistical difference between the performance of English language learner students in a Two Way Dual and Developmental Bilingual Programs in the 5th grade 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state tests?	ANOVA	There were significant differences at $p < .007$ on the TAKS Reading Test scale scores between the ELL students served in the Two Way Dual and Developmental Bilingual Programs in the 5th grade with the Two Way Dual Bilingual program showing a greater gain in reading achievement.	The findings indicate that the ELL students served in a Two Way Dual Bilingual program had a significantly higher mean of 698 in the 2011 TAKS Reading test passing standard compared to 649 of ELL students served in the Developmental Bilingual Program.
R.Q2 Is there a statistical difference between the performance of English language learners and non-English language learners on the 2011 Reading Texas Assessment of Knowledge and Skills (TAKS) state test in a Two Way Dual or Developmental Bilingual Programs in	ANOVA	There were significant differences at $p < .030$ between the 2011 TAKS Reading test scale scores of the non-ELL students and ELL students served either in a Two Way Dual or Developmental Bilingual Programs in the 5th grade.	The findings indicated that non-ELL students had a significant higher mean of 708 in the 2011 TAKS Reading test scale scores compared to composite mean 674 of ELL students served either in the Two Way Dual or Developmental Bilingual Program.

the 5th grade?			

The results of this study indicate that fifth grade students that were served in the Two Way Dual Bilingual program outperformed students served in the Developmental Bilingual Program in the 2011 Reading TAKS test. This study also indicated that non-ELL fifth grade students outperformed the ELL students served in a Two Way Dual or Developmental Bilingual Program in the 2011 Reading TAKS test. However, the mean scale scores reading gap on the TAKS test between the Two Way Dual Bilingual program and the non-ELL students were 9.6, while the gap between Developmental Bilingual Program in the 2011 Reading TAKS test and the non-ELLs was 59.1. While the research questions did not explore these differences, the numbers however reflect a numerically large gap between the two programs and the non-ELL student population.

It is important for those making decisions in regards to educating ELLs that they understand the need of these students and what programs are more effective to implement for their success. District leaders should further educate school leaders and teachers on the best practices, skills, and knowledge on how to effectively implement the Two Way Dual Bilingual program. Greene (1998) stated that children with limited English proficiency who are taught using at least some of their native language perform significantly higher on standardized tests than ELLs that are taught only in English.

However, a study done by Thomas and Collier (2004) supports the findings of this research. Thomas and Collier (2004) indicated that Two Way Dual students outperformed students in the Developmental Bilingual Program from grades 1-5.

Thomas and Collier (2004) stated “dual language education is a school reform whose time has come”. The Two Way Dual Bilingual Program is a model that even the English-only advocates endorse because it is an inclusive model for all students, and all student groups benefit from participating (Thomas and Collier, 2004). The inclusion of English and Spanish proficient students enrich the dual language program and bring them together to teach each other the curriculum through their own heritage languages (Thomas & Collier, 2004). Thomas and Collier (2004) charted the progress of three dual language programs from first through sixth grade, measuring student performance in English reading; two programs closed the gap at the rate of 6 Normal Curve Equivalents (NCEs) per year, while the third one closed the gap at 3.5 NCEs. The difference in the lower-achieving dual language program was the ELLs were separated from the non-ELLs for a two hour English language arts block (Collier & Thomas, 2004). This study “A Comparison of the of Two Way Dual and Developmental Bilingual Programs on TAKS Reading Achievement: Implications for School Leaders” indicated that the students who participated in a Two Way Dual Bilingual program scored significantly higher in the 2011 TAKS Reading test. These findings suggest a rethinking of the use of bilingual programs in the elementary schools. District policy makers need to consider changes to their bilingual education programs where English and non-English speakers learn together in programs such as the Two Way Dual Bilingual Program.

Parents, if given a choice, often make the initial and sometimes final decision on which type of program their children will enter. District and school leaders need to educate parents on the options they have and give them research based information on the

bilingual programs offered so that they can make an educated decision for their children. When parents enroll their ELL student in Texas public schools, the parents are given a language survey. If the parent indicates there is a second language spoken in the home, the student is given a language acquisition test. The language acquisition test will determine the student's level of English. Most district schools have a Bilingual and a non-ELL program already in place. The parents' option to choose a program relies on the student's language acquisition. If the student scores higher in English, the parent can choose between a Bilingual or non-ELL program. If the student scores higher in Spanish, the school highly recommends the student be placed in the Bilingual program already established at the school. The parents are provided with choices already established in the school, but may not be provided with choices of programs based on current research outcomes nor have the possibility of more than one choice.

Recommendations for Further Research

A study of the National Assessment of Education Progress in 2005 highlighted a 46% gap between English language learners and English-only students (NCES, 2006). State tests show that ELLs academic performance is far below of other students, often times 20 to 30 points lower, and usually shows little improvement across many years than their English only classmates (Abedi & Dietel, 2004). According to the National Center for Education Statistics (2011), achievement gaps continue to show a national average of 25 points gap between Hispanic and White public school students at grade 4 (Hemphill & Vanneman, 2011).

With the Hispanic population growing at a rapid pace, meeting the needs of English language learners is essential. Students learning a second language in public schools are becoming long-term ELL students because they are being put in programs that are not meeting their needs. There are students that were born in the United States of America and have never lived in a foreign country that will continue to struggle in reading through elementary and high school because they are not in effective bilingual programs, and their needs are not being met. This will continue to make the achievement gap larger, and ELL students will continue to drop out of school before earning a high school diploma.

> While many children of immigrant families succeed in reading, many do not. In particular, Latino children are disproportionately likely to perform poorly in reading and in school. As No Child Left Behind and other federal and state policies begin to demand greater levels of success for all subgroups of children, the reading achievement of English language learners is taking on even greater importance. Thousands of schools cannot meet their adequate yearly progress goals, for example, unless their English language learners are doing well in reading. More importantly, American society cannot achieve equal opportunity for all if its schools do not succeed with the children of immigrants. (Slavin & Cheung, 2005, pp. 5-6)

The state of California is poised to become the first state to reveal the extent to which ELLs languish in the public schools for years without reaching fluency (Maxwell, 2012). Under a measure in California that received broad, bipartisan support from the

legislature, the state education department would be required to report data annually on long-term ELLs and students at risk of becoming long term ELLs will be flagged (Maxwell, 2012). According to Maxwell (2012), if the legislation is signed into law, it will come as a legal force for responding to the problem of long-term English language learners.

As the ELL population continues to grow, there is a critical and continued need to evaluate ELLs reading acquisition in English. Suggestions for future research are as follows:

1) Educational researchers should further research the impact of the Two Way Dual program for ELL students achieving in other content areas such as math, writing, science, and social studies and with larger sample sizes.
2) Educational researchers should further research the effect of the Two Way Dual program for ELL secondary students in grades 6-12.
3) Educational researchers should longitudinally study the success of the Two Way Dual program for exiting ELL students and their success in college.
4) Further research should include a larger sample from several districts in different geographical locations nationally to support generalizability.
5) Further research should include a survey of students' views of their instruction, learning, test taking, and performance on the Texas standardized test.

6) Further research should include classroom observations of two programs in this study to determine if and how classroom interactions influence student achievement.
7) Further research should include ELL parent interviews on the parental role in their reasoning for selection of bilingual programs. Parent language development should be provided prior to the program selection process.
8) Further research should include the variables of teacher and student self-efficacy, and their impact on the progress of the ELLs reading achievement in English.
9) Further research should be conducted to determine the level of understanding of district leaders, districts school boards, school leaders, superintendent, and teachers in order to develop practices that impact test scores and student progress.

A continuation of this study is needed to develop strong professional development for district leaders, districts school boards, school leaders, and teachers. All stakeholders need to know what high-quality effective instruction and materials are to be able to impact the ELLs. The results of this study have potential implications for district bilingual programs, teachers, administrators, and policymakers.

Conclusion

The increase of over 15 million Hispanics from 2000 to 2010 accounted for more than half of the total population increase in the U.S. during that time (Humes et al., 2011). Students who speak English as a second language represent a growing number of

the student-age population in America's public schools. Bilingual education is neither a single uniform program nor a consistent methodology for teaching language minority students; rather it is an approach that encompasses a variety of program models (Ovando et al., 2006). Closing the Hispanic achievement gap with the native culture and educational attainment remains a challenge.

The findings of this study produced new research on the impact of Bilingual programs, specifically Two Way Dual and Developmental Bilingual Programs. The study showed the Two Way Dual Bilingual program had significantly greater gains in the 2011 reading TAKS assessment than the Developmental Bilingual Program. Students in classes that include both ELL and non-ELL achieve at a higher level in reading achievement, such as the Two Way Dual. It is possible that ELL students are more inclined to speak English due their other classmates not speaking Spanish. Students could find this opportunity as non-threating and motivate them to learn English further. As students move forward, mastery of a second language will enhance their potential to be post high school and college ready.

The selection and implementation of Bilingual programs for ELLs by parents, educators, district leaders, school leaders, and policymakers must be chosen based on research outcomes and on-going evaluation of programs. This study was intended to provide support for school leaders and policymakers as they face the challenge to improve the educational achievement of ELLs. The results of this study indicate that the students who participated in a Two Way Bilingual program outperformed students who

were served in the Developmental program and came closer to the non-ELL student population in a state's annual reading test.

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Appendix A

APPROVAL FROM THE UNIVERSITY OF HOUSTON HUMAN SUBJECT

UNIVERSITY of HOUSTON

DIVISION OF RESEARCH

December 12, 2012

Josefa Olivares
do Dr. H. Jerome Freiberg
Dean, Education

Dear Josefa Olivares,

Based upon your request for exempt status, an administrative review of your research proposal entitled "A Comparison of the Effectiveness of Two Way Dual and Developmental Bilingual Programs in Reading Achievement: Implications for School Leaders" was conducted on October 3, 2012.

At that time, your request for exemption under **Category 4** was approved pending modification of your proposed procedures/documents.

The changes you have made adequately respond to the identified contingencies. As long as you continue using procedures described in this project, you do not have to reapply for review. * Any modification of this approved protocol will require review and further approval. Please contact me to ascertain the appropriate mechanism.

If you have any questions, please contact Alicia Vargas at (713) 743-9215.

Sincerely yours,

RESEARCH COMMITTEE

Kirstin Rochford, MPH,
CIP, CPIA Director,
Research Compliance

*Approvals for exempt protocols will be valid for 5 years beyond the approval date. Approval for this project will expire **September 1, 2017.** If the project is completed prior to this date, a final report should be filed to close the protocol. If the project will continue after this date, you will need to reapply for approval if you wish to avoid an interruption of your data collection.

Protocol Number: 13050-EX

316 E. Cullen Building Houston, TX 77204-2015 (713) 743-9204 Fax: (713) 743-9577
COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS

Appendix B
CONSENT TO PARTICIPATE IN RESEARCH FORM

HOUSTON INDEPENDENT SCHOOL DISTRICT
HATTIE MAE WHITE EDUCATIONAL SUPPORT CENTER
4400 WEST 18th STREET • HOUSTON, TEXAS 77092-8501

TERRY B. GRIER, Ed.D.
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Carla J. Stevens
Assistant Superintendent
Research and Accountability Department
Tel: 713-556-6700 • Fax: 713-556-6730

Josefa Olivares
11803 Glen Bay CT
Houston, TX 77089

November 14, 2012

Dear Ms. Olivares:

The Houston Independent School District (HISD) is pleased to approve the research project titled "A Comparison of the Effectiveness of Two-Way Dual and Developmental Bilingual Programs in Reading Achievement: Implications for School Leaders." The goal of this research is to study the effectiveness of the district's two-way and developmental bilingual programs in terms of student achievement on the TAKS. The projected date of completion is May 2013.

Approval to conduct the study in HISD is contingent on meeting the following conditions:

- In this study, archival student data will be used. Specifically, TAKS reading scores from fifth-grade students enrolled in either the two-way or the developmental bilingual programs will be analyzed (2010 and 2011). Certain demographic variables are controlled for, with comparison data from non-LEPs included.
- The investigators will be responsible for all associated costs.
- Investigators will follow the HISD and University of Houston guidelines for human subject's protection and confidentiality.
- Any participation of students in this project requires active parental consent for all students under 18 years of age. Participation is voluntary.
- While the Institutional Review Board (IRB) of the university/organization is responsible for oversight of the study, the HISD Department of Research and Accountability will also monitor the study to ensure compliance to ethical conduct guidelines established by the Department of Health and Human Services, Office for Human Research Protection (OHRP) as well as the disclosure of student records outlined in Family Educational Rights and Privacy Act (FERPA).
- The study will not interfere with the districtwide instructional/testing program.
- District personnel or students will not be identified in the research process or final report.
- The study involves no expense to the district.
- The district will receive copies of the completed final report within 30 days of its completion.
- A separate data request will required to obtain any student performance data.

Any changes or modifications to the current proposal must be submitted to the Department of Research and Accountability for approval. Should you need additional information or have any questions concerning the process, please call (713) 556-6700.

Sincerely,

Carla Ste ens
Assistant Superintendent

CS: kb
cc: Michele Pola Julie Baker Sam Sarabia Karla Loria
Arnold Viramontes Gracie Guerrero Sidney Zullinger