

MOVING TOWARD DUAL-LANGUAGE APPROACHES: A POTENTIAL SOLUTION
TO ACHIEVEMENT GAPS FOR NEWLY-ARRIVED HISPANIC STUDENTS

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ABSTRACT

Jose Cardoza: Moving toward Dual-Language Approaches: A Potential Solution
to Achievement Gaps for Newly-Arrived Hispanic Students
(Under the direction of Kathleen Brown)

This quantitative study investigated the extent to which Hispanic newcomer English Language Learners (ELLs) enrolled in grades 4 and 5, who received math instruction in Spanish, improved their math scores in district and state tests as compared to ELLs who received math instruction in English only. The researcher compared 2017-2018 quarterly assessments for those students who received math instruction in Spanish against secondary archival data from the prior three years for students who had received math instruction in English. The primary conceptual framework used to ground this research included the Common Underlying Proficiency Theory postulated by Cummins (1981), which suggests that while every language is different at the surface level, certain commonalities, such as content learning (skills that demand more complex thinking), exist among them. Well-developed, complex thinking skills acquired in one language can translate into positive outcomes when learning a second language (Cummins, 2012). In general, the results of the current study indicate that ELLs who received math instruction in Spanish exhibited higher gains (in that subject) than those instructed in English-only settings. However, when controlling for gender, time in the U.S., grade, and English proficiency, the results were mixed. Specifically, this analysis demonstrates that math content instruction in Spanish improved achievement by 6% for the treated group compared to < 3% for the comparison group. These findings demonstrated that instructional support in ELLs' first

language (Spanish) for at least one hour a day during a six-month period contributed to their academic performance in math more than English-only models used in similar settings. While not a complete panacea for the multiple challenges faced by ELLs in U.S. schools, these results may have great implications for practice. That is, school leaders interested in closing academic achievement gaps for their newcomer ELLs may consider adding on-site, dual-language models to their ESL programs.

To my lovely wife, Katherine, completing a doctorate would not have been possible without your unselfishness and unwavering support. To my two children, Benjamin and Camila, you are my inspiration. You are my legacy. I hope this triumph serves you as an example of the endless possibilities—that you can be anything you want to be in life if you set your mind to it.

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CHAPTER 1: INTRODUCTION

Introduction

In the last five years, American schools have experienced an unprecedented influx of immigrant school-age children from Central American countries such as El Salvador, Guatemala, and Honduras (Chishti & Hipsman, 2016). According to the U.S. Department of Homeland Security¹ (2016), 68,541 school-age, unaccompanied, immigrant children entered the United States from Central American countries in 2014 alone, reflecting a 43% increase from the previous year. As this trend is projected to continue (Chishti & Hipsman, 2016), the need to accommodate these English as a Second Language (ESL²) “newcomers”—who by definition are students who enter U.S. schools with little or no English and who in most cases “have gaps in their educational background” (Center for Applied Linguistics [CAL], 2012)—becomes a concern to school principals wanting to support teachers who see themselves as unprepared and ill-equipped to provide effective classroom instruction (DeCapua & Marshall, 2009).

To address this issue, several school districts across the country have implemented initiatives to support newcomer students, including one-year dual-language on-site and off-site transition programs—with some exhibiting signs of success in closing academic achievement gaps (CAL, 2012). Yet, most districts continue to rely on standard English as a Second Language (ESL) services as the main support for these students, services often described as inadequate and

¹ Report conducted by the U.S. Customs and Border Protection, a division of the U.S. Department of Homeland Security.

² ESL (English as a Second Language); LEP (Limited English Proficient); and ELL (English Language Learner) are acronyms used interchangeably to describe a student who is not fluent in the English language.

least effective (CAL, 2012; Thomas & Collier, 2011, 2012), as evidenced by the continued achievement gap between English Language Learners (ELLs) and English native speakers (National Center for Education Statistics, 2015).

Current standard newcomer ESL programs at the elementary level, for example, are English-based and most of the focus is placed on learning the English language rather than content area, e.g., math and science, development (Thomas & Collier, 2012). Consequently, ELLs have less opportunity to access the standard curriculum, thus maintaining the social status quo of underachievement and achievement gaps (Ovando et al., 2006). Therefore, addressing the issue of achievement gaps for these students may require a complete paradigm shift in the way most current ESL programs serve ELLs,³ in particular when essential elements are left out, such as caring and culturally competent teachers, proper human and financial resources, newcomer family outreach and support, and, most importantly, the use of students' first language.

While there is plenty of research supporting bilingual education (i.e., when two languages are used) as an instructional option to support these students, it seems many school districts are still reluctant to experiment with alternatives that would incorporate such a feature into their current standard ESL programs. This study examined one of those alternatives by testing how this instructional option might result in positive effects for ELLs.

Statement of the Problem

Academic achievement gaps among minority students represent a significant problem in the educational community, with no impending solution in sight in the near future (Morris & Perry, 2016). Certainly, academic achievement gaps are more extreme for certain groups than for

³ During standard ESL instruction, these students are divided into three levels of English proficiency: *beginners* (or newcomers), *intermediate*, and *advanced*. For the purpose of this study, ESL, ELL, or LEP may refer to Hispanic students who are ESL newcomers (beginners), intermediate, advanced, or as otherwise specified.

others, as is the case for ELLs (newcomers in particular). Researchers agree that some of the major causes for such academic gaps among ELLs,⁴ despite positive changes involving language education achieved since the passing of *Lau v. Nichols* in 1974,⁵ may have to do with the following: a) the failure of public schools to provide appropriate interventions to fill literacy educational gaps when newcomers first enroll in U.S. schools (Calderon & Minaya-Rowe, 2003; Cloud, Genesee, & Hamayan, 2000); b) lack of bilingual support in widely used standard ESL programs in public schools, causing ELLs to take up to seven years to acquire English language skills to fully understand and participate in a regular English, mainstream classroom (Cummins, 2012; Krashen, 1981, 1999, 2003; Lopez & Tashakkori, 2006; Thomas and Collier, 2011, 2012); c) family-related issues such as poverty, marital status at birth, and single family homes (Hedges & Nowell, 1999; Hernandez et al., 2008; National Center for Education Statistics, 1995); d) accountability measures that assess ELL newcomers' academic achievement in a language they do not understand (Echeverria et al., 2010); f) lack of legal immigration status (The Migration Policy Institute, 2016); and g) institutionalized racism (Bonilla-Silva, 2006; Pager & Shepherd, 2008; Quillian, 2006, as cited by Morris & Perry, 2016).

A number of broad educational policies have been developed with the hope of finding a panacea to the increasing concern about achievement gaps. From President Johnson's Elementary and Secondary Education Act (Elementary and Secondary Education Act [ESEA], 1965) to President Bush's No Child Left Behind (No Child Left Behind [NCLB], 2003) to, most recently, Obama's Race to the Top (Race to the Top [RTT], 2009), school reform initiatives have prioritized raising graduation rates and eliminating achievement gaps. Such broad educational

⁴ Some of major causes described here apply to ELLs of different language proficiency levels, not just newcomers.

⁵ *Lau v. Nichols* (1974) is one of the most significant Supreme Court rulings that positively affected language education in the United States.

policies may have different names, but most priorities remain the same. Going forward, however, it seems as though this problem will persist for this language minority group, continuing with the status quo of ELLs falling behind in academic achievement, unless approaches in the way these students are being served are prioritized and improved. By examining fundamental causes and by investing in research-based solutions, closing achievement gaps among these students should not be out of reach for a country with vast economic resources.

Purpose of the Study

While a substantial amount of research has been conducted on the positive effects of using students' first language to instruct ELLs during regular school hours in structured dual-language models (Burchinal et al., 2012; Thomas & Collier, 1997, 2011, 2012), fewer studies exist on the benefits of using this same feature with newcomer ELLs but in a semi-structured math program instead. As such, the group of students and the format this study investigated added to the body of research in the following specific ways: first, this study examined short-term treatment impact (six months) in a semi-structured format, i.e., the researcher conducted comparative analysis between a group of ELLs who received math instruction in Spanish and another who received math instruction in English; second, the students involved were unique in the sense that only those 4th and 5th grade ELLs with less than three years in U.S. schools were considered for inclusion.

Specifically, this study addressed the issue of achievement gaps among ELLs by looking into the relationship between content (math) instruction that uses dual-language features (students' primary language plus English) and math academic performance for 4th- and 5th-grade Spanish ELL newcomers (i.e., ELLs in year one, two, or three in U.S. schools). While ELL newcomers are considered those students who have been in U.S. schools for two years or less,

this research expanded the criteria to include third-year ELLs. As a result, ELLs in the treatment and comparison groups had been enrolled for no more than three years in U.S. schools and had attained a maximum of a 3.5 overall score⁶ in their latest language proficiency ACCESS test.⁷ Another noteworthy observation is the fact that each of the cohorts from 2014 to 2018 had a different teacher. More specifics of the participant selection criteria will be explained in more detail in the methodology section in chapter 3.

The researcher, who was himself the provider of the treatment, compared assessment data from two groups to examine treatment effect. The treatment group received a one-hour block of math instruction in their primary language (Spanish) for a period of six months, while the comparison group received such instruction in English (their second language). Assessment data obtained from both groups were then compared, and the treatment effect was examined. The main instrument used for this analysis was a math quarterly cumulative assessment used by the district: I-Ready.

Significance of the Study

Segregation, despite the *Brown v. Board of Education* (1954) victory, is still prevalent in public schools. In theory, facilities are integrated, yet the disparity in educational opportunities for certain groups of students still exists to a considerable extent (Clayton, 2011). Bryk (2010), Orfield and Lee (2005), and others found that most language-minority students⁸ are concentrated in low-income neighborhood schools—schools that are often low-achieving and ill-funded, with

⁶ Overall ACCESS scores range from 1 to 6, with 1 being the lowest and 6 being the highest. Newly-arrived ELLs usually score a 1 overall.

⁷ ACCESS is a state test given to all K-12 students identified as ELL. This test assesses ELLs' English language proficiency in four main language areas, including speaking, reading, listening, and writing. Currently, 39 states participate in such yearly assessments. The importance of such tests is on par with that of the EOGs (WIDA, 2017).

⁸ According to the Migration Policy Institute (2015), 71% of these students were Spanish speakers in 2013. In 2015, this number was 77.1% (National Center for Education Statistics, 2017).

inadequate resources. Consequently, it becomes challenging to close achievement gaps for this group that “by far faces the highest dropout rates” (Orfield & Lee, 2005, p. 3).

The National Center for Educational Statistics (2016) reported that from 1990 to 2014, non-Hispanic White and Black youth completed high school at a higher rate than Hispanic youth.⁹ Specifically, the dropout rate for Hispanics dropped from 32.4% to 10.6% in the 1990-2014 period, while for White youth, it moved from 9% to 5.2% during the same period. This report estimates that despite improvement in the last 24 years, the dropout rate for Hispanics is still high at 10.6%, representing a gap of 5.3 percentage points when compared to White students. When referring to ELLs, Darling-Hammond (1997) reasons that “It is not that U.S. teachers and students cannot succeed when they are well supported, it is that the system fails to support many of them” (p. 27). From a legal perspective, some would say that such practices may infringe upon state constitutional laws that protect rights to high-quality education for all students.

According to most state constitutional laws regarding education, all students have a right to receive high-quality education. Some states might call it a “sound basic education” while others might call it something different. What is clear, however, is that students regardless of race, ethnicity, and linguistic ability are entitled by state laws to receive such education (Machtinger, 2007). In North Carolina, for example, under the N.C. Constitution, Article One, Section 15, it is clearly stated that all students “have a right to the privilege of education, and that it is the duty of the state to ‘guard and protect that right.’”¹⁰ Despite such laws, several pieces of

⁹ 77.1% of ESL students speak Spanish at home, making Hispanics the most well-represented ELL group (National Center for Education Statistics, 2017). https://nces.ed.gov/programs/coe/indicator_cgf.asp

¹⁰ NC Const. art. I, § 15.

litigation (e.g., based on *Leandro I* and *Leandro II* NC court cases)¹¹ are currently under way due to practices that seem to be ignoring such mandates. The two-decade-old North Carolina *Leandro* case is relevant to this discussion, as it may exemplify current inequitable practices that affect minority groups such as ELLs. Such practices raise the following crucial questions: Are these students given a fair share of state educational resources? Are they being protected by state educational laws? These questions clearly warrant further examination.

To further illustrate these issues, there is compelling reason to believe that ELLs and other minority groups are less supported when it comes to human and financial resource allocation—as seen in across-district, intra-district, and even intra-school student expenditure discrepancies—which has a direct impact on these students’ performance (Clayton, 2011). Several indicators demonstrate that financial and human resources are not allocated in a manner that is equitably sound. Houck and DeBray (2015) assert that the discrepancy in funding that occurs “across states, districts, and schools harms low-income and minority students disproportionately” (p. 149). In addition, when experienced teachers are allocated to a “good school,” and new, less-experienced teachers to low-income neighborhood schools, some students benefit more than others and adequacy fails to be realized in great part because of the disparity in such teachers’ quality (Fram et al., 2007).

A horizontal equity¹² analysis of various local N.C. districts reveals that the state of North Carolina allocates almost the same per pupil expenditure across districts,¹³ demonstrating that the

¹¹ *Leandro v. State*, 346 N.C. 336, 347 (1997) and *Hoke County Board of Education v. State*, 358 N.C. 605, 632, 637 (2004).

¹² That is, equal treatment of units, where every student is given the same resources. This contrasts with vertical equity, in which students are treated differently and resources are allocated based on students’ needs.

¹³ Excluding students with higher needs, such as English Language Learners (ELLs). Extra funding, through Federal grants and state funding, is available for such students (Education Commission of the States, 2015) <http://www.ecs.org/clearinghouse/01/16/94/11694.pdf>.

disparity in student expenditure does not come from the state so much as it comes from the district itself. Districts with higher property tax revenue, for example, can increase student expenditure in the form of teacher bonuses, higher supplements for teachers, more expensive technology, and the like. Further, a vertical equity analysis reveals that even though high-needs schools receive more federal and state funds due to the high concentration of ELL and Exceptional Children (EC) students, an average overall gap in student expenditure between these schools and wealthy schools still occurs when human allocations are considered. Such data demonstrate that teachers with higher average pay are often skewed towards schools with fewer high-needs students (Orlofsky, 2002). Thus, the idea that *correlation does not necessarily imply causation* applies, in particular when human allocation is considered. For instance, even if low-income neighborhood schools, where most Hispanic ELLs attend, receive extra financial resources through Title I money or other means (federal grants, for example), the absence of high-quality teachers would still present challenges to principals to substantially improve high-needs student academic outcomes and thus to the chances to narrow achievement gaps (Houck & DeBray, 2015).

Clearly, these inequitable practices in resource allocation are not exclusive to North Carolina. According to national data from Education Trust, schools with high numbers of poor and migrant students receive an “average of \$907 less per student” (Machtinger, 2007); when human resource allocation disparities, e.g., higher-quality teachers and principals, within the district are factored in, the amount of the student expenditure gap is even higher (Machtinger, 2007). Such practices have created inequity problems that go beyond state borders, reaching the highest levels of government intervention (Fusarelli, 2005). This is evident in the way that the level of control and involvement in creating new educational policies addressing minority

achievement gaps seems to be shifting from state to federal agencies. For instance, since the inception of No Child Left Behind (NCLB), there has been a drastic shift in government control over education reforms (Fusarelli, 2005). Even before this legislation, there were signs that the shift was inevitable. Shirley Hufstедler, first U.S. Secretary of Education, explicitly articulated the role of the newly formed governmental educational agency in 1979, noting that “The federal role [in education] has developed in response both to constitutional requirements and to truly national problems—problems that transcend the scope or the resources of state and local governments.”

Another inequitable district and school practice worth mentioning in this discussion involves the way school districts sometimes encourage school principals to use educational triage approaches in order to increase test scores (Gillborn & Youdell, 2000, as cited by Booher-Jennings, 2005), clearly underserving some students in the process. Such a practice consists of grouping students based on their academic ability, i.e., students with the greatest possibility of passing state tests are placed in the top group, those closer to passing the tests (balloon kids) are placed in the middle group, and those who have no possibility of passing these state tests are placed in the bottom group. Booher-Jennings (2005) refers to this as “Safe cases, suitable cases for treatment, and hopeless cases” (p. 232). Since this method is based on academic performance, it is not surprising that most ELLs (newcomers mostly) fall in the bottom group. Even though this practice is more evident close to the end of the school year due to testing pressures, for newcomer ELLs this could be the norm throughout the year, particularly in low-income neighborhood schools, where they are usually served by inexperienced or unqualified teachers. In fact, ELL newcomers often end up receiving remedial classes conducted by teachers’ assistants and substitutes (Fashola et al., 2001; Peske & Haycock, 2006).

As the number of ELLs continues to grow (Chishti & Hipsman, 2016), it becomes clear that this educational problem should not be taken lightly. According to estimates by the National Center for Educational Statistics (2016), 9.3% of public school students (or 4.5 million) were identified as ELLs in the 2013-14 school year.¹⁴ Of this number, approximately 77.1% were of Hispanic origin (Migration Policy Institute, 2015). Clearly, studies addressing issues of academic gaps among disenfranchised groups such as this is extremely relevant and significant to the field of education and to the nation as a whole. Not acting swiftly on this issue would imply ignoring the almost 10% of U.S. public school students affected—a group of students that has historically been denied equal access to education.

Research Questions

This study mainly was guided by the following research question and sub-question: Does dual-language instruction improve achievement in math for Hispanic ELL newcomers enrolled in an urban Title 1 elementary school in grades 4 and 5 more than English-only instruction? To what extent do such ELL newcomers improve their math scores in district and state tests as compared to ELLs who receive math instruction in English only? Answering these questions required that the following areas of educational research were examined: (1) the historical policy shifts that directly or indirectly have shaped language education in this country; (2) the causes and trends of achievement gaps among ELLs; (3) the effectiveness of different ESL approaches used to support ELLs, including dual-language instruction, newcomer programs, and the widely-implemented pullout model; and (4) the role of the principal as an influential actor in narrowing achievement gaps.

¹⁴ In 2016, this number is close to 5 million, or 10% of the student population.

Hypotheses

It is hypothesized that ELLs learn best in a low-stress environment, where the input received (i.e., what they read, listen to, or see during instruction) is comprehensible to them (Cummins, 1981; Krashen, 1981). It is also hypothesized that on average, students enrolled in dual-language programs, where both languages are used for instruction, perform better than those students not enrolled in such programs (Marian, 2013; Rolstad, 2005; Thomas & Collier, 2010, 2012). While the program examined in this research differed in some ways (e.g., exclusive to ELL newcomers, small group, Spanish only, and the like) from the typical structured one-way and two-way dual-language models mostly reviewed in this literature, major commonalities existed (e.g., the use of students' first language for content instruction). Based on such findings, this research was guided by the following hypothesis: After receiving one-hour block math instruction in Spanish for a period of six months, the treatment group¹⁵ would show significant positive results in their math district cumulative tests when compared with those of the comparison group not receiving the treatment. Significant scale score differences between the two groups would provide statistical evidence to reject the null hypothesis (or H_0).

Conceptual Framework

As race plays a significant factor in understanding school inequities, it is easy to see how social justice and education have been “inextricably linked” since the 1954 Supreme Court decision of *Brown v. Board of Education* (Grogan, 2013). As it stands, equity posits that all children—regardless of gender, social class, race, language origins, and geographical location—should be given access to educational opportunities and the resources to succeed academically (Levin, 2002). Drawing from such concepts, the University of North Carolina at Chapel Hill

¹⁵ This group consisted of 15 Hispanic ELL newcomers with similar characteristics (e.g., English proficiency, socioeconomic status, average time in U.S. schools, and the like).

(UNC-CH) School of Education Conceptual Framework describes equity as “the state, quality, or ideal of social justice....a perspective that understands the unequal treatment of those who have been historically discriminated against based on their ability, parents’ income, race, gender, ethnicity, culture, neighborhood, sexuality, or home language” (UNC-CH, School of Education, 2017). Similarly, the distinguished British scholar Terry Eagleton argues that “Genuine equality means not treating everyone the same, but attending equally to everyone’s different needs” (p. 104).

These theoretical perspectives, along with vertical equity, as well as critical race theory (CRT)—holding that institutional racism is entrenched in American society, where the dominant (White) culture has historically created social structures that tend to benefit Whites while marginalizing people of color—were instrumental in this research. Through these lenses, among others, the researcher understood and was able to describe the great challenges this language minority group continues to face in gaining access to a high-quality, differentiated education.

Specifically, these lenses and perspectives served as analytical tools for examining inequitable practices (Ladson-Billings, 1995) in our public schools. They helped in: a) examining how the English-only proponents are overshadowing attempts to widen ESL initiatives with dual-language features, despite the vast amount of research that supports such instructional model benefits; b) explaining the discrepancies that exist in student expenditure between predominantly White schools and predominantly language-minority schools; c) understanding why achievement gaps are still so prevalent in our schools, with no real solution in sight; and d) providing insight on how laws that affect language education—despite great strides—still fall short in achieving equitable support for ELLs.

While the study drew from such aforementioned equity-based lenses for understanding inequities affecting ELLs, the researcher also found it helpful to use language acquisition theories such as Krashen's comprehensible input and affective filter, as well as Cummins' Common Underlying Proficiency (CUP), on which to ground this research. Such language acquisition theories (Cummins' theory in particular) substantiate the positive effects that exist when students' first language is used as support for learning content and a second language. Krashen (1981) argues that ELLs learn best when instruction (or the input) received in a low-anxiety setting (i.e., low affective filter) is understandable to them. Such a notion stresses the importance of creating (1) a low-anxiety setting within the classroom (e.g., when ELLs are allowed to speak their language, they feel more at home and anxiety is reduced), and (2) accessibility to the new language (e.g., by using visuals and cognates,¹⁶ slowing down speech, and the like). Cummins (1981) goes a few steps further, suggesting that it is best when ELLs are allowed to develop conceptual knowledge and cognitive skills in their first language—skills that will eventually and successfully transfer to the new language.

Assumptions and Procedures

This research project was guided by the following assumptions and procedures: a) the math I-Ready (given in September, December, and February/early March) and the ACCESS test (February) are the most valid benchmark measurements to support study findings; b) a significant effect on math scores in the benchmark measurement instruments will be seen after the treatment—i.e., using students' first language (Spanish) to provide math instruction to ELL newcomers in grades 4 and 5 (students in their first, second, or third year in U.S. schools who scored no higher than 3.5 on their latest ACCESS test); c) an unbiased review of the data—considering the researcher was also the treatment provider; d) the quantitative methodology used

¹⁶ Or words that are very similar in both languages, e.g., adult-adulto, car-carro, library-libreria, and the like.

offered the most appropriate approach for this study; and e) conceptual frameworks and lenses for analyzing the data and literature offered the most suitable approaches for this study.

Limitations and Challenges

Limitations in this research, which limited the scope of the generalizability of its findings included: a) the small sample size ($n = 15$ in the treatment group); b) being conducted with elementary newcomers in grades 4 and 5 only—or those 4th and 5th grade ELLs in their first, second, or third year in U.S. schools; c) focusing on math instruction only and with newcomers from Spanish-speaking countries; d) participants were only given the intervention one hour a day for six months, which may be a short period of time in which to adequately validate the study's findings; e) participants were not randomized, but were, instead, selected under a set of criteria that fit the desired profile described above and came from a low socioeconomic background, etc.; f) some ELL participants relocating to another school in the middle of the study could compromise the validity of the findings; and g) the researcher was also the provider of treatment.

While no major obstacles were expected, the following presented some challenges: 1) obtaining math assessment data in a timely manner. Sources of quantitative data included quarterly district assessment data for four consecutive years, as well as ACCESS test scores; 2) obtaining permission from the research site principal; and 3) the treatment and the comparison group participants had similar characteristics as far as socioeconomic status, age range, grade, native language, English proficiency, and the like, which facilitated the comparison analysis. However, other internal and external variables that may have influenced the outcome existed, such as more subtle differences in family background, which would be variables hard to isolate. Another internal variable that could have impacted the results is the fact that the researcher was also the provider of the treatment. With that said, further examination of each cohort reveals that

the teacher was not the same for all cohorts. In fact, each cohort—including the treatment year—was instructed by a different teacher. To an extent, this could validate the results in the sense that it eliminates teacher quality as factor for the treatment effect.

Definitions of Key Terms

Academic Achievement Gaps. This term refers to the consistent and evident disparity in student performance observed on high-stake tests (EOGs, for example) among groups of students, such as ELLs.

ACCESS Test. ACCESS is a state test given to all K-12 students identified as ELL. This test assesses ELLs' English language proficiency in four main language areas (or domains), including speaking, reading, listening, and writing. Overall ACCESS scores range from one to six, with one being the lowest and six being the highest. Newly-arrived ELLs usually attained “one” on their overall scores. Currently, 39 states participate in these yearly assessments (WIDA, 2017).

Early-exit and Late-exit Bilingual Models: Transitional Bilingual Education (or TBE). As the names imply, early-exit and late-exit bilingual models use both languages to instruct students. However, different from the typical dual-language, or DL, model, transitional bilingual education (TBE) models are used to instruct mostly ELLs and not English speakers. Students can stay in an early-exit program for up to three years, and for all their school years in the late-exit model.

English Language Learner (ELL). This acronym is used interchangeably with LEP (Limited English Proficient) and ESL (English as a Second Language) to refer to students who are not fluent in the English language and whose primary language is not English. It is estimated that almost 10% of the K-12 public school student population is identified as ELL; 77.1% of those spoke Spanish (as of 2015).

End of Grade State Tests (EOGs). In North Carolina, these exams are given to students at the end of the school year in grades 3-8. They are meant to measure students' proficiency and growth on core academic subjects such math, reading, and science.

ESL Pullout Model. This model consists of pulling ELLs out of their regular classes into a separate room for a period of 30 minutes to an hour per day (depending on the school and the students' level of language proficiency), where most of the instruction is focused on language development (McKeon, 1987) and to a lesser extent on content-area subjects such as science, math, and social studies (Ovando et al., 2006).

ESL Newcomers. These are students who enter U.S. schools with little or no English and who in most cases “have gaps in their educational background” (National for Applied Linguistics, 2012). Newcomers are put into two categories: Limited Language Proficient 1—LEP 1 (newcomer year one; students who have been in the country for less than a year) and LEP 2 (newcomer year two; students in the second year of U.S. schools). This study will expand this definition by including ELLs in their 3rd year of U.S. schools, and those who have a 3.5 or less overall score on the ACCESS test.

One-Way Dual Language. This model contrasts with two-way dual-language (described below) in the population it serves. One-way refers to one group of native speakers learning academic content in two languages. In a typical Spanish one-way dual language program, both languages are used (Spanish as the native language and English as the second language), but only native Spanish speakers would be enrolled in such classes.

SIOP Model. Sheltered Instruction Observation Protocol (or SIOP [developed by Echevarria, Vogt, and Short in 2004]) is an ESL service model that focuses equally on content and language development, bringing the classroom and the ESL teacher to share equal

responsibility for assessing, planning, and delivering instruction (Echevarria, Vogt & Short, 2004).

Standard ESL Programs. Regular ESL pullout and inclusion models are used to serve all proficiency-level ELLs—i.e., beginners (or newcomers), intermediate, and advanced.¹⁷ Yet the amount of time of service in a typical school day may vary for these three groups.

Structured English Immersion (SEI). This model was borrowed from a successful language immersion program in Canada, which promoted bilingualism (French and English). The original design would immerse students in the new language (English), but students' first language (French) was used for support. When the United States adopted it, however, the students' first language component was left out, resulting in an English-only language learning approach (Ovando et al., 2006). The argument behind the newly revised SEI was that the more exposed/immersed students were to the new language, the more quickly they would learn it.

Two-Way Dual Language Programs. Two-way immersion (TWI) models consist mainly of providing instruction in both a content area, such as science and math, and language to students of other languages as well as English-speaking students in the same classroom, using two languages (Christian et al. 2000). While the TWI model is appropriate for all K-12 students, it is most often used in the elementary grades (Howard et al., 2003). Variations exist in program implementation, such as timing, grouping, and language used.

¹⁷ WIDA, which stands for World-class Instructional Design and Assessment (WIDA), is a consortium of 39 U.S. states in charge of creating instruction guidelines, research, and assessments used with K-12 ESL students: <https://www.wida.us/>

CHAPTER 2: REVIEW OF LITERATURE

Introduction

The consistent achievement gap among the almost 5 million ELLs enrolled in public schools across the nation¹⁸ says something about the magnitude of the problem, and it highlights the great challenge K-12 education now faces. Increasingly, this issue has caught the attention of the research community, which has attempted to theorize and conceptualize causes as well as develop solutions for this growing concern. Several scholars, for example, have pointed out human and financial resource inequalities that exist across states, schools, and even classrooms as being one of the biggest obstacles for improving ELLs' academic outcomes (Clayton, 2011; Bryk, 2010; Orfield & Lee, 2005).

As has been reported, Hispanic ELLs are mostly concentrated in low-income, overcrowded, low-resourced, and isolated schools (Bryk, 2010)—factors often associated with low academic performance (Houck & DeBray, 2015). Other researchers argue that the underperformance is caused not only by financial and human allocation disparities, but also by the ineffective and inadequate conventional ESL models used to support most ELLs. Krashen (2003), Thomas and Collier (2012), and others describe current standard ESL models as inadequate because they tend to focus on English language development in isolation, sacrificing content development and thus leading to achievement gaps. As part of the solution, notable language acquisition theorists such as Jim Cummins have suggested that ELL instruction should leverage the academic mastery acquired in students' first language to help ELLs make a

¹⁸ This number represents close to 10% of the U.S. K-12 student population.

successful transition into the new language (Cummins, 1981), supporting dual-language approaches. Clearly, knowing and understanding such theories is an important step in the right direction. However, broader application of them is needed. The problem of achievement gaps is understood, but it has yet to be solved. As such, an effort should be made to work on solutions that strengthen the way these students are being supported.

This study intended to capitalize on such theories and research with the aim of examining possible practical solutions to a growing concern affecting elementary school principals who are trying to better accommodate the rising number of ELLs. Empirical data obtained from this study hope to support findings demonstrating that ELLs learn best when they are taught in a language they understand as they transition into the new language and culture. Specifically, this study explored the effects of dual-language instruction on academic performance in math for 4th- and 5th-grade Hispanic students identified as ELLs.

The participants in the treatment group received math instruction in Spanish for a period of six months, from September to February/March. A comparative analysis was conducted to determine the correlation between Spanish instruction in math and math academic performance after the six-month period. The researcher used the district assessment I-Ready instrument as the main quantitative data source to support this analysis. Specifically, the researcher identified ELLs with similar demographics and compared math performance between the treatment and comparison groups.

Critical race, equity, and second-language acquisition theories became instrumental lenses in understanding the reviewed literature on historical trends in ESL education, the most common ESL models of instruction (including dual-language approaches), and the important role of the principal. It was the hope also that the intervention—or treatment—would result in

positive outcomes for ELLs, thus, supporting the major research that is already available. These findings may provide opportunities for elementary school principals and district leaders to improve instructional support for ELLs, leading to narrowed achievement gaps and higher graduation rates. By focusing on this specific group of newcomers and a specific content area (math), this study attempted to contribute to the body of dual-language research in a very specific way.

Organization of Chapter 2

This chapter is organized into four distinct, but related, parts. The first examines major causes affecting achievement gaps among ELLs, followed by an analysis of a historical policy context regarding language education and instruction in public schools. The second part of the chapter provides an overview of ESL programs and models used to support ELLs, including newcomer programs. This section culminates with a discussion of language acquisition and dual-language as a conceptual framework. The third part of this chapter focuses on the role of the principal as an agent of change and as an important actor in creating improved school conditions for these students. In this section, the school leader is challenged to take a more participatory role in encouraging reforms aimed at supporting these students. The fourth section of the chapter amalgamates and synthesizes the literature reviewed, summarizing major points.

Achievement Gaps among ELLs

The knowledge that a significant achievement gap persists between ELLs¹⁹ and other groups (e.g., White students) is hardly news to the educational community (Bergman, 2005). But what has caused it? Why is it still so prevalent in our schools? What are schools doing wrong? Who is responsible for this? Answering these questions and understanding achievement gaps

¹⁹ This is more evident in ELL newcomers.

between Hispanic ELLs (newcomers in particular) and native English-speakers would require that the economic and social characteristics of this demographic (Jensen, 2009), as well as the educational practices that have historically placed this group at a disadvantage (Clayton, 2011), be studied.

According to Haycock (2001), the mean in reading and math skills for Hispanic ELLs in 12th grade is similar to that of 8th-grade White, English-speaking students. Or, as she puts it: “By the end of high school, African American and Hispanic students perform about the same as White eighth graders” (p. 22). Similar statistical reports from Thomas and Collier (2011) reveal that it takes two to three years for ELLs with minimum pullout instruction²⁰ to reach a growth of 10 to 12 percentage points in reading proficiency when compared with an average 50 percent growth in non-ELLs, suggesting that at the end of the three-year period, ELLs will score 1.2 national standard deviations below regular students. This report also estimates that regular, non-ELLs in U.S. schools are expected to achieve ten months of academic growth for every year of school, while ELLs in a successful dual-language program entering kindergarten would require 15 months of academic growth for every year of school. In other words, it would take a period of six years for a typical ELL to reach reading and math academic proficiency that is at par with that of regular, native speakers—provided that he or she is enrolled in a “successful dual-language program” (Thomas & Collier, 2011, 2012). But enrollment in a successful dual-language program is not always an option, as many school districts continue to rely on standard ESL services that do not offer students first-language support, focusing instead on language development rather than content development, thus allowing these students to stagnate with regard to actual academic content growth (Thomas & Collier, 2002).

²⁰ Thomas and Collier (2011) assert that pullouts are the least effective ESL model (T. Brody, personal communication, May 2, 2011).

Other related studies have demonstrated that ELLs fail to make academic progress because regular classroom teachers do not understand them culturally and do not know the most appropriate way to instruct them (Marshall & DeCapua, 2009), resulting in the trickling down of the curriculum in an effort to differentiate (Ovando et al., 2006). They assert that the ELLs' underachieving is credited in great part to the failure of schools to effectively accommodate ELLs' home cultural and linguistic differences into school contexts (Ovando & Collier, 1997). According to Murphy (2014), an emphasis on home language use to support academic performance is not the case in many schools with high numbers of ELLs. Clayton (2011) concurs, stating that "... teachers who seem to sometimes to have a disconnect between how they teach and how students learn need to focus on culturally competent instruction" (p. 677). Echoing this position, Park and Peterson (2008) assert that students need to feel that teachers care about them, have high expectations of them, and want to work with them.

Further, current programs aimed at helping Hispanic ELLs fail in closing achievement gaps because "They [schools] do not genuinely respect the values of diverse families" when it comes to education and success (Valdez, 1996, p. 188). When studying immigrant Mexican families' attitudes towards education, Valdez (1996) concluded that it is not that these families are uninterested in education or that they do not value education; rather, the priority placed on formal education is different than that of Americans—particularly when considering the added pressures involved in moving to a new country where their needs for physical survival, health care, and the capacity to make a living have not been met. In fact, "Most parents of ethnically and linguistically diverse children have high aspirations for their children and want to be involved in promoting their academic success" (Center for Applied Linguistics, 2012; Lindholm-Leary, 2001, p. 74). Furthermore, it is imperative for principals and teachers to understand that

these students come from collectivist rather than individualist societies and that many come with interrupted and sometimes limited formal schooling (Center for Applied Linguistics, 2012; Cloud et al., 2000). This notion challenges educators working with this population to become more sensitive about their instruction (Ladson-Billings, 1995), helping them develop differentiated instruction and a better sense of community for these students (Freeman & Freeman, 2001).

Another factor associated with achievement gaps is the fact that many Hispanic ELLs come from low socioeconomic backgrounds (Garcia & Cuellar, 2006), which can lead to their lacking the social and human capital present in other groups—e.g., non-Hispanic Whites (Coleman, 1988). Data from 2000 revealed that 68% of elementary ELLs came from low-income families compared to 36% of regular, non-ELL students, and that 48% of those students had at least one high-school dropout parent, compared with 11% of regular English-speaking students (Capps et al., 2005). This affects their academic performance, as is evident by the disproportionately high dropout risk in this group (Hopson & Lee, 2011). Brook-Gunn (1997) asserts that being poor has a direct correlation with linguistic isolation, limited English proficiency, lower preschool enrollment, and reduced socioeconomic progress.

Another factor believed to hinder ELLs' academic success is associated with current myopic ESL service models that limit their focus to school context only. Although improving the school context—e.g., by strengthening a positive school climate—is vital for the development of a student as transition occurs (Irvin et al., 2011), critics of current ESL models observe that a more holistic approach should be taken. Zaff argues that students develop in multiple contexts—e.g., school, community, and home—and that improving each of those contexts improves students' outcomes as they transition through different phases of life (Zaff, 2011). Eccles et al.

(1993), Hopson (2011), and others echo this view, reasoning that refining the school climate is particularly vital for those students coming from poor homes. They caution that these initiatives have to be combined with policies and interventions that provide opportunities to help these families get out of poverty, as well as initiatives that bridge the gaps between these three contexts (Hopson & Lee, 2011). The net result would be to reduce the overall impact of the numerous factors associated with these children's poor academic performance (Berliner, 2006; Houck & DeBray, 2015; Rothstein, 2008, as cited by Hopson & Lee, 2011). In general, and simply put: when parents and communities are involved with schools, "Remediation rates dip, and test scores and graduation rates rise" (National School Public Association, 2013).²¹ Similarly, Zaff (2011) articulates that "Linking family and community contexts with schools is essential to the well-being of our nation's children and the well-being of our country" (p.2). In short, available evidence is persuasive that the benefits from improved family outreach and community involvement and collaboration reach beyond regular, non-ELLs (Lindholm-Leary, 2001). They are fundamental ingredients in supporting ELLs as well (Marzano, 2003), resulting in improved academic performance for language-minority children (Cloud et al., 2000).

Lack of legal immigration status among ELLs (or their parents) may also be linked to academic underachievement due to its direct correlation with poverty. Based on a report by The Migration Policy Institute (2016), an estimated 5.1 million children 18 years old and younger were living with at least one "unauthorized parent" (or undocumented parent) during the 2009-2013 period. Of this number, 19% (or 959,000) were themselves undocumented. These numbers represented 30% of all children of immigrants and 7% of all U.S. students 18 years and

²¹ Source: National School Public Association: <https://www.nspra.org/cap>

younger.²² Being undocumented may limit job and economic mobility opportunities for undocumented parents of ELLs, subsequently affecting their children's academic achievement and thus reducing their chances of graduating from high school (Houck & DeBray, 2015; Migration Policy Institute, 2016).

Even if these students “make it through high school,” going to college seems like an impossible feat, not because they do not want to attend college, but because they are not allowed to do it. Under current immigration laws, for example, students who are in the United States undocumented are not allowed to enroll in a two-year or a four-year college program unless they have been granted Deferred Action for Childhood Arrivals (DACA) status²³ (Capps et al., 2016), which may help explain the discrepancy in college attainment levels among different ethnic groups during the last decade. When examining educational attainment at the bachelor's level for the four major U.S. ethnic groups—Hispanics, Blacks, Whites, and Asians— during the last 12 years, data show that the number of Hispanics obtaining a bachelor's degree moved from 11% to 15.5% from 2003 to 2015, Blacks moved from 17% to 22.5%, Whites from 30% to 32.8%, and Asians from 49% to 53.9% (Ryan et al., 2016; Stoops, 2004). Despite the fact that Hispanics had the largest percentage gain during this period (i.e., a growth of 41%), a wide gap persists.

This information is relevant to this discussion since the trend might continue unless something is done about the way ELLs in general are supported. Policies preventing undocumented immigrants from pursuing college degrees will clearly have inequity consequences for future generations for that particular group of students, as these “future parents” will lack the educational capital to leverage and support their own children when they

²² Source: Analysis of U.S. Census Bureau Data from Migration Policy Institute (MPI).

²³ This was signed into law by President Barrack Obama in 2012, allowing students who came to the United States undocumented as children to study at 4-year colleges in the United States—a right that was previously denied (Boerner, 2015).

are school-aged, thus failing to foster social justice and to stop perpetuating the social divide (Capps et al., 2016). Instead, efforts should be made by state and local governments to improve the conditions of these minority groups by facilitating access to early childhood health and education, as well as opportunities for housing and economic prosperity (Houck & DeBray, 2015).

Finally, discussing achievement gaps for this minority group would not be complete if the issue of race were left out. According to Clayton (2011), the problem affecting this and other minority groups might have to do with deeper issues such as race and discrimination in the form of institutionalized racism embedded in American society. Through the lenses of critical race theory, it is recognized that “Racism is engrained in the fabric and system of American society” (University of California Los Angeles, 2009, p.1). Citing several researchers on race, Morris and Perry (2016) assert that “The subtle, covert forms of discrimination are major drivers of racial inequality in the post-civil rights” movements (p. 82). This notion challenges school leaders and educators to engage in institutional racism discourse and to be transparent about it, helping bring theory (e.g., social justice) into practice—or, as Stovall (2006) points out, “When theories are converted to action and praxis,” there is hope (p. 232).

Historical Policy Context of Language Education in the United States

Various influential actors such as teachers, principals, legislators, and school board members shape educational policies and practices (Lipsky, 1969). For example, individual schools and districts have traditionally been in charge of selecting instructional models for ELLs (Ovando et al., 2006). At the same time, such policies are also greatly influenced by federal and state court decisions. In fact, the basis for policies that have affected language minority groups may be credited to the U.S. Constitution, despite the fact that no explicit or implicit language

regarding “education” appears as a fundamental right there. Specifically, it was the Fourteenth Amendment (U.S. Const. Amend. XIV, 1868)—which guarantees equal protection to all citizens under the law—that was responsible for giving room to different interpretations of what encompasses education rights to language-minority students (Ovando, et al., 2006).

Minority-language students and ESL education in the United States gained momentum in the 1980s after federal policies aimed at protecting education rights for all students were passed in the mid-1970s through the 1980s. The Office for Civil Rights (OCR) monitoring of enforcement guidelines, paralleled with new federal education laws, generated accountability systems that mandated states and districts to create ESL programs to bridge the language gap. Before this time, districts provided little or no language support to language-minority groups (Ovando et al., 2006).

Two pieces of legislation that helped establish basic human rights that later benefited language education were Title VI of the Civil Rights Act (1964) and the Equal Education Opportunity Act (1974). The passage of these acts protected individuals from discrimination in federally assisted programs (Watson, 2004). The Equal Educational Opportunities Act of 1974, for example, maintained that the opportunity for equal education should not be denied to any student due to his color, gender, or ethnic background, pressuring educational agencies to take appropriate steps to provide support to ELLs to overcome language barriers that “impeded” equal participation in a school setting (Lyons, 1992, p.10). However, it was the favorable Supreme Court ruling in *Lau v. Nichols*²⁴ (1974) that most influenced ESL education. Most litigation advocating for language-minority students and language education that happened before this case did not succeed due to strong opposition by nationalists who believed in maintaining English as the only language (Teitelbaum et al., 1977). In this court case, the

²⁴ Lau v. Nichols, 414 U.S. 563 (1974).

Supreme Court found the unfair treatment of ELLs by the San Francisco Unified District to be unconstitutional. The final ruling, however, was not based on the Fourteenth Amendment, as it was decided that this practice violated a legislation from a decade earlier: Title VI of the Civil Rights Act (1964). As a result of this ruling, the responsibilities of schools in serving ELLs were more clearly defined (Ovando et al., 2006).

The *Lau v. Nichols* (1974) victory, paralleled with Congress's passage of the Equal Educational Opportunity Act of 1974 a few months later, put even more pressure on school districts across the country to create bilingual programs to support ELLs (Ovando et al., 2006). In an effort to support school districts with the implementation of these new mandates, the *Lau Remedies* were presented by the U.S. Office for Civil Rights (OCR) a year later (Baker, 1983).

These newly mandated *Lau Remedies* required that schools use the following guidelines in supporting ELLs: (a) Identification of Student's Home Language; (b) Diagnostic/Prescriptive Approach; (c) Educational Program Selection; (d) Required and Elective Courses; (e) Instructional Personnel Requirements; (f) Racial/Ethnic Isolation and/or Identifiability of Schools and Classes; (g) Notification to Parents of Students Whose Primary or Home Language was Other Than English; and (h) Evaluation. These procedures were replaced in 1980 by new regulations that aimed at enforcing support for ESL services, but were later withdrawn due to their specific nature (Baker, 1983). It took five more years for a new set of revised Lau-based regulations to be passed, most of which were credited to the *Castaneda v. Pickard* (1981) case (Ovando et al., 2006). As English as a Second Language and language instruction continued to evolve, other court cases at state and federal levels also took place after the hallmark *Lau v. Nichols* (1974) case—some with great impact on the future of ESL education in the United States. Several of these court cases are presented in Table 2.1.

Table 2.1

U.S. Court Cases with Significant Effects on Language Education since the Passing of Lau v. Nichols (1974)

Court cases	Description	Outcome
<i>Aspira v. Board of Education of the City of New York</i> (1974)	The educational advocacy group of Aspira sued NYC Board of Education, arguing that ESL students were not being provided with adequate opportunities to fully participate in instructional programs of the public schools.	The city of New York began to provide support to ESL students (mostly Puerto Ricans) through transitional bilingual ESL programs (Santiago, 1986).
<i>Cintron v. Brentwood</i> (New York, 1978)	As the number of ESL students declined, the district wanted to dismiss bilingual teachers, as well as implement an English Immersion program instead of bilingual instruction. The court found that such practices were in violation of <i>Lau Guidelines</i> (Roos, 1978).	Bilingual teachers were protected from being dismissed. The court ordered the district to create a plan of instruction that would serve ESL students in an adequate manner, which it did.
<i>Rios v. Read</i> (New York, 1977)	A court ordered that the district of Patchogue-Medford, New York, revamp their inadequate bilingual program, as well as expand it to all K-12. The court ordered that it was not enough to have a bilingual program; it had to be a good bilingual program (Wright, 2010).	The ESL program was revamped to a higher-quality bilingual program—taught by more competent bilingual personnel—and was expanded to all K-12 grades
<i>U.S. v. the State of Texas</i> (1982)	The court found that Texas ‘had not only segregated schools but had also failed to provide Mexican American students with tools they needed to succeed—tools such as K-12 bilingual education	Texas expanded their bilingual programs for 4-12 grades, previously only provided to K-3 grades (Wright, 2010)
<i>Castaneda v. Pickard</i> (Texas, 1981)	This district was charged with denying “basic rights” under the Educational Opportunities Act of 1974. The district was order to create a program for ESL students based on three criteria: High quality, implementation, and success in integration into the content curriculum. This new, three-point test was implemented to assess district compliance with mandates. Specifically, this test	One of the most significant cases affecting ESL students (Ovando et al., 2006), this case led to the implementation of ESL programs for minority-language students guided by the three-point test

included: Sound, researched-based instructional approaches; appropriate resources for implementation; and evaluation of results (Del Valle, 2003).

Plyler v. Doe (1982)

Based on the equal protection provisions of the Fourteenth Amendment, the Supreme Court ruled that undocumented immigrant students had a right to a free public education (Carrera, 1989).

Districts across the country were mandated to provide not only public education but also ESL support to undocumented school-age immigrant children (Carrera, 1989).

Gomez v. Illinois State Board of Education (1987)

The court ruled that state education agencies were also responsible for making sure ESL students received education that met their needs (Wright, 2010).

The three-point test (from *Castaneda v. Pickard*)—based on theory, practice, and results—was mandated in state educational agencies; ESL instruction improved for some, but inconsistency remained in ESL models used (Wright, 2010).

Y.S. v. School District of Philadelphia (1986)

Based on the 1975 ruling of the Education of the Handicapped Act and the 1973 Section 504 of the Rehabilitation Act, Y.S. sued the district of Philadelphia for erroneously placing students in mentally retarded classes based on “tests developed for English-speaking students” (Lyons, 1992).

Philadelphia school districts developed programs—newcomer and bilingual programs—based upon which the needs of Asian and other ESL students were better addressed.

Philadelphia High and McCall Elementary opened their first Newcomer Center for newly-arrived immigrants.

Horne v. Flores (2009)

A Federal Court decided that lower courts had wrongly punished the state of Arizona for not spending on ESL education adequately. This court decision was based on student outcome and not necessarily on student expenditure.

The spending on ESL education would focus more on programs that would lead to these students’ success regardless of how much the states were spending. As a result of this ruling, some states, including California and Arizona, have made it mandatory for their states to use English Immersion Programs (English Only Instruction).

ESL Programs and Models

Although federal and state policies heavily influence educational practices, such policies are not always implemented as they were originally intended (Lipsky, 1969); principals and teachers have considerable influence on how they are implemented as well (Blanchett et al., 2005; Lipsky, 1969, 1980; Tyack & Cuban, 2005). In the case of ESL program implementation, this idea could not be more accurate (Ovando et al., 2006). In fact, many of the programs developed to support ELLs are left to local schools, and many times the discrepancy in application varies tremendously across schools within the district as teachers and principals act as “street-level bureaucrats” (Lipsky, 1969) who tend to shape the policies during their implementation—implementation that ultimately “...boils down to the social perception of the program, as viewed by school staff, students, and community, and the social consequences of the program design” (Ovando et al., 2006, p. 2). In the section that follows, the most commonly used ESL programs in the United States are described, reflecting a fusion of federal, state, and local policy influence—as it is typical in educational policies—as well as influence from teachers’ and principals’ participation in shaping and taking initiatives in such implementations, becoming themselves “policy makers” (Lipsky, 1969). It is therefore wise to be sensitive to such discrepancies in program delivery and implementation when examining the following analysis.

Current Standard ESL Programs

Regular ESL pullout and inclusion models (described in more detail below) are used to serve ELLs with all levels of proficiency—i.e., beginners (mostly newcomers), intermediate, and advanced (WIDA).²⁵ The amount of time of service in a typical school day may vary for these three groups. For example, it is recommended that elementary newcomer students be served

²⁵ WIDA, which stands for World-class Instructional Design and Assessment (WIDA), is a consortium of 39 U.S. states in charge of creating instruction guidelines, research, and assessments used with K-12 ESL students. See <https://www.wida.us/>

from 30 to 60 minutes a day, five days a week; intermediate-level ELLs 30 to 45 minutes a day, three or five days a week; and for advanced ELLs, 30 minutes, two or three days per week. This variability in the amount of time of service depends on available staff resources to serve these students at each school.

ESL Pullout. According to Thomas and Collier (2011), the most popular and frequently implemented model currently available is the pullout model. This model consists of putting ELLs into a separate room for a period of 30 minutes to an hour per day—depending on the school and level of language proficiency of the student—where most of the instruction is focused on language development (McKeon, 1987) and to a lesser extent on content-area subjects such as science, math, and social studies (Ovando et al., 2006). The pullout model is the most expensive (Crawford, 1997) and least effective (Thomas & Collier, 1997). Consistent with Thomas and Collier (1997), other critics observe that the transition time involved in pulling out students to a separate room and the fact that they are taken from content-based standard curriculum instruction also makes it ineffective (Krashen, 1993, 2003, for example). Duke (1987) points out that the lack of access to the standard curriculum and the stigma it creates with other mainstream students makes it an ineffective program. Other disadvantages associated with pullout models include lack of space for resource rooms, the difficulty of student grouping,²⁶ difficulty with scheduling, and inconsistency in ESL curriculum planning (Friend et al., 2010).

Because of such disadvantages, several newer ESL models are attempting to close the gap between ESL and mainstream classroom instruction by supporting ELLs within the regular classroom. These models are inclusive in nature and contrast with those relying on pulling students out of the classroom for a substantial part of the day (Ovando et al., 2006). Proponents

²⁶ Due to time and logistics, some ESL teachers are forced to group mixed-level proficiency students, making it difficult to differentiate instruction (TESOL International Association- <http://blog.tesol.org/pull-out-vs-push-in-esl-programs-in-elementary-schools/>).

of inclusive approaches insist that instead of being pulled out of their classrooms, ELLs need to have access to academic content in the students' primary language in their own classrooms (Ovando et al., 2006). In a meta-analysis of 17 studies, Rolstad (2005) found a significant overall size effect of .23 in favor of dual-language approaches. The researchers reported that dual-language programs—where both languages are used for content instruction—are by far more effective than any other approach, including pullout and sheltered instruction models (i.e., SI or SIOP).

The SIOP Model. A revised inclusion approach proven to be successful to a certain extent is team-teaching (or co-teaching), because it gives ELLs access to the standard curriculum in an environment that is socially supportive (Ovando et al., 2006). Team-teaching has led to even newer, more structured models such as SIOP (or Sheltered Instruction Observation Protocol, developed by Echevarria, Vogt, and Short, 2004). This model gives content and language development an equal weight, expecting the classroom teacher(s) and the ESL teacher to share equal responsibilities for assessing, planning, and delivering instruction (Echevarria, Vogt & Short, 2004). The SIOP model predominates in the lower grades, where classes are self-contained. It provides a transition period of one or two years to help more advanced ELLs move into the appropriate grade level. Different from regular pullouts, SIOP requires that students be served for longer periods of time during the day (e.g., from 60 to 150 minutes per day). As such, this approach may not work well with newcomers in regular English-based programs (Ovando et al., 2006). However, the context-embedded experience of SIOP, plus the presence of “comprehensible input” features²⁷ (Krashen, 1993) and access to the standard curriculum—if done well—could make this method more effective than pullouts (Peregoy & Boyley, 1997).

²⁷ This refers to the ability of a teacher to make language instruction clear and easy to understand by using visuals, slowing down speech, paraphrasing, and the like.

Structured English Immersion. This model was borrowed from a successful language immersion program in Canada, which promotes bilingualism (French and English). The original design immerses students in the new language, but students' first language is used for support. When the United States adopted it, however, the "first language" component was left out, resulting in an English-only language learning approach (Ovando et al., 2006). Structured English Immersion gained more support after the Supreme Court case of *Horne v. Flores* (2009), in which the court ruled in favor of the state of Arizona, stating that the evidence about student outcomes was more relevant than focusing exclusively on student expenditure. Not surprisingly, California, Arizona, and Massachusetts have adopted and made mandatory the use of Structured English Immersion over bilingual-based models.

Early-exit and Late-exit Bilingual Models: Transitional Bilingual Education (or TBE). As the names imply, early-exit and late-exit bilingual or dual-language models use both languages to instruct students. However, different from the typical dual-language model—or DL (discussed in more detail in the next section), transitional bilingual education (TBE) models are used to instruct mostly ELLs and not English speakers; thus, the interaction between native English-speakers and ELLs is lost (Murphy, 2014). Students can stay in an early-exit program for up to three years, and for all their school years in the late-exit model.

Certainly, these two models offer a better approach than pullouts, but early-exit can still become a segregated model since only a few English-speakers stay in the program, essentially making this a revised ESL approach with the focus on English development rather than content (Ovando et al., 2006). The negative perception of being a remedial, lower-track program in which teachers have to tone down academic content in the students' first language is also seen as a problem (Ovando et al., 2006). Such findings have led some proponents of bilingual education

to prefer a late-exit model—models that integrate late-exit, bilingual, high-quality enrichment features into their programs—claiming that ELLs can succeed and reach academic achievement that is at par with that of native, regular English speakers in a shorter period of time (e.g., Ramirez, 1991; Thomas & Collier, 2012). Ramirez (1991) states this well, saying that:

The growth patterns are surprisingly consistent across content areas....Over and over again, those students who began their schooling with substantial amounts of instruction in their primary language and were exposed to the gradual introduction of English for instruction realized the greatest growth in skills (p. 639).

Two-Way Dual-language Programs. Although four different types of dual-language programs exist—i.e., two-way immersion (bilingual), developmental bilingual, foreign language immersion, and heritage language—the level on which the two languages are used varies, as well as the type of students served under these programs (Center for Applied Linguistics, 2007). For example, different from one-way immersion programs, the two-way immersion²⁸ models instruct native speakers and non-native speakers in the same classroom. To put it differently, two-way immersion (TWI) models consist mainly of providing content area and language instruction to students of other languages and English-speaking students in the same classroom, using two languages (Christian et al., 2000). While a TWI model is appropriate for all K-12, it is most often used in the elementary grades (Howard et al., 2003).

Two-Way Immersion is not always used in the same manner, as variations exist in program implementation. In one variation, both minority and majority elementary students started kindergarten at nearly total (or 90:10) receiving instruction for 10% of the school day in English only and the other 90% of the day in Spanish (or any other “heritage language” used in the program, e.g., Arabic, Chinese). As students moved up in grade level, the distribution of the

²⁸ Two-Way Bilingual or Immersion, Bilingual Immersion, or Dual-language all fall under the same umbrella of bilingual education.

language used changed, essentially moving from nearly total (90:10) to a complete 50:50 model by the time they reached third or fourth grade²⁹ (Christian et al., 2000). Programs such as this have benefited academic achievement for both groups—native and non-native speakers of English (Marian, 2013; Rolstad et al., 2013; Thomas and Collier, 2010, 2012). Significant positive findings on dual-language teaching methods have led several school districts to implement ESL instruction initiatives with bilingual (or dual-language) features integrated into their programs.

Six ESL Newcomer Programs across the United States

In addition to the ESL models described in the previous section, six ESL newcomer programs implemented in various school districts across the United States were examined. This analysis adds to a study conducted by The Center for Applied Linguistics (CAL) in 2011, in which sixty-three 3rd – through 12th-grade newcomer programs across the country with a total of 10,899 ELLs were assessed. For the purpose of this analysis, however, only six of those programs were selected, narrowing the list to schools that serve elementary newcomer ELLs.

Doris Henderson Newcomers School, Greensboro, North Carolina. This newcomer program benefits thousands of refugee and other immigrant students in the 3rd to 12th grades who come to this country with little or no English language. Guilford County, which runs 51 schools, places newcomer students in this off-site program for a year. The model used is one-way English immersion, in which the use of the students' first language is minimum. Content-area subjects such as math and science are delivered through a sheltered model. Supplemental support in English language development, cultural orientation to the United States, and reading interventions are also provided on a daily and weekly basis. In addition, newcomer students are

²⁹ 50:50 means that both languages are used in the same proportions during the school day.

eligible to participate in summer camps, which are funded by the district for more advanced ESL students.

According to the program's goal,³⁰ this one-year period allows students to transition to mainstream classes as they adapt to the new language and country. It is a full-day program, and the average number of students per class is 24. To fit the ESL newcomer criteria, students must be: (a) in the 3rd-12th grades; (b) recent arrivals to U.S. schools; and (c) speakers of other languages. As of 2015, about 260 students, predominantly from Burma, Vietnam, and Mexico, received these services. Nearly all of them (99%) qualified for free or reduced lunches.

Although ESL newcomers are exempt from state reading EOGs, this program uses Fountas and Pinnell³¹ cumulative assessment and WIDA ACCESS Test³² to assess students' reading and English proficiency growth, respectively. These measurements serve different purposes, but for the most part, they assess newcomer readiness to transition into regular schools. This transition depends on various criteria. In addition to relying upon assessment data (e.g., language proficiency, district and state tests), parents have the option to request a transfer, but it is often teachers' recommendations that weigh in more on such transfer decisions. Counselors are instrumental in helping newcomers transition to a regular school, in the sense that they organize field trips to the receiving schools and guide students and families through the process.

Newcomer families applying to enroll in the county's public schools have the option to take advantage of the program, since it is not mandatory. However, if families decide to send

³⁰ School website: http://newcomers.gcsnc.com/pages/Doris_Henderson_Newcomers

³¹ Monitor reading program: <http://www.fountasandpinnell.com/>

³² Thirty-nine states participate in WIDA standards and testing for English Language Learners. Each year, ESL students are tested for language proficiency in four domains—reading, listening, speaking, and writing. On a scale from 1 to 6 (1 being the lowest), students must score 5 or above in overall average and at least 4 in the writing and reading subtests (although these criteria might vary slightly in some states). See <https://www.wida.us/NonDisclosureAgreement.aspx?ReturnUrl=/client/index.aspx>

their newcomer children to regular schools, these students can and will receive regular ESL instruction facilitated by certified ESL teachers. Twenty bilingual or multilingual licensed teachers, who are regularly trained by the district, serve these students, along with other support personnel, including four community liaisons, one social worker, one counselor, five teacher assistants, two reading specialists, one nurse, a physical education specialist, and an art specialist. Family outreach and family academic support—e.g., free adult ESL classes—is also part of this program’s commitment to language minority groups.

Newcomer Academy, Redwood, California. This school provides language acquisition, content-area instruction in students’ primary language (as needed), as well as cultural orientation classes. The program supports 16 elementary and middle schools’ ESL newcomers (in grades 3 to 8) in the county’s two off-site locations—one site for elementary and one for middle schools. These two main campuses accommodate and provide newcomers with full-day, whole-year instruction. Students can participate in after-school and summer programs as well. Most newcomers participating in the program are Hispanics, coming from Mexico, El Salvador, Peru, and Guatemala, among other countries. Ninety-nine percent of the students qualify for free or reduced lunches. These newcomers receive content instruction in self-contained setting in classes with an average size of 15. Their first language is used as needed to teach foundational skills, as well as more advanced math and English Language Arts (ELA) standards. Three experienced, licensed, bilingual teachers instruct the 29 students currently enrolled.

Various forms of assessments are used to monitor these students’ content and language proficiency growth and their readiness to transition to mainstream classrooms. These assessments include: CELDTZ and ADEPT for language proficiency; IPT (or Inside Placement Test); and district and state math and ELA assessments (or CELDT, STAR, STS) for content

proficiency. To exit the program and be able to transition into a regular, mainstream classroom, students must demonstrate growth of at least “one level on an oral language assessment” or have spent a whole school year in the program. If the student is eligible to transition into a regular school mid-year, parents are notified and meetings are held to make sure that support is available to help students with the transition.

Grade 4-7 Newcomer Program, Marlborough, Massachusetts. This program supports newcomer students by offering content area instruction and language development classes in separate classrooms, but within the school. Students from grades 4-7 are divided into two groups, one for 4th and 5th grades and the other for 6th and 7th grades. Most students come from Brazil, Puerto Rico, Mexico, Iran, and Haiti, and 99% of them qualify for free and reduced-price lunches.

The school day is divided into two blocks: about 30% of the school day is spent in language development and the remainder on content-area support (e.g., math). These newcomers do not have to stay in the program for the whole year, but most of them do. Continued support is available once students transfer out of the program, transitioning into “Structured English Immersion classrooms”—facilitated by licensed ESL teachers. Content-area subjects are taught in English, but language development is facilitated throughout the day in both languages. A foundational literacy component is added to these classes, and summer camps are also available. To assess students’ progress, MELA-Oral (Reading/Writing), LAS (reading and writing), and content-related district and state tests such as the Massachusetts Comprehensive Assessment System (MCAS) are used. Newcomer students are exempt from state English Language Arts (ELA) tests, but must take math and science state assessments.

Salina Intermediate Newcomer Center, Dearborn, Michigan. This newcomer program helps newly arrived students learn not only English and content, but also understand their new culture and various aspects of American public education. The program can last from one to two years. However, most students remain no more than one and a half years. These newcomers, who are mostly from Yemen, Iraq, Lebanon, and Pakistan, are placed into self-contained classrooms for the better part of the school day.

Although the first year or two primarily focus on language acquisition, newcomers are then placed in bilingual transition classes where both content and continued language support is given. The first period provides students time to transition into a new culture and language. The program expands into middle school, where there is continued bilingual support. The model used during this period is SIOP (or Sheltered Instruction Observation Protocol). Exiting students are placed in transitional bilingual classrooms once they reach middle schools. These classes are taught by certified teachers who are proficient in both Arabic and English.

West Hills Middle School ESL Newcomer Program, West Bloomfield, Michigan. This program supports 15 newcomers, mostly coming from Germany, Korea, Ukraine, Japan, and Iran. It provides ESL and content area instruction, as well as cultural orientation for most of the school day. Specifically, these newcomers spend most of their school day in a self-contained classroom where they receive direct English instruction in addition to one academic support class. Here, they receive content instruction in English as well as language-focused instruction, but cross-cultural orientation to the United States as well as school and study skills are emphasized.

West Hills is the only school in the district that offers this within-a-school newcomer program. Other schools offer regular ESL classes. It is a one-year program, but students do not

have to remain in the program the whole year, provided that they demonstrate sufficient language proficiency growth. A non-licensed but experienced teacher instructs the 15 students currently in the program. School counselors help them with transitions into regular classes when exiting the program, and they continue to receive support from regular ESL teachers as they move up. For progress achievement monitoring, the program uses the English Language Proficiency Assessment (ELPA) for language proficiency, as well as standard state tests such as the Woodcock Munoz and Scholastic Reading Inventory for content.

Harrisonburg City Schools 5-8 Newcomer Program, Harrisonburg, Virginia. Mainly aimed at supporting middle school newcomer students, this program serves newcomers from the 5th to the 8th grades. It runs for a year, in which students receive not only classes for English language development but also instruction in content areas, culture, and study skills. It is a within-a-school, sheltered (SIOP) program, but students receive content instruction in both English and the students' first language, as needed (Spanish and Arabic predominate).

Two licensed, experienced teachers in addition to a teacher assistant support these 35 newcomer students. After a year of being in this program, if all exit criteria (e.g., based on ACCESS scores, teacher observation, portfolio, etc.) have been met, newcomers transition to regular schools. Continued language support is provided by regular ESL teachers—but not necessarily bilingual transition support.

Exemplary Research-based Features Found in Programs Studied

Researched-based features were found in most of these programs, including:

- (a) most programs rely on students' first language as a resource to scaffold learning and transition (Thomas & Collier, 2002; Krashen, 2003; Howard, 2004);
- (b) family outreach, ESL, and literacy support are extended to parents of ELLs, helping families to obtain the social, linguistic, and cultural capital needed as they adjust to their new country (Valdez, 1996);

(c) appropriate and equitable use of financial and human resources, including bilingual teachers, counselors, and school administrators, are allocated to such programs;

(d) initial placement and transition to general education support is facilitated by counselors, ESL teachers, and principals (Eccles, 1993);

(e) continued ESL support are available after exiting the program (Center for Applied Linguistics, 2012); and

(f) extended summer or after-school ESL programs are available for additional support (Center for Applied Linguistics, 2012). (See Table 2.2.)

Table 2.2

Six Newcomer Programs across the Country with Research-based Exemplary Features

Newcomer program	Exemplary features	Length of program
Doris Henderson Newcomers School, Greensboro, NC	FS, E-M, LBT, SLS	1 year
Newcomer Academy, Redwood, CA	FS, E-M	1 year
Grade 4-7 Newcomer Program, Marlborough, MA	TBE, LBT, PWS, SLS, E-M	1 year
Salina Intermediate Newcomer Center, Dearborn, MI	FS, E-M, TBE, PWS, PSC, SLS	1 to 1 ½ years (or up to 2 years)
West Hills Middle School ESL Newcomer Program, West Bloomfield, MI	FS, E-M	1 year
Harrisonburg City Schools 5-8 Newcomer Program, Harrisonburg, VA	FS, E-M, LBT, PWS, PSC, SLS,	6 months to a year

Note. FS = family support^a; E-M = elementary through middle School; TBE = transitional bilingual model used for continued support after exiting program; SM = small classes^b; LBT = licensed, experienced, bilingual teachers; PWS = program within school; PSC = partially self-contained; SLS = supplemental language support during after-school, summer, or weekend.

^aFamily Support Services (e.g., family outreach, ESL and literacy support, adult basic education, GED).

^b10 students or less.

Despite these exemplary characteristics found in these newcomer programs, two fundamental features seem to be missing: (1) the duration of the program may be too short, and

(2) the exclusive nature of such models may have some undesirable outcomes, as the stigma associated with non-inclusive programs may affect students psychologically (Ovando et al., 2006). These students need to stay in such programs for a longer period of time, where instruction is delivered in both languages in an inclusive format (Grogan, 2013), reflecting something similar to what late-exit immersion programs may offer (Thomas & Collier, 2012; Krashen, 2003; Ovando et al., 2006). An effort should be made to make these models more inclusive—moving away from off-site to on-site programs. Further, an analysis of the effectiveness and feasibility of offering these programs during weekends or after-school hours should also be examined.

Language Acquisition and Dual-Language: A Conceptual Framework

This study mainly drew from Cummins (1981), who highlights the importance of language transfer that occurs when learning a second language, as well as from Krashen (1981), who theorizes on the importance of comprehensible input and affective filter when instructing ELLs. According to Krashen (1981), several elements are needed for language acquisition. Two of those elements are highlighted here: (1) ELLs need comprehensible input, which can be described as the way these students are challenged beyond what they already know, but in a way that is comprehensible to them. This can be accomplished by using scaffolding strategies such as using visuals, slowing down speech, and the like; (2) to more effectively facilitate such input, ELLs need to be instructed in a low-stress setting, without concerns about making grammatical errors (or any other distractions) as they practice the new language. To put it differently, an affective filter is the level of stress and anxiety ELLs experience as they learn a new language; the lower the affective filter, the more at ease ELLs are when receiving information, thus making such input more comprehensible to them.

Cummins' Common Underlying Proficiency (or CUP) language acquisition theory (1981), on the other hand, involves cognitive academic language transfer. He argues that ELLs need to develop a threshold level of academic proficiency in their first language (L1), first (or while they are learning the second language—L2). He asserts that the academic language learned in L1 will eventually transfer into L2. This theory clearly opposes English-only forms of instruction and favors dual-language approaches, arguing that ELLs' continued development of their first language skills will ultimately help them reach academic achievement in both languages.

There is a considerable amount of research supporting dual-language and bilingual education saying that the broad benefits extend not only to ELLs but also to regular, English-speaking students. Dual-language or bilingual ESL models draw from the theoretical framework that is based on the relationship between the students' first language and the new language. Dual-language supporters agree that the abilities and processes acquired in the students' first language can transfer to the new language (Cummins, 1981), resulting in increased academic abilities in the second language (Mora et al., 2001; Lindholm-Leary, 2001; Howard et al. 2003). To put it differently, ELLs learn a second language and develop literacy and cognitive skills best when the instructional input (i.e., what they read or hear) is comprehensible to them (Krashen, 2003), and a way to do this is by using the conceptual knowledge learned and developed in the first language as a scaffold to make the new input more understandable (Cummins, 1979). Such theories are consistent with several empirical studies conducted by lead researchers in the field.

A study conducted by Thomas and Collier in 1997, in which data from more than 700,000 student scores were used, revealed that ELLs who were instructed in both languages (L1 and L2) developed academically and cognitively in their first language, and that such skills

successfully transferred to the second language by the end of their school years (Thomas & Collier, 1997). In a longitudinal study (1983-1991), Ramirez et al. (1991) also found that Hispanic ELLs taught mostly in Spanish performed better in content areas than those who were not, without interfering in second language development. In a more recent study (and close to home), Thomas and Collier (2010) reported positive results in some dual-language programs in the state of North Carolina. Data from 81,060 students from different subgroups (e.g., Hispanic, White, ELL, social economic status, and so on) enrolled in six districts³³ dual-language programs were used to examine math and reading EOG achievement. Findings revealed that in general (despite subgroup), dual-language students performed higher than those not enrolled in such programs.

Adding to the benefits, Christian et al. (2000) concluded that students who are exposed to both languages will not only develop “high levels of proficiency in the first and second language,” but will also be able to attain “grade-level academic achievement and cross-cultural competence” (p. 258). Further, when students’ linguistic and cultural abilities are allowed to be used as building blocks in learning the new culture and language, these students are more likely to succeed (Gonzalez & Darling-Hammond, 2000). Fortune (2012) also points out that “English learners' higher bilingual proficiency levels are also linked to higher levels of reading achievement in English, increased academic language proficiency, and successful schooling experiences in general” (p. 3). Consistent with this view, Baker (2011) observes that in a high-quality bilingual program—where students receive non-remedial, but meaningful, accelerated, and challenging instruction—both groups benefit, English speakers and non-English speakers. When these two groups of students are combined, “Two-way bilingual programs help to expand

³³ Chapel Hill-Carboro, Charlotte-Mecklenburg, Chatham County, Durham County, Green County, and Winston-Salem/Forsyth County.

our nations' overall language competence by conserving and enhancing the language resources that minority students bring to school with them and promoting the learning of the other languages by English speakers" (Christian, 1994, p. 3, as cited by Ovando, 2006). Echoing this notion, Thomas and Collier (2011) found that both groups of students enrolled in dual-language classes are "outperforming their peers in all grades in which they are tested (3-8)...By middle school they are scoring one grade level above their peers in 6th-8th grade, because of the intellectual stimulus of schooling through two languages" (Thomas & Collier, 2011, p. 1). Finally, in the words of Krashen, "Bilingualism makes you smarter, delays senility!" (Krashen, 2014).

Despite the notable positive findings, dual-language approaches are not always viewed favorably. English-only or English immersion (the opposite of dual-language) proponents argue that the more exposed ELLs are to the second language (i.e., English), the more quickly they learn the language and the better they perform (Baker, 1998; Porter, 1996). Several empirical studies do indeed validate this notion, demonstrating that ELLs enrolled in English-only classes outperform ELLs enrolled in dual-language programs in the early grades (Marian et al., 2013; Slavin, 2011). While this might be a cogent perspective, the overwhelming body of research on dual-language suggests that despite its flaws, dual-language is a better, more successful approach to narrowing achievement gaps among ELLs (Goldenberg, 2008; Rolstad, 2005; Thomas & Collier, 2012). In fact, the benefits of English-only programs are limited to the early grades, presenting a challenge to the efforts of closing academic achievement gaps in the upper grades. Specifically, ELLs enrolled in English-only programs may perform better in the early grades (e.g., K-2), but when these ELLs move to the upper grades (e.g., 5th grade and on), the content aspect embedded in state assessments—meant to measure students' proficiency and growth—

shows that their content knowledge was not well developed in lower grades. As Cummins (1981) suggests, ELLs need to develop an adequate level of literacy and cognitive skills in their first language to make the language transfer more successfully. ELLs enrolled in English-only programs lack that opportunity.

Other critics of language transfer theories argue that for language transfer to occur, L1 and L2 (e.g., English and Spanish) have to share similar language characteristics, such as phonological and alphabetic structures (Genese et al., 2008). They conclude that language transfer does occur, but that the benefits fail to generalize to other-language ELLs (e.g., to Chinese ELLs). Goldenberg (2008) has a conflicting view, asserting that even if certain languages do not share similar characteristics, some features are common to all languages and transfer occurs to a certain extent.

Dual-Language and Math Instruction

When thinking of math instruction for ELLs, some may get the impression that such content area is the easiest to teach. Others might think that since math is a “universal language,” ELLs should be able to easily grasp concepts and work out math problems, even without English language proficiency. Both of these notions are flawed. According to Bernardo (2005), ELLs with formal education in their first language may have difficulties in math similar to those of any other child learning in their own language. The struggle for most ELLs begins when they are asked to read, interpret, reason, and solve mathematical problems written in a language they do not understand.

Being able to solve mathematical problems requires that students have an evident proficiency of basic math vocabulary (Jarret, 1999). But too often these considerations are ignored. In North Carolina, for instance, ELLs are asked to take math End of Grade tests (EOGs)

within their first year of U.S. schooling. Such practices may help explain why the substantial well-documented achievement gap in math (Abedi & Gandara, 2006) among this group persists. When 4th-grade National Assessment of Educational Progress (NAEP) math assessment scores were averaged for the years of 1996, 2000, 2003, 2005, and 2007, it was found that only 8% of ELLs had a proficient score compared to 32% for non-ELLs (Martiniello, 2008). Such results indicate how the language barrier may play a significant role in the underperformance of ELLs. As such—as previously highlighted—persuasive research suggests that part of the solution for academic gaps in math (and reading) for ELLs may lie in bilingual education (or dual language) in favor of English-only approaches (Burchinal et al., 2012; Thomas & Collier, 2010). The following major empirical studies have examined such a link.

A study conducted in Chicago in 2013, in which 2,009 student scores were used, revealed that both groups (ELLs and non-ELLs) benefit from dual language programs, but such benefits may be present at different times. Non-ELLs showed greatest academic gains in reading in grade 3, whereas for ELLs the gain was in the upper grades (5th grade). For math, however, there was no difference in times, as both groups achieved similar gains in grades 3-5 (Marian et al., 2013). A related 10-year study involving 13,750 ELLs enrolled in four different types of ESL programs, including dual-language and English immersion (or English-only), concluded that ELLs enrolled in English immersion programs outperform dual-language ELLs in the short term (i.e., through 2nd grade) but not in the long term. They determined that students enrolled in dual-language programs for several years (e.g., from kindergarten to 7th grade) significantly outscored those in other ESL programs (Valentino & Reardon, 2015). Consistent with these findings, an earlier work from Thomas and Collier (2002) revealed that former ELLs enrolled from 4 to 7 years in two-way bilingual immersion programs had outperformed (51st percentile by the time they

reached 5th grade) those ELLs not enrolled in such programs. Such findings also demonstrated that those ELLs enrolled in English-only models had decreased by $\frac{3}{4}$ of a standard deviation (based on comparative analysis between the two groups) by the time they reached 5th grade. A more recent study conducted in Charlotte, North Carolina, provided similar evidence on the favorable link between dual-language instruction and math achievement, reporting that a K-8 dual-language school had attained some of the highest math scores in the district due to their instructional model (Maxwell, 2015). Such findings also highlighted the fact that even though ELLs in dual-language programs are taught in both languages, state math tests are given only in English, confirming the effect of academic and cognitive knowledge transfer that occur when learning two languages (Cummins, 2012). Similarly, in a 4-year study, Abella (2009) compared the effectiveness between programs that offered one-hour language arts instruction in Spanish and those that offered an additional 30 minutes of content instruction in Spanish. Using a sample population of 418 students, the researchers found substantial math achievement gains in both of these programs, with the program offering the additional 30 minutes outperforming.

Drawing from the sizable amount of research on dual-language reviewed, the researcher created the following model (see Figure 2.1) to indicate a potential successful trajectory of ELLs in accomplishing both competency in Spanish and English and development of sufficient content knowledge to succeed as a student.

Level 1: The first level of the pyramid indicates the importance of key components, such as continued instruction in ELLs' first language (at least partially), highly qualified bilingual teachers, and a late-exit (more than three years) dual-language model. Such key components will lead ELLs into...

Level 2: By instructing ELLs in their first language, the level of anxiety may be reduced (by lowering the affective filter [Krashen, 1981]) and the development of literacy and cognitive abilities in the first language is increased, reaching an adequate L1 academic threshold (Cummins, 1981).

Level 3: At this stage, the continued development of cognitive abilities learned in L1 in a low-anxiety setting facilitates comprehensible input, and cognitive abilities transfer to L2 should be expected.

Level 4: ELLs continue to strengthen in their content area development as they become proficient in the second language.

Level 5: ELLs reach content area proficiency that is at par with or higher than that of other groups—e.g., Whites (Thomas & Collier, 2010, 2012).

Level 6: Significant gains in ELLs achievement have been accomplished, leading to the narrowing of academic achievement gaps (success!).

This trajectory may take from five to seven years (Thomas & Collier, 2012).

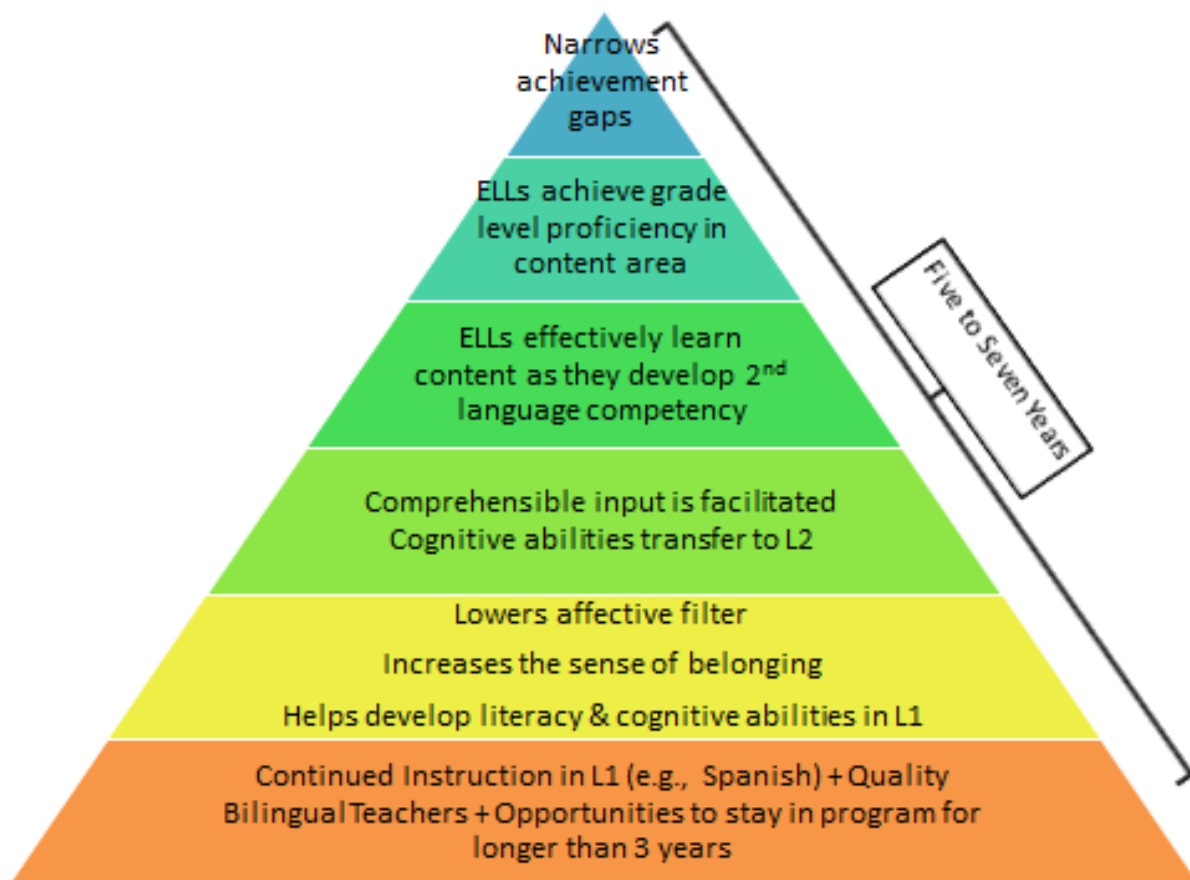


Figure 2.1. Model of a Potential Successful Trajectory of ELLs in a Solid Dual-Language Program.

In short, as is the case among many social justice advocates who use equity theory lenses and perspectives to make their case in support of dual-language instruction (Hornberger, 1990),

this study has used similar critical components, but mainly relied on language acquisition theories and data to examine and assess opportunities for improving support of ELL newcomers in elementary schools. Certainly, just knowing what works is not enough. It requires that social justice reform advocates—e.g., school principals—wanting to make a difference get out of their comfort zone and move from being merely the critics of educational policies to more risky “front-line participants” and architects of policies and program models aimed at improving education in our schools (Stallings, 2015).

The Role of the School Principal as a Change Agent

The U.S. Department of Education defines an effective principal as someone “whose students, overall and for each subgroup, achieve acceptable rates (e.g., at least one grade level in an academic year) of student growth” (U.S. Department of Education, *Race to the Top*, 2009). This definition posits the principal as an influential individual who works for all students’ achievement growth. In fact, principals can be regarded as the most influential individuals in students’ achievement, after teachers. As articulated by Grogan (2013), their decisions “have important implications for others’ lives” (p. 331). From the improvement of teachers who serve these students, to the “relational trust”³⁴ (Bryk & Schneider, 2002) they must build to reach parents, to the cultural sensitivity fostered within the school, to the safe environment they can help create, the quality of a principal is a key factor in the improvement of the schools (Cambron-McCabe, 2005).

Yet many principals would agree that reaching appropriate academic achievement goals for all students could be particularly challenging when external, uncontrollable conditions such

³⁴ Within the school leader context, relational trust could be described as the ability of such a leader to build trust among school stakeholders by being sensitive to their needs and opinions as they take part in the decision-making process (directly or indirectly) that will ultimately affect students. *Relational trust* is another measure of good leadership at the school level (Machtinger, 2007).

as poverty and students' weak educational and linguistic backgrounds are considered. Certainly, principals cannot do this alone. Broadly speaking, they need to look for the right strategy in gaining the right support needed, as well as to make the most of the human and financial resources available to achieve such a feat. This is a challenge indeed, but it is not out of reach (Khalifa, 2012), especially when principals (and teachers) focus on things they can control (Clayton, 2011).

Becoming a successful principal has a lot to do with how such a leader effectively identifies student-centered needs and creates that "relational trust" (Bryk & Schneider, 2002) as a bridge to gain support to solve "important school problems" (Grogan, 2013, p. 314). In other words, becoming a successful principal will depend on their ability to both build "relational trust" (Bryk, 2002) as a strategy for gaining the support of relevant stakeholders (Machtinger, 2007) when implementing school reforms, as well as integrating the following "essential supports" (Bryk et al., 2010):

- (1) a coherent instructional guidance system, which aims at supporting teachers in improving consistency in instruction—focusing on what students really need;
- (2) professional capacity, in which teachers' quality is improved;
- (3) strong parent-community-school ties, which focuses on improving how these three contexts can support each other for better student outcomes;
- (4) student-centered learning climate, in which the focus is placed on improving the student climate not only in school, but also in other contexts in the community; and
- (5) leadership drives change, which challenges the principal to be an agent of change not only within the school but beyond (Bryk et al., 2010).

Positing school leaders as social justice advocates and agents of change within the educational context and beyond is a theme that resonates in schools of education in major U.S. universities' courses of study. Indeed, an opportunity exists for school principals to leverage

their position to seize the challenge to improve the educational field in general, but in particular to improve school conditions for those historically underserved groups (Foster, 1986). In the same context, Cambron-McCabe (2005) notes that “Who will lead schools may be one of the most critical challenges and one of the most important opportunities to influence social justice” (p. 208), putting pressure on school leadership programs to prepare principals to ask critical questions about what is blocking equitable schooling (Cambron-McCabe, 2005). Echoing this notion, Grogan (2013) reasons that “To undercut the current practices of inequalities, school instructional leaders need the tools needed to act on a fully acquired and comprehensive equity consciousness” to advocate for a population of students who have not been given equal access and opportunity to education. It is the ability of the principal to use teachable moments as leverage to make true changes in human justice, as it is from these instances that those in positions of power can prompt initiatives that promote human justice (Aleman, 2009).

Summary and Conclusion

To summarize, this section attempted to highlight major relevant literature to help better answer the research questions addressed in the following ways: (1) information on influential court cases that have affected language education in the United States informed the researcher on trends in policies that may favor bilingual education; (2) literature on the current, most-implemented ESL models and programs informed the researcher about potential flaws and opportunities for improvement in the models and programs used to support ELLs; (3) the literature on effective models in language education—such as bilingual approaches—provided a framework for this study; (4) the literature included on achievement gaps among this group was instrumental in understanding trends that have kept this issue unresolved; and finally (5)

literature on the role of the principal was discussed with the aim of understanding the influential role such leaders play in reform policies that may affect this language minority group.

Taken together, a substantial amount of research suggests that it is paramount that ELLs not only have access and opportunity to high-quality teachers, which can have an impact on their intellectual development as well as “significant long-term” financial and other positive effects (Chetty et al., 2011), but also access to the standard curriculum through the students’ first language (August & Shanahan, 2006; Cheung & Slavin, 2005; Genesee, Lindolm-Leary, Krashen, 2003; Saunders & Christian, 2005). With that in mind, school principals should consider adding dual-language features into their ESL programs wherein both language development and content are taught simultaneously. This practice would not only satisfy equity by providing ELLs with the tools they need, but also excellence, as these students are likely to succeed as they move into the upper grades, thus narrowing academic achievement gaps (Fillmore, 2000). Accepting the status quo of underachievement for ELLs without exploring these possibilities would be a mistake.

CHAPTER 3: METHODOLOGY

This chapter provides a review of the purpose of the study and study questions addressed, as well as a description of other major components of methodology this study used. These include: the participants' and research site's unique characteristics as well as the rationale and criteria for selection; the role of the researcher; challenges and limitations; instruments; step-by-step data collection techniques and data analysis; and notes on reciprocity and ethics.

Purpose of Study

Certainly, K-12 public schools face many challenges when trying to meet the needs of the students they serve. This is particularly true for schools with higher numbers of ELLs. New accountability measures attempting to close academic achievement gaps, plus the dramatic increase in the ELL population in the last five years, have clearly put pressure on these schools to look for better alternatives to their current standard ESL services.

With ELLs now constituting 10% of the K-12 student population in the U.S., this is clearly becoming an even bigger issue. The need to accommodate the unique needs of these students is paramount.

Broad, well-intended school initiatives prioritized on closing achievement gaps and increasing graduation rates have not been enough to make a substantial difference in this subgroup's performance, and it continues to be a problem with no potential solution in the near future. Part of the problem—among other things—may have to do with the inability of schools to provide appropriate ESL services where both language development and content are emphasized (Ovando, 2006; Thomas & Collier, 2002).

Most elementary schools continue to use standard ESL services that prioritize English language development and to a lesser extent content. As the pressure now builds to narrow academic achievement gaps, finding solutions to improve ELLs' performance will require that schools re-examine such approaches and move towards research-based initiatives with proven results—dual-language instruction being one of them (Howard et al., 2003; Lindholm-Leary, 2001; Marian et al., 2013; Mora et al., 2001; Thomas & Collier, 2002).

According to dual-language and language acquisition theories, there is a clear benefit in instructing ELLs in a language they understand as they gradually learn the second language (Cummins, 1981; Krashen, 2002). In fact, the literature highlights content area development as its main benefit. With models that use both languages, newcomer ELLs continue to receive content instruction in their native language (partially, depending on the specificity of the dual-language model) as they adjust to the new culture and language. Thus, the continuity of content learning is not lost. A shift from standard ESL instruction, which often focuses on language acquisition, to a more differentiated approach that uses ELLs' first language as a support, could potentially help narrow academic gaps and increase graduation rates on a broader scale.

The purpose of this quantitative study was to investigate how using dual-language features as a form of instruction could improve academic performance for ELL newcomers enrolled in grades 4 and 5. Specifically, this study examined how a group of newcomer Hispanic ELLs' academic performance was influenced after receiving math instruction in their native language (Spanish) or through dual-language support. The treatment (15 students) and comparison groups (48 students) were enrolled in the same school. The study compared math performance between the experimental and the control groups at the end of the period and relied mainly on quarterly district assessments.

Conceptual Framework

This research drew from multiple theories and approaches, such as equity and language acquisition frameworks, to ground this study. The equity lens helped explain and describe how inequitable practices at the state, district, and school levels continue to place this group of newcomer students at a disadvantage, impeding attempts to improve ELL education. The language acquisition and bilingual lenses provided insight on how ELLs use conceptual knowledge learned in their first language to make sense of new concepts, such as in math, in the new language.

According to Krashen (1981), students learn a second language when what they hear or read is comprehensible to them (comprehensible input). Cummins (1981) adds that in order to help make that input comprehensible, ELLs should be able to use the conceptual knowledge learned in their native language. To put it differently, ELLs learn a new language more effectively and develop content language more quickly when their first language is used for instruction. This can help them by both lowering the “affective filter” (ELLs are more relaxed) and leveraging what they already know (funds of knowledge) to effectively make the knowledge transfer between the two languages.

Dual-language models draw on theories that are based on the relationship between students’ first language and a target language (or second language). These theories provide an empirical foundation in favor of using students’ first language as one of the main supports to facilitate not only second language acquisition but also content area development (Howard et al., 2003; Krashen, 1981, 1999; Lindholm-Leary, 2001; Mora et al., 2001; Thomas & Collier, 2010). According to Thomas and Collier (2010), for example, ELLs can achieve greater academic success when instructed in both languages for several school years—favoring approaches such as

late-exit dual-language models.³⁵ They assert that this model offers more benefits than English-focused pullout ESL services, claiming that the exposure to the two languages may shorten the time required for ELLs to reach proficiency in the academic language necessary to succeed as students (about six years). Typically, an ELL can take up to seven years to reach adequate academic language (CALP) in a pullout, standard, English-focused ESL program (Cummins, 1979). Similar language development can be achieved in six rather than seven years through a dual-language approach (Thomas & Collier, 2011), representing substantial academic as well as cost benefits.

Research Questions

This study examined the effectiveness of one model that is an alternative to the currently standard, most-used ESL program to support ELLs at the beginner to intermediate levels. Specifically, this study focused on the benefits of using ELLs' first language for improving performance in math; it was guided by the following questions: Does dual-language instruction improve achievement in math for Hispanic ELL newcomers enrolled in an urban Title 1 elementary school in grades 4 and 5 more than English-only instruction? To what extent do ELL newcomers enrolled in an urban, Title 1 elementary school in grades 4 and 5, who receive math instruction in Spanish, improve their math scores in district and state tests as compared to ELLs who receive math instruction in English only?

Research Design

Statistical comparative analysis instruments such as repeated and independent *t*-tests were used to examine the treatment effect. Specifically, the treatment, provided by the researcher and which consisted of math instruction in Spanish (students' first language), was given to a group of

³⁵ Late-exit dual language models allow ELLs to stay in the program for more than three years—a period necessary for reaching appropriate academic language proficiency.

4th- and 5th-grade ELL newcomers during a six-month period. District assessment data on math skills were collected and used to calculate students' academic growth (by subtracting pretest mean scale scores from posttest mean scale scores). Repeated *t*-tests were helpful in calculating the significance of academic growth within each group; independent *t*-tests calculated academic growth difference between the treatment and the comparison groups. Cohen's *d* test further validated mean differences and calculated treatment effect size.

Sample Selection

The sample for this study included students in 4th and 5th grade with similar linguistic, economic, and educational characteristics, among other things. The student population was not randomly selected. Instead, participants needed to fit the following selection criteria to be considered: Participants (1) were enrolled in U.S. schools for no more than three years; (2) scored no higher than 3.5 overall in the latest ACCESS evaluation, indicating beginning-intermediate levels of English proficiency; (3) spoke Spanish as their first language; (4) were literate in reading and writing in Spanish, but with clear academic gaps in that language (e.g., reading below-level based on reading assessment in Spanish); (5) qualified for reduced and free lunches; and (6) were not enrolled in other programs such as Exceptional Education (EC) or Academically Intellectually Gifted (AIG). The treatment group was controlled and received math instruction in their first language (Spanish). The other group received math instruction in the second language (English).

The rationale for participant student selection was mainly based on students' needs. As it stands, newcomer students face the most challenges when it comes to academics and seem to be the least supported. ELLs are often placed in mainstream classrooms, where they receive content instruction in a language they do not understand, causing potential self-confidence problems as

they move to higher grades (e.g., affecting behavior, school dropout, and the like). Many newcomer ELLs are concentrated in low-resourced schools (Bryk, 2010), making it even harder to make it through high school. Further, newcomers are often placed at a disadvantage when they are required to take End of Grade exams in math within their first year of being in this country, potentially having an effect on how they are perceived by teachers who have little knowledge of ELLs and their unique educational circumstances. Due to testing pressures, these students are not always a priority; they tend to be placed in remedial classes served by inexperienced teachers, since they are already expected to do poorly on such state tests.

Rationale for Research Design

Dual-language research has often focused on how this approach generally benefits both English and non-English speakers in reading performance in the early grades (e.g., K-2). While such research is valuable, further examination on how this approach can improve math performance for non-English-speaking newcomers in the upper grades (e.g., 4th and 5th) is warranted. It was the intent of this study to add to the body of research in a very specific way by focusing on a content area not often studied (math) as well as on a unique group of ELLs (those with less than three years in U.S. schools).

While qualitative research approaches, such as observations with little or no obstruction (Hagan, 2003), could help describe behaviors that affect ELL students' performances in a natural setting (Abusabha & Woelfel, 2003), for this particular study a quantitative approach offered the best method. Newer accountability systems have put pressure on schools, districts, and states to use quantitative data such as End of Grade scores to demonstrate the academic achievement growth students have attained during a school year. Not surprisingly, many new school reforms and program implementations are based on such data. This is equally true for ELLs and for other

subgroups' programs aimed at improving outcomes. District quarterly assessments (I-Ready tests), which directly resemble the content covered in End of Grade (EOGs) exams, were used to determine treatment effect. Specifically, previous math data from the 2014-2015, 2015-16, and 2016-2017 school years' cohorts (comparison group – received math instruction in English) were compared to the 2017-2018 cohort (treatment group – received math instruction in Spanish) to determine treatment effect.

Participants and Research Site

Research Site

This study was conducted in one of the largest Title 1 elementary schools in the district: Star Public Schools (a pseudonym), located in a mid-size county in the Southeast U.S. It served more than 34,000 pre-K to 12th-grade students in the district's 53 schools during the 2016-2017 academic year. Of those 34,000 students, 4,953 (or 14%) were labeled ELLs (National Center for Educational Statistic, 2017).³⁶ The percentage of ELLs enrolled in the district is higher than that of the state overall (6.2%). As is typical of other districts in the surrounding areas, ELLs are supported with language instruction by certified ESL teachers. The most-used ESL model is the standard pull-out model.

As of the 2017-2018 school year, Star Public School had a total enrollment of about 650 students. Of these, 171 (or 26%) receive ESL services. Thirty of those students had been in U.S. schools for less than three years. They came from different parts of the world, including Rwanda, Vietnam, and Ethiopia. However, those coming from Latin countries such as El Salvador, Honduras, Mexico, and Guatemala made up the great majority, or 90%. Further, 98% of the school's students were eligible to receive free and/or reduced lunch—100% of ELL participants were in that category.

³⁶ https://nces.ed.gov/ccd/districtsearch/district_detail.asp?ID2=3701260

In terms of academics, an average of 40.6% of students in grades 3 through 5 attained a passing score in math and 38.4% in reading in the 2016-2017 school year (based on End of Grade scores).³⁷ When comparing academic achievement by subgroups in the preview year, it was evident that the subgroups of African American and Hispanic students were underperforming White students by a wide margin. Table 3.1 shows students grouped by gender and ethnicity, among other factors, and the percentage of those who reached proficiency levels on both reading and math tests (see Table 3.1).

Table 3.1

Percentages of Students who Reached Proficiency in Reading and Math in 2015-16 School Year - Research site vs. District and State

	All	Male	Female	White	Black	Hispanic	ELLs
Site	16.8%	18.9%	15.2%	39.1%	14.3%	12.8%	8.8%
District	22.2%	20.9%	23.5%	55.0%	12.9%	12.9%	<5%
State	32.0%	30.6%	33.5%	43.5%	14.2%	19.3%	5.8%

Entry and Access

Due to the nature of this study, it was required that UNC's Institutional Review Board (IRB) as well as the school district's Research Review Committee (RRC) review the proposed study for approval. Once permission had been granted, the principal of the research site was formally contacted via email. Soon after, parents received consent letters to participate in the study. Participants needed to understand the purpose as well as the content of the research. As such, emails and participation consent letters were carefully written in clear language and accurately translated into Spanish (as needed). The importance of the study, the participants'

³⁷ <http://www.ncpublicschools.org/accountability/reporting/>

rights to withdraw from the study, as well as assurance of anonymity were highlighted in those letters.

Data Collection

It was the intent of the researcher to triangulate available research and several data pieces to help support and corroborate his findings (Miles & Huberman, 1994). What follows is a description of data collection techniques that were used to conduct this research with the aim of finding consistency associated with the benefits of using students' first language to instruct Hispanic ELLs.

Instruments

This study relied mainly on quantitative indicators such as statistical measures based on district assessment scores that included end-of-quarter cumulative district measurements (or CDMs) test scores.³⁸ As it stands, the district currently uses one main quarterly benchmark test to assess students' progress in math—the I-Ready. This test is mostly multiple-choice and resembles the quarterly content that is covered in the district end-of-grade test (EOG). The I-Ready tests are given three times a year.

The first (or pretest) is given in August/September (within a few weeks of the start of the school year), then again in December/January, and one in February/early March. Student scores are reported by showing the percentage of correct responses attained and projected achievement level. In addition to CDMs, this study relied on students' ACCESS test overall score as a means of identifying language proficiency levels in English. The ACCESS test is an annual exam to assess K-12 ELLs' progress in understanding academic language. It is a state test given to all students identified as ELL, assessing their language proficiency overall and in four major domains: speaking, reading, listening, and writing.

³⁸ Previous years' EOG data were used to examine treatment effect (structured dual-language) between two schools.

Data Collection and Data Analysis

It was the goal of this study to address the issue of achievement gaps among ELLs by examining the relationship between content (math) instruction that uses dual-language features (i.e., native speakers learning content in the students' primary language) and math academic performance for 4th and 5th-grade Spanish ELL newcomers (i.e., ELLs in years one through three in U.S. schools). For the treatment and comparison population selection, the following steps were taken:

- (1) the researcher used a roster of ELLs enrolled at the school who were in grades 4 and 5 for the current school year (about 30 ELLs were enrolled in grade 4 and 5);
- (2) the researcher relied on the district and school data managers to provide de-identified demographic information on ELLs;
- (3) the researcher populated the 4th- and 5th-grade ELLs' roster with demographic information, including their free and reduced lunch status, time enrolled in U.S. schools, gender, primary language spoken at home, and latest ACCESS overall score; and
- (4) from the roster, the researcher selected students who fit the desired population criteria:
 - (a) an overall score of < 3.5 on ACCESS test;
 - (b) less than three years in U.S. schools;
 - (c) qualified for free and reduced lunches; and
 - (d) spoke Spanish as their primary language.

While it was the intent of the researcher to select treatment group participants that shared similar linguistics, educational, socio-economic and cultural characteristics with the comparison group participants, external factors such as subtle family background differences were possibilities that may have affected results. Nevertheless, as soon as the treatment group had been identified and permission to participate had been granted, the treatment began.

Assessment data were collected from the district's database at two different times during the school year—i.e., September 2017 and February of 2018—and helped the researcher and provider of treatment examine the intervention impact in math achievement between students

who received math instruction in English only and those who received math instruction with Spanish-language support during a six-month period. Specifically, the data consisted scores from the district quarterly assessments (dependent variable), which were used to examine the treatment effect on the independent variable (math instruction). As such, the researcher relied on a quasi-experimental design with true experimental features, which involved a pretest, a treatment, and a posttest. To that end, to test the hypothesis, independent sample t-tests and repeated t-tests—on which pretest scores served as the covariance—were conducted on math scores, aiding the researcher to identify pretest to posttest mean differences in math achievement between the treatment and comparison groups at the end of the six-month period.

Role of the Researcher

The researcher was aware that there is “no such a thing as tabula rasa, and that there is always some preconceptions when collecting data” (Marshall, 2015). He also recognized that conducting a study on his own students may have conflicted with his own bias due to his extensive understanding and knowledge of these students’ backgrounds and educational contexts. And while careful examination of bias was a priority for the researcher as he positioned himself as a learner and strictly followed the protocol stipulated by the Institutional Review Boards’ (IRB) guidelines regarding working with human subjects, this was certainly a limitation.

Reciprocity and Ethics

Whether the researcher found a significant effect in students’ math achievement or not, the most important piece involving reciprocity was in the sharing of the findings of the study. For teachers, for example, it might have meant growing in their profession, learning that the way they instruct and embrace ELLs’ culture and language has an effect on ELLs’ academic performance. Some teachers might have even been tempted to become advocates for dual-

language approaches themselves. For parents, study findings might have encouraged them to become more active and more involved in their children's schools. And for school administrators, the findings informed them of alternatives to better support their ELLs. Overall, parents, administrators, teachers, and district policy makers were able to gain insight from this research; most importantly, however, it was the ELLs/children who benefited from this study the most. Knowing this was more than enough of a reward.

Ethics was given high importance in this study, in particular in the area of participant privacy. There were several alternatives for protecting participants' personal information to prevent confidentiality issues. Therefore, the following ethical actions were taken:

- Pseudonyms were used instead of real names to protect participants' and the site's anonymity.
- Information shared was kept confidential and was used for research purposes only.
- No information on participants was shared with anyone.
- Participants had the right to withdraw from the study if they requested.
- Finally, in order to comply with the "Belmont Principle of Justice," students not receiving the treatment continued to receive standard ESL services as well as math instruction in the second language.

CHAPTER 4: RESULTS

Pretest and posttest scores were used to compare math academic performance between English Language Learners (ELLs) who received math instruction in English (second language) and those who received that instruction in Spanish (first language). Descriptive and inferential statistical tools such as frequency distribution, variability, as well as *t*-tests were used in the analysis. This chapter—structured in two main parts—begins by describing sampling procedures and the study’s populations. The second part summarizes the results and findings of the data analysis, followed by a more detailed presentation of analysis and results for the research questions addressed. The chapter concludes with a recapitulation of the main points discussed.

Description of the Population

Approximately 30 ELLs were enrolled in grades 4 and 5 in this urban Title 1 school during each school year examined—from 2014 to 2018 (approximately 120 ELLs in total). Of these, only 63 students fit the sample selection criteria, 48 of whom comprised the comparison group and 15 of whom comprised the treatment group. For each of the years examined, the researcher selected only students who: (a) scored < 3.5 on their latest ACCESS test (representing a beginning to intermediate level of English proficiency); (b) had been enrolled in U.S. schools for no more than three years; (c) spoke Spanish as their primary language; (d) qualified for free or reduced-price lunch; and (e) were not enrolled in any other program such as Academically Intellectually Gifted (AIG) and Exceptional Children (EC). Students comprising the treatment group were all enrolled in this school (described in Chapter 3) at the time of the study, while

many of the students comprising the comparison group had already transitioned to middle school (e.g., those from the 2014-2015 and 2015-2016 cohorts).

Table 4.1 describes the demographic and language proficiency characteristics of the population in each of the years studied (2014-2018). Only 12 ELLs who were enrolled in grades 4 and 5 at this school in the 2014-2015 cohort fit the selection criteria. Of these, ten were enrolled in grade 4 and two were enrolled in grade 5, with five students being boys and the rest girls. Five of these students had been in the U.S. for less than a year. In terms of English proficiency (as measured by the ACCESS test), all ELLs in this cohort had a score of < 3.5 , with scores ranging from a beginner level of 1 to a low-intermediate level of 3.5. Specific to this year, 42% of the students had attained a score that ranged from 1 to 1.5; 17% scored between 1.5 and 2; 25% scored between 2 and 2.5; 8% scored between 2.5 and 3; and 8% scored between 3 to 3.5. Data from the 2015-2016 cohort show that 15 students fit the selection criteria. Eight of them were boys and seven were girls. Three (or 20%) were in year 1 of U.S. schooling, and 40% scored between 1 and 1.5 in their latest ACCESS test. The sample population in the 2016-2017 cohort ($n = 21$) was larger than the sample populations in the previous two years. However, the distribution in terms of gender, time enrolled in the U.S., and language proficiency was very similar. Eleven students (or 52%) in this cohort were boys and ten were girls. Of the 21 students, six had been enrolled in U.S. schools for less than a year, and almost half (or 43%) of students had attained a language proficiency score between 1 and 1.5.

Looking at the treatment cohort (2017-2018) in Table 4.1, results show that this group ($n = 15$) was representative of the comparison group. Specifically, this group was comprised of 15 ELLs—seven were enrolled in grade 4 and eight were enrolled in grade 5. Of the 15 participants, eight were girls and seven were boys. The 15 participants came from Latin American

Table 4.1

Demographics of Students Who Received Math Instruction in English and Those who Received Math Instruction in Spanish

Descriptor	<i>Comparison Group</i>							<i>Treatment Group</i>	
	2014-2015 (n = 12)		2015-2016 (n = 15)		2016-2017 (n = 21)		2014 – 2017	2017-2018 (n = 15)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Total*	Frequency	Percent
Boys	5	42%	8	53%	11	52%	50%	7	47%
Girls	7	58%	7	47%	10	48%	50%	8	53%
Enrolled in grade 4	10	83%	8	53%	14	67%	67%	7	47%
Enrolled in grade 5	2	17%	7	47%	7	33%	33%	8	53%
< 1 year in U.S. schools	5	42%	3	20%	6	28%	29%	3	20%
Free/Reduced Lunch	12	100%	15	100%	21	100%	100%	15	100%
<u>English Proficiency **</u>									
ACCESS Score of 1 - 1.5	5	42%	6	40%	9	43%	42%	7	47%
ACCESS Score of 1.5 - 2	2	17%	4	27%	6	29%	25%	4	27%
ACCESS Score of 2 - 2.5	3	25%	2	13%	2	10%	15%	2	13%
ACCESS Score of 2.5 - 3	1	8%	2	13%	3	14%	12%	1	7%
ACCESS Score of 3 - 3.5	1	8%	1	7%	1	5%	6%	1	7%

Note. *Total percentage of the three years of the comparison group.

**English proficiency as measured by the ACCESS test, ranging from the level of 1 (beginner) to the level of 6 (advanced, exit level).

countries—mostly from Mexico. Three of the boys and four of the girls came from Mexico; one boy and two girls came from El Salvador; and three boys and two girls were from Honduras. In terms of years enrolled in U.S. schools, three of the students were year one, meaning they had been enrolled in U.S. schools for no more than a year. The rest had been enrolled in U.S. schools for more than one year but less than three years. Similar to the comparison group, the overall English language proficiency scores attained by these students ranged from a low of 1 to 3.5 (on their latest ACCESS test), considered to be at a beginner to intermediate level. Almost half (or 47%) of the students in this group had scores of 1 to 1.5. Other scores ranged from 1.5 to 3.5.

Descriptive statistics in Table 4.2 divide the population in two groups—the comparison and the treatment groups. The 48 students in the comparison group included those ELLs enrolled in grades 4 and 5 in the 2014-2017 school years, while the treatment group ($n = 15$) included those enrolled in 2017-2018 school year. This table reports the frequency and the percentage of participant characteristics overall, showing that despite the differences—e.g., a younger comparison group (67% were in grade 4 versus 47% in the treatment group) and more newly-arrived ELLs in the comparison group than the treatment group (29% versus 20%, respectively, with < 1 year in a U.S. school)—in general the distribution was highly consistent between the two groups.

To exemplify, both the comparison and the treatment groups' percentage of students eligible for free and reduced-price lunch was roughly 100%. Similarly, gender distribution was consistent in both groups, varying only by a few percentage points (i.e., 50% in the comparison group were males vs. 47% in the treatment group). Such commonality in the population's characteristics, as well as the fact that all cohorts came from the same school, added a level of validity to the study by reducing both the margin of error and other external validity threats.

Table 4.2

Demographics by Group: Comparison vs. Treatment

Descriptor of ELLs	Comparison Group 2014-2017		Treatment Group 2017-2018	
	n = 48		n = 15	
	Frequency	Percentages	Frequency	Percentages
Boys	24	50%	7	47%
Girls	24	50%	8	53%
Enrolled in grade 4	32	67%	7	47%
Enrolled in grade 5	16	33%	8	53%
< 1 year in U.S. schools	14	29%	3	20%
Free/Reduced Lunch	48	100%	15	100%
English Proficiency				
ACCESS Score of 1 – 1.5	20	42%	7	47%
ACCESS Score of 1.5 – 2	12	25%	4	27%
ACCESS Score of 2 – 2.5	7	15%	2	13%
ACCESS Score of 2.5 – 3	6	12%	1	7%
ACCESS Score of 3 – 3.5	3	6%	1	7%

Summary of the Results

Data collected included ELL newcomers' math scores generated in the 2014 through 2018 school years (a total of 4 years). September to February (six months) math academic variance was calculated for each year by using pretest to posttest I-Ready math mean scale scores. To calculate the normal pretest to posttest math growth, average pretest scale scores attained by the comparison population were subtracted from their respective average posttest scale scores. These results were then compared to the math scale score means generated in the treatment year (2017-2018). Similar calculations were also conducted to further examine

treatment effect by subgroups, controlling for gender, years in U.S. schools, grade, and language proficiency.

It is important to note, however, that due to changes in the I-Ready testing schedule in the treatment year (2017-2018), it was not feasible to use a quarterly I-Ready assessment that would align with the pretest/posttest (September to February) time frame used in the comparison group. That is, instead of February/early March assessment data from an earlier I-Ready, quarterly test data were used. As such, the quarterly I-Ready pretest/posttest data for the treatment group was from September 2017 to January 2018 (five months), varying by a month from the pretest/posttest data collected for the comparison group (September to February; six months). To compensate for this discrepancy, students in the treatment group were tested again in February 2018 by using a monthly monitoring I-Ready assessment instead of a quarterly assessment. While not identical to the quarterly test (it is shorter), the monthly monitoring I-Ready test aligns in terms of the content covered in a quarterly test—it provides a monthly scale score that described students' growth up to that point in time. The February data collected from this monthly test allowed for six-month to six-month data comparison between the two groups. Five-month to six-month as well as six-month to six-month comparison analyses are presented here.

The initial step consisted of calculating both pretest and posttest mean scale scores within each group (i.e., comparison and treatment). Second, the difference between the pretest to posttest mean scale scores for both groups was computed by subtracting the pretest mean from the posttest mean in each group, providing a scale score average point gain in the six-month period for each group. To validate mean differences and to evaluate magnitude of treatment effect, standard effect size between means were evaluated by using Cohen's *d* test—i.e., the mean difference divided by the standard deviation SD (Gravetter & Wallnau, 2013). These

calculations were important in examining the extent to which the treatment impacted the outcome (math scores)—something a hypothesis test simply cannot evaluate (Gravetter & Wallnau, 2013). According to Cohen’s d test, an effect size that results in less than 0.2 SD between the two means is considered to be non-significant; a d effect size of 0.2 represents a small effect, 0.5 a medium effect, and 0.8 or higher a large effect (Gravetter & Wallnau, 2013). The final analysis involved conducting independent t -tests across groups, and, as it is typical in these types of hypothesis tests, a confidence level of 95% was kept on all of these calculations. This meant that a resulting t value at or greater than 0.05 would represent significant difference in the means, leading to a rejection of the null hypothesis. The results of these test calculations are presented next.

Figure 4.1 illustrates the average pretest scale score attained among the four years studied, indicating that scores and means among the four years did not vary by much. Specifically, the average pretest score in the 2014-2015 school year was 403.7; the average pretest score in 2015-2016 was 393.5; 414 in 2016-2017 school year; and 420.8 in the treatment year. Figure 4.2 divides the data distribution into quartiles, with the middle line representing the median of the scores for that particular year. Such data indicate that the median in the first year was 406, 398 in the second year, 421 in the third year, and 434 in the last year (representing a higher start for the treatment group). Further, this data demonstrate that 50% of the scores were between 386 and 429 in year one (2014-2015), 380 and 426 in year two (2015-2016), 400 and 438 in year three (2016-2017), and 388 and 446 in year four (treatment year). Finally, Figure 4.2 displays the presence of outliers (dots), which by definition are values that differ “from the values obtained for the other individuals in the data set” (Gravetter & Wallnau, 2013, p. 523).³⁹

³⁹ Calculations were conducted with and without outliers, with no significant change in outcome and assumption. As such, they were kept in the analysis.

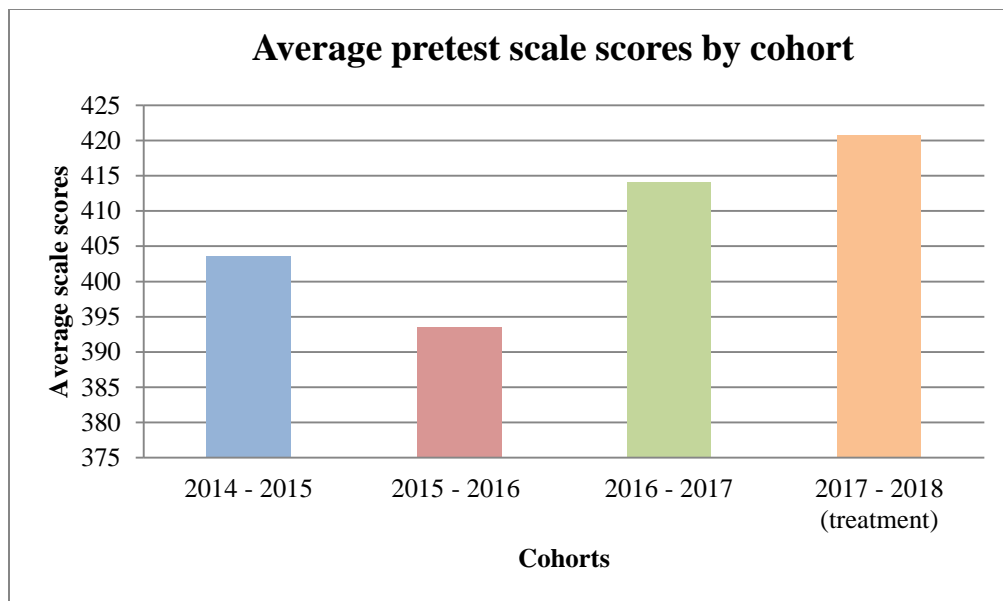


Figure 4.1. I-Ready Math Pretest Scale Scores for Each Year Studied.

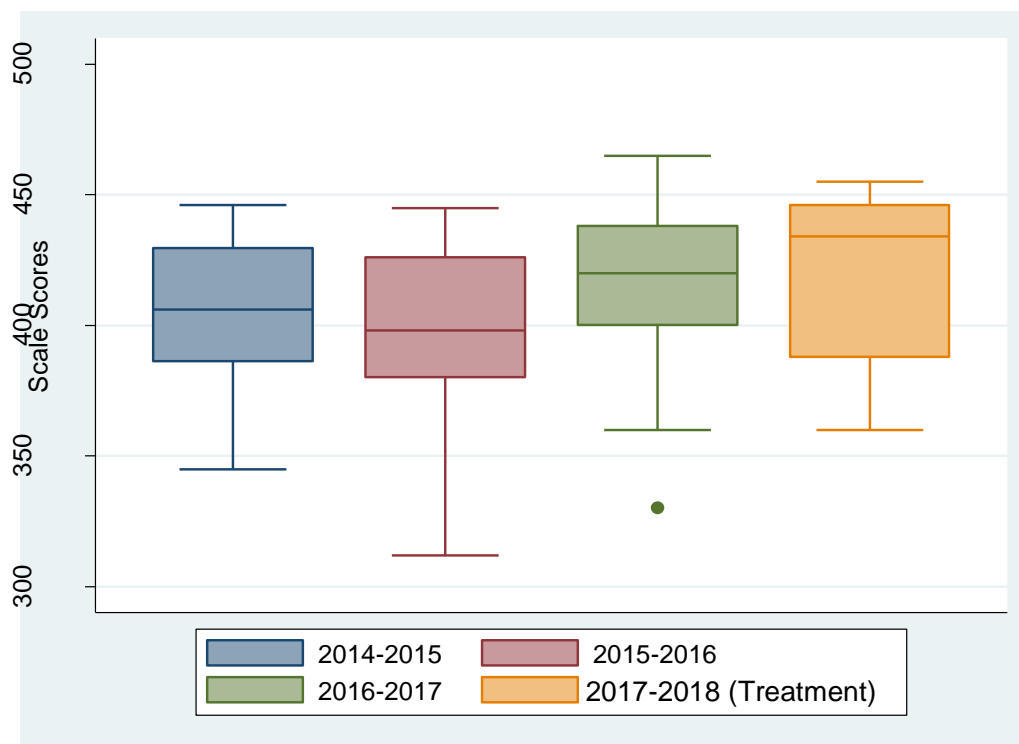


Figure 4.2. I-Ready Math Pretest Scale Score Data Distribution for Each Year Studied.

Figure 4.3 and Figure 4.4 display the average posttest scores for all four years studied. Both January and February posttest data for the treatment group are presented in Figure 4.3.

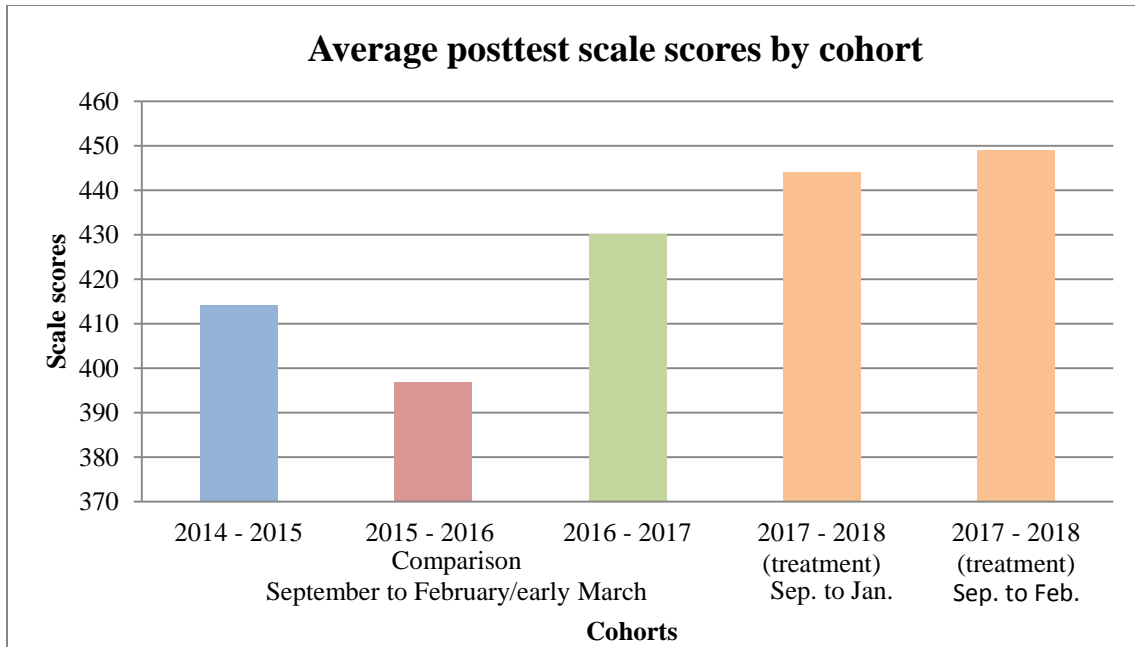


Figure 4.3. I-Ready Math Posttest Scale Scores for Each Year Studied.

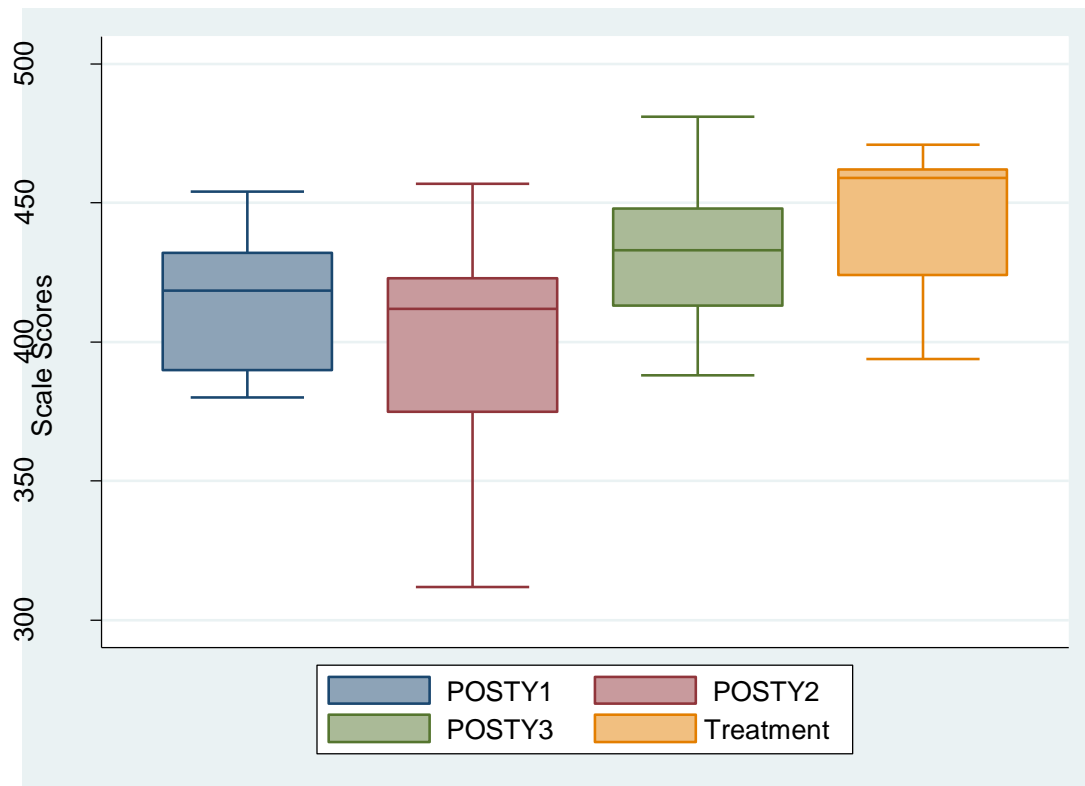


Figure 4.4. I-Ready Math Posttest Scale Score Distribution for Each Year.

When examining pretest to posttest mean scale score gains, data indicate that the comparison group grew at comparable percentage rates across the three years, i.e., 3% in year

one; < 1% in year two; and close to 4% in year three. Specifically, Table 4.3 shows that ELLs enrolled in the 2014-2015 school year grew in math competency from a pretest mean scale score of 403.7 points to a posttest mean scale score of 414 points in the September to February period, for a total 10.4-point gain. Similarly, the 2015-2016 cohort started the year with an average scale score of 393.5 and ended with a scale score mean of 396.9, for a total gain of 3.4 points; the 2016-2017 cohort started the year with a mean score of 414 and ended at 430.2, for a total gain of 16.2 points. When averaging the three years of the comparison population, it resulted in ten points of pretest to posttest growth. While both groups grew in math competency, the treatment group experienced a wider gain, increasing their math achievement from a scale score mean of 420.8 to 444.07 (September to January, 5 months) and 420.8 to 448.9 (September to February, 6 months).

Table 4.3

Math Academic Achievement Growth for Students in the Two Groups

ELL newcomers in grades 4 and 5 receiving math instruction in English n = 48			ELL newcomers in grades 4 and 5 receiving math instruction in Spanish n = 15		
	Mean	SD		Mean	SD
Pretest - September, 2014	403.7	32.2	Pretest - September, 2017	420.8	31.5
Posttest - February, 2015	414	25.7	Posttest - January, 2018	444.1	23.7
Pretest - September, 2015	393.5	41.3	Pretest - September, 2017	420.8	31.5
Posttest - February, 2016	396.9	45.3	Posttest - February, 2018	448.9	27.1
Pretest - September, 2016	414	34.9			
Posttest - February, 2017	430.2	22.8			
Pretest - All three years	405.4	36.8			
Posttest - All three years	415.8	34.6			

Scale score point gains attained by each cohort over a six-month period are again presented in Table 4.4 and in Figure 4.5, illustrating that the highest mean scale score gain was

obtained during the 2017-2018 school year—the year of the treatment group. Specifically, the 2014-2015 cohort experienced a 10.4-point average scale score gain in the six-month period; 3.4-point gain in 2015-2016; and 16.2-point gain in 2016-2017; while the treatment group experienced a 23.3-point gain over a five-month period (September to January) and 28.1-point gain in a six-month period (from September to February).

Table 4.4

Math Academic Achievement Growth for Students in the Two Groups by Average-point Gain

2014-2015 Sept. to Feb.	2015-2016 Sept. to Feb.	2016-2017 Sept. to Feb.	Normal Growth Sept. to Feb.	2017-2018 Sept. to Jan.	2017-2018 Sept. to Feb.
10.4 points	3.3 point	16.2 points	10 points (rounded)	23.3 points	28.1 points

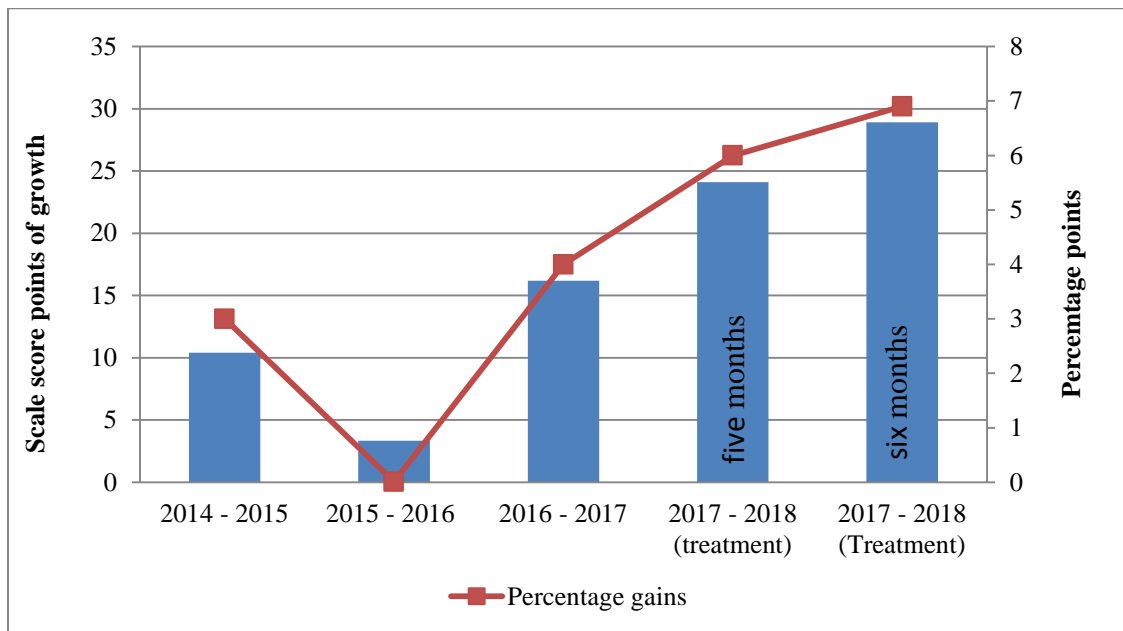


Figure 4.5. Average Increases in Scale Score Points and in Percentage Points per Cohort.

When averaging all three years of the comparison population, the academic achievement in math resulted in a mean scale score gain of ten points pretest to posttest (Table 4.4). Such data indicate little progress in math during a six-month period (i.e., a ten-point gain represents a < 3%

pretest to posttest increase). For the 2017-2018 cohort (treatment group), the mean gain was noticeably higher. Specifically, the gains attained in 2018 amounted to 23.3 points (or 6% pretest to pretest increase) over a five-month period and a 28.1-point gain in a six-month period (Figure 4.6).

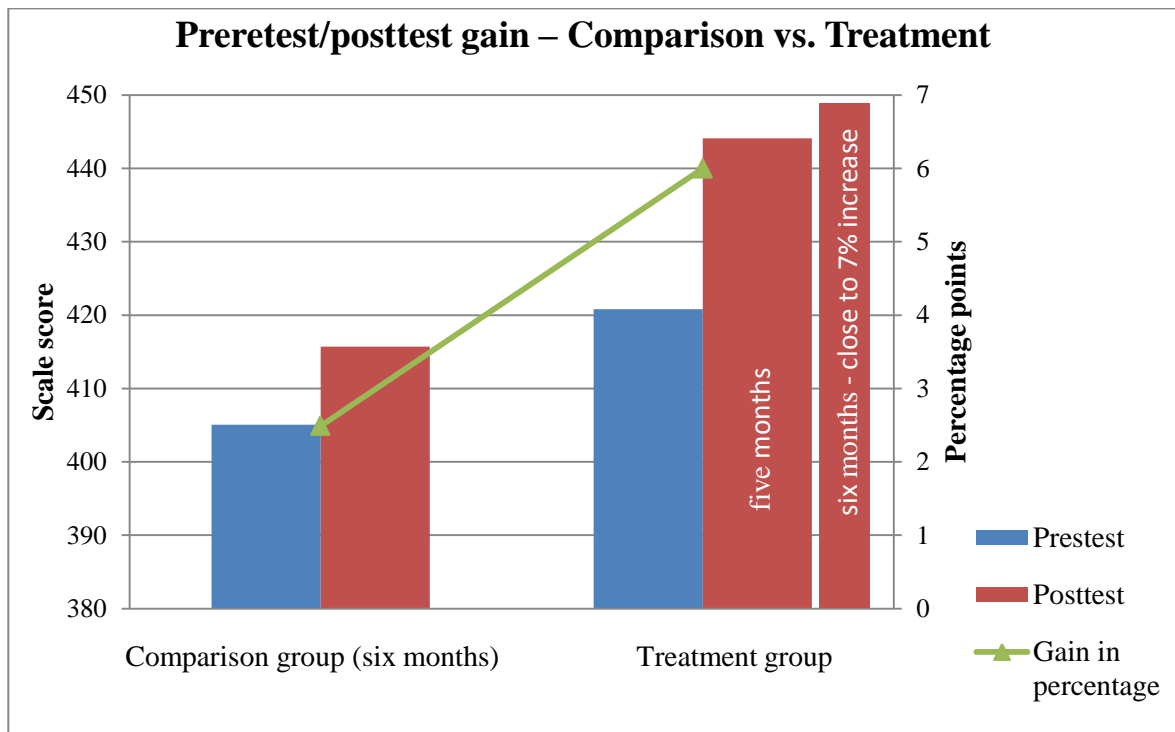


Figure 4.6. Comparison Group vs. Treatment Group Pretest to Posttest Gains, by Percentages.

To further examine the treatment effect, paired-sample *t*-tests and independent *t*-tests with a 0.05 ($p < 0.05$) significance level were calculated. These calculations were carried out with two key points in mind: (1) to examine whether the pretest to posttest mean of the differences between the two variables in scores within each group were significantly different from zero (Green & Salkind, 2003); and (2) to validate the posttest significance of variance across groups. Additional independent *t*-tests were conducted to calculate treatment impact by subgroup—i.e., gender, time in U.S. schools, English proficiency, and grade.

In general, data indicate that ELLs who received math instruction in Spanish exhibited higher gains (in that subject) than those instructed in English-only settings. However, when controlling for gender, time in U.S., grade, and English proficiency, the results were mixed. The specifics of these results are discussed further.

Reading Scores vs. Math Scores

To further examine the effects of the treatment in other subjects, independent sample *t*-tests were also conducted on reading scores across time. Data indicate that the comparison group had an average pretest to posttest gain of ten points of growth in math and seven points of growth in reading. When these numbers were then compared to the treatment group's performance, there was a higher difference in their average scale score means for math and reading. More specifically, reading scale score means in years 2014 through 2017 revealed a norm of a seven-point pretest to posttest gain over a six-month period for the comparison group and a 16-point gain for the treatment group. While on average the treated students gained more pretest to posttest points of growth, scores from the treatment group were not statistically significantly higher than those of the comparison group, $t(39) = 1.64$, $p > 0.05$. These results suggest that the positive treatment effect observed in math may not have replicated to other subjects such as reading.

Results in Detail

Research Question 1

For the first research question, "Does dual-language instruction improve achievement in math for Hispanic ELL newcomers enrolled in an urban, Title 1 elementary school in grades 4 and 5 more than English-only instruction?", treatment effects were examined by analyzing quarterly scores from I-Ready district tests generated in 2014 through 2018. Dual-language,

which falls under the umbrella of a more general term of bilingual education, can be defined as an instructional model that uses two languages to teach students literacy and content (Center for Applied Linguistics, 2016). While several variations exist within this definition, in general the research questions addressed in the study inquired whether ELL newcomers who are taught math in their first language (Spanish) for a period of six months (one hour a day) experience greater math academic achievement than those who do not receive such native language support.

To test the hypothesis, mean score differences between the comparison and treatment groups were examined by conducting paired *t*-tests and independent *t*-tests. For the comparison group ($n = 48$), the paired *t*-test resulted in a pretest math mean scale score of 405.4 and SD of 36.8, while a mean scale score of 415.8 and SD of 34.6 resulted for the posttest, $t(47) = 2.85$, $p < 0.05$. The confidence interval at 95% was between 394.35 and 415.7 for the pretest; and 405.7 and 425.8 for the posttest (Table 4.4 and Figure 4.7). A further analysis of the effect size *d*, which provides a measurement for quantifying the extent of the treatment effect, revealed a small effect. That is, when comparing the pretest to posttest scale score means for the comparison group (although there was no treatment for this particular group, other than learning math in their second language), the *d* effect size was 0.29, which is considered a small effect (Gravetter & Wallnau, 2013).

Similar calculations were conducted for the treatment group ($n = 15$), revealing a greater mean difference between the pretest and posttest scores (Table 4.4 and Figure 4.8). Specifically, paired *t*-tests within this group showed that the math mean scale scores in the pretest assessment were 420.8 with a SD of 31.5. The 95% confidence level was between 403.8 and 438.2. The mean scale scores for the posttest resulted in a higher mean of 444.1⁴⁰ (in relation to the pretest mean of 420.8), with a 95% confidence level interval ranging from 430.8 to 457.18 and a SD of

⁴⁰ Posttest from January quarterly assessment was 444.1; posttest mean score for the February test was 448.9.

23.7. These results indicate that the posttest mean score was significantly different than the pretest mean score, $t(14) = 3.44$, $p < 0.05$. Additionally, the effect size between these two means resulted in a Cohen's d effect of .84, which is considered large (Gravetter & Wallnau, 2013).

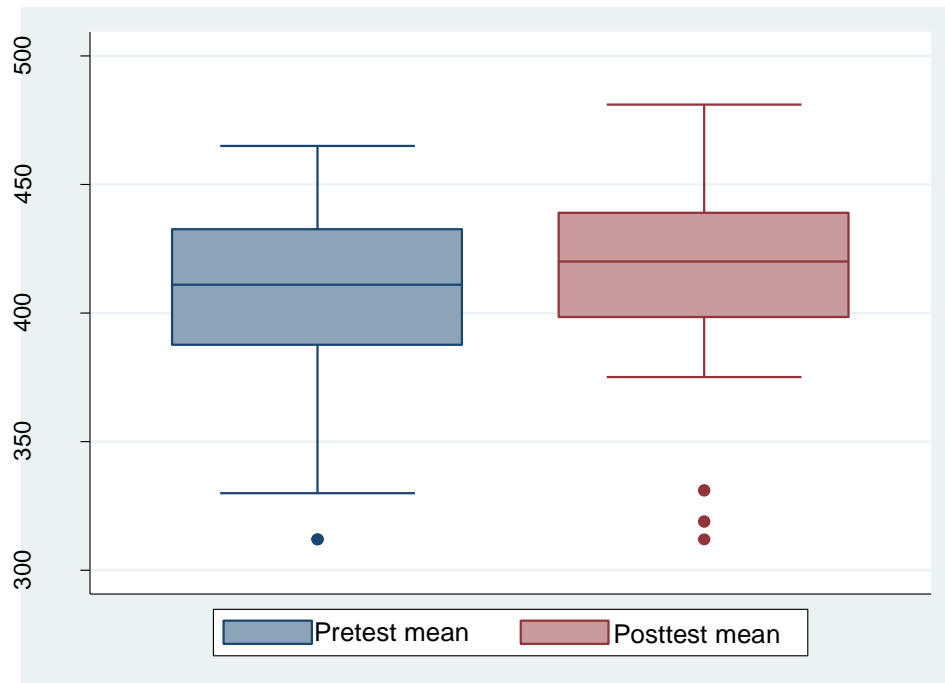


Figure 4.7. Comparison Group—Pretest vs. Posttest Math Scale Scores.

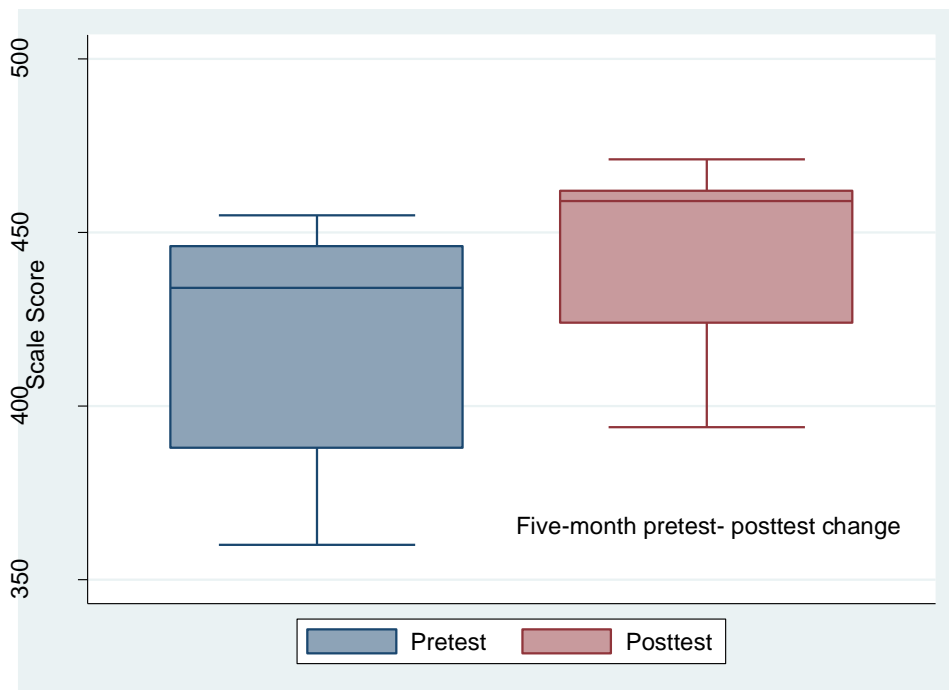


Figure 4.8. Treatment Group Pretest vs. Posttest Math Scale Scores.

To assess whether there was a significant difference in scores across groups (i.e., comparison vs. treatment), independent t -tests were conducted. Results revealed a statistically significant difference in posttest scale scores between the two groups, generating a p -value that was less than 0.05. Specifically, the mean difference between the comparison and the treatment group was 28.3 points, with the treatment group outpacing the comparison group (Figure 4.9). The t value equaled 2.95, and its two-sided p value was < 0.05 , demonstrating that the scores in the treatment and comparison groups were significantly different. Further, these results suggest that the intervention had a positive effect on students' performance, indicating that those ELL newcomers who received math instruction in Spanish one hour a day for six months outperformed ELL newcomers who received that instruction in English only. As such, the null hypothesis was rejected. These findings were further validated by conducting a Cohen's d test, which generated a 0.87 effect size, which is considered to be a large effect.

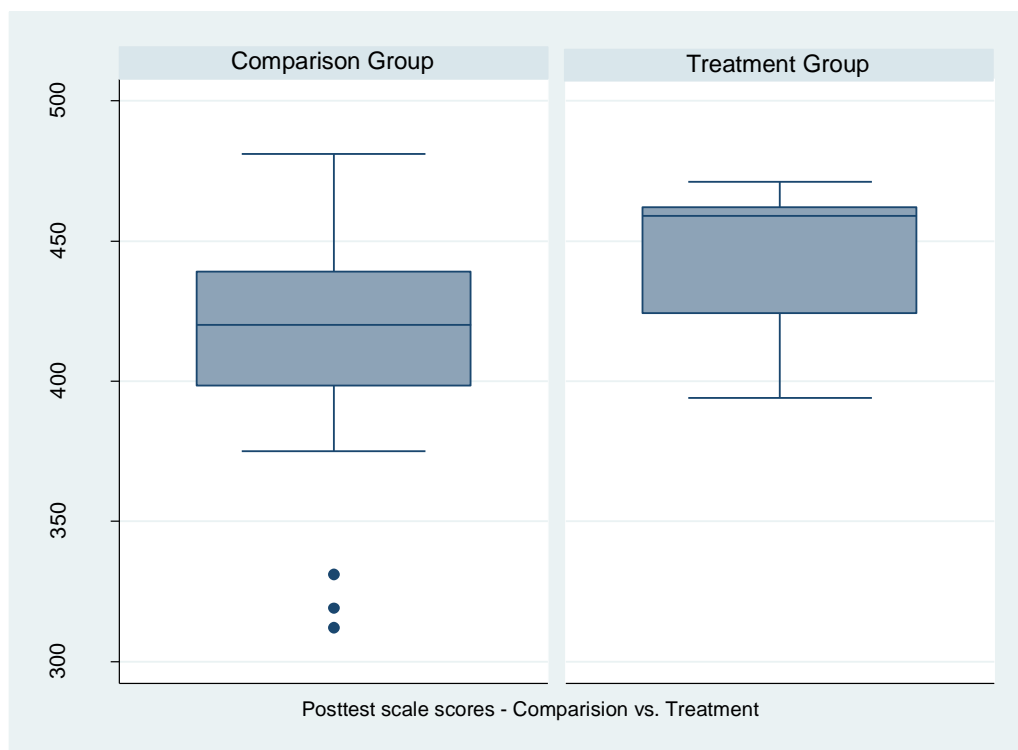


Figure 4.9. Posttest Scale Scores across Groups.

Research Question 2

To answer the second question, “To what extent do ELL newcomers enrolled in an urban Title 1 elementary school in grades 4 and 5, who receive math instruction in Spanish, improve their math scores in district and state tests as compared to ELLs who receive math instruction in English only?”, similar *t*-test calculations were computed. That is, to calculate the significance of variance between the means, the average scale score means from the comparison group and treatment group were computed. These averaged means were generated by finding the pretest to posttest means variance—or the change between the pretest and posttest scale scores. For the comparison group ($n = 48$), this number was ten (or 9.97) points (Table 4.4). For the treatment group, that gain change was noticeably higher—23.3 points (five months) and 28.1 (six months). Holding a confidence level of 0.05 ($p < 0.05$) or less significance, independent *t*-test results indicate that students’ scores in the treatment group were significantly higher than those in the comparison group, $t(61) = 3.58$. $p < 0.05$ (Figure 4.10).

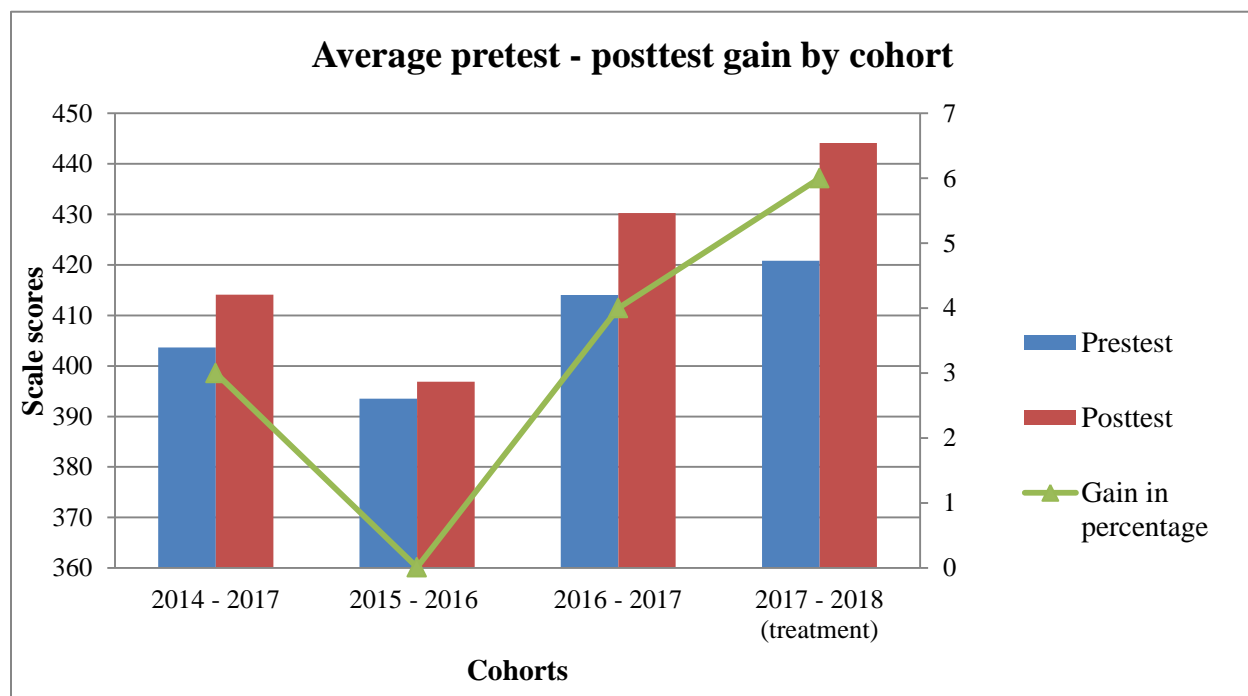


Figure 4.10. Pretest to Posttest Gain for Each Each Studied.

Controlling for Gender, Time Enrolled in U.S. Schools, Grade, and English Proficiency

Driven by the following questions, the researcher found it useful to examine the treatment impact by subgroups: Did the treatment have the same effects on girls that it did for boys? Did those ELLs in year one experience similar gains as those ELLs in year two and year three? Did students' level of English language proficiency impact the treatment effect? Was there a difference in treatment impact for students enrolled in grade 4 vs. those enrolled in grade 5?

Controlling for gender, paired *t*-test results revealed the math mean scale scores for the comparison group were lower than that of the treatment group. However, data also indicated that the gains experienced by female students were higher than that of male students in both the comparison and the treatment groups. Specifically, for the comparison group this calculation resulted in a pretest to posttest gain of a 15.3-point scale score mean for the female subgroup and 6.5-point gain for males, while the average gain for females in the treatment group was a 30.7-point gain and a 14.8-point gain for males (Table 4.5).

Table 4.5

Pretest to Posttest Math Academic Gains by Gender over a Six-Month Period

Comparison Group—ELL newcomers in grades 4 and 5 receiving math instruction in English			Treatment Group—ELL newcomers in grades 4 and 5 receiving math instruction in Spanish	
n = 48			n = 15	
	Pretest to Posttest Mean Change	Number of Students	Pretest to Posttest Mean Change	Number of Students
Male	6.1	24	14.8	7
Female	15.3	24	30.7	8

Independent *t*-tests conducted within groups further demonstrated that means between male and female were significantly different at the pretest and posttest level for the comparison and the treatment group alike. However, when posttest means were compared across groups (i.e., comparison vs. treatment group), data indicate that male scores in the comparison group were not significantly different than male scores in the treatment group, $t(29) = 0.064$, $p > 0.05$. This was not true for female students, however, as posttest data indicate that scores from female ELLs who received math instruction in Spanish were significantly different than scores for those who received math instruction in English, $t(30) = 7.31$, $p < 0.05$.

Controlling for grade, paired *t*-tests results revealed the math mean scale scores for the comparison group were lower than that of the treatment group in both grades. Specifically, students in grade 4 in the treatment group gained almost three times as many scale points as did those students in the comparison group (Table 4.6).

Table 4.6

Pretest to Posttest Math Academic Gains by Grade over a Six-Month Period

	Comparison Group—ELL newcomers in grades 4 and 5 receiving math instruction in English		Treatment Group—ELL newcomers in grades 4 and 5 receiving math instruction in Spanish	
	n = 48		n = 15	
	Pretest to Posttest Mean Change	Number of Students	Pretest to Posttest Mean Change	Number of Students
Grade 4	8.5	32	21.3	7
Grade 5	15.3	16	24.9	8

Controlling for English language proficiency and time enrolled in U.S. schools, paired *t*-test results demonstrate that those students who received math instruction in Spanish made greater gains than those who received instruction in English only (Table 4.7).

Specifically, students in the treatment group who had been enrolled in U.S. schools for less than one year with an ACCESS score of < 1.5 outperformed the comparison students under the same conditions. For this calculation, it was not necessary to control for time enrolled in U.S. schools and English proficiency separately, since all ELLs enrolled in U.S. for < 1 year had ACCESS scores of < 1.5 .

Table 4.7

Pretest to Posttest Math Academic Gains by Year-One ELLs and Year-Two and Year-Three ELLs over a Six-Month Period

Comparison Group—ELL newcomers in grades 4 and 5 receiving math instruction in English			Treatment Group—ELL newcomers in grades 4 and 5 receiving math instruction in Spanish	
n = 48			n = 15	
ACCESS Scores	Pretest to Posttest Mean Change	Number of Students	Pretest to Posttest Mean Change	Number of Students
1 - 1.5	44	20	30	7
1.5 - 3.5	-13	28	20	8

While pretest to posttest mean change for students enrolled in U.S. schools longer than one year (and with > 1.5 ACCESS scores) were higher for the treatment than for the respective comparison group, independent t -tests examining treatment impact indicate that the difference in scores was not significant. Specifically, ELLs enrolled in U.S. schools with a score of < 1.5 who received math instruction in Spanish ($n = 7$)—with a mean of 426.7 and standard deviation of 22.8—and those who received math instruction in English ($n = 20$)—with a mean of 419.4 and a SD of 31.9—were not significantly different, $t(25) = 0.62$, $p = 0.55$. Similar results were found when examining students who had been enrolled in U.S. schools for more than one year (and with ACCESS scores > 1.5), as math scores from those students in the treatment group were not significantly different than scores from students in the comparison group, $t(34) = 2.07$, $p > 0.05$.

Summary

This chapter presented the results obtained from analyzing quantitative data from the prior three years and the current school year. Specifically, the researcher collected quarterly assessment data from four cohorts ($n = 48$ in the comparison group and $n = 15$ in the treatment group). These data were used to examine treatment effect, consisting of providing math instruction to ELL newcomers in their first language (Spanish). Descriptive and inferential statistics were used to analyze data collected. Frequency distribution was used to analyze percentages and proportions of sample populations, demographics, and math scores collected; paired t -test and independent t -test statistical tools were used in the analysis of the treatment effect. Specifically, paired or repeated t -tests were used to examine mean differences within groups; independent t -tests were used for analyzing mean differences across groups.

In general, statistical data revealed ELLs who received math instruction in Spanish (first language) for six months performed higher than those ELLs receiving math instruction in English only, confirming a positive treatment effect. Those students who received instruction in their first language experienced pretest to posttest math academic gains that were significant—averaging a mean scale score gain of 6% to 7% over the six-month period. Controlling for gender, time in U.S. schools, grade level, and English proficiency, the data indicated mix results.

Taken as a whole, the sample size ($n = 63$) used in this study provided valid empirical data that could be generalized to other schools with similar settings. These findings have valid and important practice implications for districts and elementary schools with high numbers of ELL newcomers. The following chapter discusses such implications, allowing the researcher not only to make recommendations for future studies in the field but also recommendations for

school principals and district leaders wanting to improve ELL newcomers' academic performance within their schools and districts.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

This chapter has two major goals: (1) to discuss the extent to which this project addressed the problem highlighted throughout the earlier chapters; and (2) to recommend future research on the field and discuss implications for practice. The chapter is structured in three sections. The first begins by summarizing the problem this study meant to address, followed by a brief review of the study's significance, literature reviewed, methodology used, and the study's findings. Section two discusses both the study's major findings in more detail and their significance, linking the results to the overall research on the field of bilingual education and ELLs' academic performance. The chapter ends with a discussion of limitations, conclusions, and implications and recommendations for practice.

Background and Statement of the Problem

Hispanic ELLs are by far the lowest-performing group in reading and math in U.S. schools and is the group experiencing the highest dropout rate (Orefield & Lee, 2005). As the high number of ELLs moving to U.S. schools in recent years continues to be noteworthy (Chishti & Hipsman, 2016), school principals and district leaders across the nation wanting to effectively support these students are being challenged by this trend. "The gaps in academic achievement between these increasing numbers of ELLs and their English-proficient peers continue to be a problem" (August et al., 2012, p. 2). While several factors influence ELLs' academic performance (e.g., poverty), the inability of public schools to accommodate these students' academic deficiencies and language barriers presents by far the greatest challenge.

Such a trend in low academic performance is expected to continue unless critical components—such as the way these students are supported as they transition to the new language—are enhanced.

Several leading researchers confirm the benefits of using ELLs' first language in an academic setting as a means of supporting their transition to the new language, highlighting how the gradual language transfer can help ELLs improve academically. These researchers and advocates of dual-language approaches believe this could be a potential answer to academic achievement gaps among these students. Hispanic ELLs, who by far face the greatest challenge in mastering grade-appropriate content (August et al., 2012), can particularly benefit from these types of instructional approaches. Interestingly, even when these students receive instruction in Spanish and are tested in English, they perform better than those who receive content instruction in English only (Genese & Lindholm-Leary, 2011).

During the last several years, such persuasive empirical research has likely driven a number of schools and districts to incorporate variations of dual-language programs in an effort to help ELLs and non-ELLs improve academically. Specific to ELLs, several school districts have implemented on-site and off-site newcomer programs with dual-language features, and others have even changed their traditional settings completely—converting their English-only instructional models to dual-language schools. To an extent, the program examined in this study resembles a typical in-site, dual-language program in the sense that students' first language was used for instruction; yet, it differs in some aspects. For instance, both ELLs and non-ELLs are typically instructed in the same classroom in a structured, two-way, dual-language program, whereas what was implemented here served only those recently-arrived ELLs in a small-setting math class in Spanish.

While not a complete panacea for the multitude of challenges faced in a new country, these are certainly important steps in supporting ELL newcomers. Grounded on such a conceptual framework, the purpose of this specific dissertation project was to examine the extent to which language transfer occurs during a six-month period in newcomer ELLs enrolled in grades 4 and 5 in a Title 1 elementary school.

Significance

The United States schooled approximately five million ELLs in K-12 public schools in 2017—many of whom were newcomers—representing 10% of the K-12 overall student population. As increasing federal and state accountability initiatives continue to put pressure on districts and schools to demonstrate students’ academic growth and proficiency—or adequate yearly progress on reading and math state tests (Lindholm-Leary, 2012)—a study that addresses academic gaps among the lowest-performing students (i.e., ELL newcomers) is warranted. Given the significance of the issue, this study addressed the prevalent academic achievement gaps that exist between ELLs and non-ELLs by examining the effect of dual-language instruction and ELLs’ math achievement. It is the hope of the researcher to add value to the body of research on dual-language and academic achievement by focusing on one unique group of ELLs. Similarly, the researcher hopes that through this discussion, elementary school principals, district leaders, and educational policy makers will learn of alternatives to better serve their ELL populations.

Methodology

This quantitative study sought to understand the impact of dual-language instruction in math on Hispanic ELL newcomers. To examine treatment effect, the researcher compared 2017-2018 quarterly assessment data on newcomer ELLs enrolled in grades 4 and 5 who received math instruction in Spanish against secondary archival data from the prior three years for

students who had received math instruction in English. Both the treatment (math instruction in Spanish) and the comparison data (math instruction in English only) included pretest and posttest quarterly math scores, allowing for a six-month math academic growth comparison between the two groups. Descriptive (frequencies, percentages, and proportions) and inferential statistical tools such as *t*-tests were used to calculate significance in mean variance within and across groups. To further evaluate and validate the magnitude of the treatment effect, Cohen's *d* tests were calculated.

Major Findings

In this research study, the link between math performance and dual-language instruction was examined. Specifically, during the six-month intervention, newcomer ELLs had the opportunity to learn 4th- and 5th-grade-level math concepts and skills in their first language. This approach was implemented with the aim of replicating research-based features found in structured, dual-language models—where both Spanish and English are used for the transmission of educational content to ELLs and non-ELL students. However, different from a structured dual-language model, only ELLs were instructed in this approach. Significant research suggests that such an approach can help ELLs and non-ELLs improve academically (Maxwell, 2015; Thomas & Collier, 2012).

The main research question asked whether ELL newcomers would benefit academically by receiving math instruction in their first language (Spanish) and to what extent they would benefit from such intervention. In general, results from I-Ready assessment data reveal that the group who received the treatment (math instruction in Spanish) performed better than those who received instruction in English only, confirming persuasive available research on dual-language instruction and academic achievement. Further, empirical data gathered here demonstrate that

students new to the country can benefit from this type of intervention to the same extent as or even more than the overall population of ELLs enrolled in structured dual-language programs.

Specifically, statistical data analysis demonstrates that ELL newcomers (< 3 years in U.S. schools) enrolled in a Title 1 school in grades 4 and 5, who received math instruction in Spanish for five to six months, performed better than ELL newcomers receiving that instruction in English. The pretest to posttest (six months) mean math overall score gain in the comparison group was 10 scale points of growth versus 28.1 points of growth for the treatment group over the same time period.⁴¹ In percentage terms, the 10-point gain in the comparison group equaled a < 3% gain, while the treatment group experienced a 7% gain. The difference in mean gains was statistically significant and provided evidence to reject the null hypothesis. That is, overall mean scale scores attained by ELLs who received math instruction in their first language (Spanish) were significantly higher than mean scale scores attained by ELLs receiving math instruction in a second language only (English), $t(61) = 3.58$. $p < 0.05$.

When controlling for the number of years enrolled in U.S. schools—those enrolled in a U.S. school for less than one year versus those enrolled for more than one year but less than three years—data indicate that ELLs who have more recently arrived in U.S. schools (< one year) experienced greater math academic growth in both the comparison and the treatment groups. This was expected, but not in both groups, as it was predicted that the treatment group would outperform the comparison group.

Controlling for gender, results showed significant pretest to posttest difference in scores between male and female students within groups, with females outpacing male students in both the comparison and the treatment groups. Yet, across-group posttest analysis demonstrated no significant difference in scores between males in the comparison group and males in the

⁴¹ The five-month pretest to posttest gain for the treatment group was 23.3 points of growth (6% growth).

treatment group. Similar analysis confirmed the opposite results for females, as scores between females in the treatment group were significantly higher than for females in the comparison group, $t(30) = 7.31, p < 0.05$.

When controlling for grade level, ELLs enrolled in grade 4 outperformed those in grade 5 for those students receiving the treatment. Specifically, ELLs in grade 4 in the comparison group experienced an 8.5 pretest to posttest mean gain, while those in the treatment group experienced a 21.3 mean gain during the same period. For grade 5 ELLs, while the treated group also experienced a higher gain than those in their respective comparison group, the gain difference was relatively small. In other words, math pretest to posttest mean score variance between the comparison and treatment groups was 14.8 scale score points of growth for grade 4, while a variance of 9.6 scale scale points of growth was experienced in grade 5.

Controlling for subject (reading vs. math), these results indicate that the growth experienced by the treatment group (vs. the comparison group) was significantly higher in math but not in reading. Such an outcome may have been predicted, since instruction was focused upon the content area of math and not reading. Specifically, reading performance for the treatment versus the comparison groups revealed a small, non-significant difference between the two groups. The mean norm points of growth from the September to February (six months) period was calculated to be close to seven points for the comparison group (2014-2017). While average reading gains experienced by the treatment group was higher than the normal pretest to posttest growth in the comparison group (16-points of growth vs. 7 points), they were not statistically significant.

Taken together, major findings here are consistent with previous research in several ways. Mainly, this study found that students in upper elementary grades (i.e., in grades 4 and 5)

who received content (math) instruction in both languages performed better than those receiving that instruction in English only, even if the tests they later took to gauge their competency were in English—their second language (Genese & Lindholm-Leary, 2011). Granted, this study focused on a particular sub-set of ELLs, namely those new to the country, and not on the overall population of ELLs. As such, these results ought to be taken with caution, as the generalizability of the results may be limited in scope.

Limitations

Answering a broader question of whether this type of instruction can close achievement gaps for ELLs may require the time of treatment to be expanded to three years or more rather than being limited to six months. The short period this intervention was given, as well as other limitations such as the small number of ELL participants, use of only one testing instrument limited number of grades included, and limited subject areas used may have contributed to the results found here.

Specifically, one of the biggest limitations involved the small number of participants in the treatment group. While this study used data points from 63 ELLs' I-Ready quarterly assessments, 48 of those comprised the comparison group and 15 the treatment group, meaning that the treatment group was comparatively small. A higher number of participants in the treatment group may have provided a more ideal population for deriving more generalizable findings. However, due to the specificity of the grades studied and other selection criteria, this was not possible (the school enrolled an average of 30 ELLs each year, but only approximately half of those fit the desired selection criteria).

Another limitation was the relative short time of the treatment. Noted previous research suggests three or more years to be ideal for optimizing treatment results (Thomas & Collier,

2012). As such, six months may not have been enough time to demonstrate greater intervention success. Finally, a third relevant limitation affecting the generalizability of this study's findings involves the limited grade levels (4 and 5) and subject areas (math) used.

As variations within the realm of dual-language education exist, fidelity in implementations for the program evaluated here may present another limitation. Even with little variability, teachers, principals, and the like attempting to replicate this program in their schools should be conscious of the criteria and the conditions that led to its success, and, as such, should consider: (a) using Spanish only to instruct ELLs in math; (b) including only ELL newcomers (< three years in U.S. schools and < 3.5 ACCESS scores) enrolled in grades 4 and 5 in a Title 1 school; (c) having a lead teacher who is both bilingual and bicultural; (d) using all of the math block (one hour or more) to instruct ELLs; (e) using small-group settings (seven to eight ELLs at a time); and (f) providing professional development to the assigned teacher on math instruction best practices. Missing any of these components could lead to unexpected and undesirable outcomes.

Finally, the fact that the researcher was also the provider of the treatment may present some limitations as well. While the researcher's goal was to be an objective observer, there was always a possibility of bias, especially considering the great knowledge he had about the participants.

Discussion

In general, findings in this dissertation project are consistent with major previous research, which has determined a positive connection between dual-language instruction and academic achievement in ELLs and non-ELLs. Language transfer theories—on which dual-language approaches are grounded—affirm that the abilities and processes acquired in the

students' first language can transfer to the new language, thus resulting in increased academic abilities in the second language (Cummins, 1981; Howard et al., 2003; Lendholm-Leary, 2001; Mora et al., 2001). Cummins (1981) theorized on how the academic skills learned in one language are transferable to other languages—that due to the underlying commonalities among languages, students do not need to relearn certain skills learned in their first language. Further, this theory suggests that when students have developed a threshold of proficiency in their own language, it can have greater impact on their overall academic achievement in a second language.

In that sense, the empirical evidence found here may contribute to previous research on the field of dual-language education and ELL academic achievement in the following important ways: By controlling for newcomer ELLs in elementary schools—a group that has seldom been examined as a separate population—these findings indicate that content instruction in both Spanish and English may particularly benefit newcomer ELLs more than it was previously suggested. For instance, prior research on the general population of ELLs who received math instruction in both Spanish and English indicated that for students to maximize treatment effect, it was desirable for them to stay in the program for more than three years. While such observations are still true, the fact that these students' scores improved significantly in a six-month period may confirm the success of such an intervention even in a short period of time.

With that said, not all outcomes in this research were as predicted. When controlling for time in U.S. schools, for example, the researcher hypothesized that ELLs who had just moved to the country (< one year) and were able to continue learning in their first language without interrupting the continuity of content learning would benefit more than those ELLs who had been given such instruction in earlier years in a language they did not understand. Based on the results, this prediction was not completely validated here. It is possible that ELL newcomers who

have been enrolled in U.S. schools for two or three years and who had received math instruction in English missed the learning of mathematical content that would have taken place in earlier grades due to the language barrier. For example, if a newcomer in grade 5 came to the U.S. at grade 3 and received math instruction in English-only settings before reaching grade 5, it is possible that the math concepts and skills expected to be learned in grades 3 and 4 were not strong due to the language barrier. Consequently, lack of such concepts and skills would have impacted these ELLs as they moved on to the upper grades (e.g., grade 5). Yet no significant difference in scores was found between ELLs in the comparison group and those ELLs in the treatment group under the same conditions. Interestingly, further analysis indicates that those ELLs enrolled in U.S. schools for longer than one year and with an ACCESS score higher than 1.5 were the ones who experienced greater treatment effect (i.e., -13 pretest-posttest scale-point difference in the comparison group versus 20 pretest-posttest scale-point difference for the treatment group). One explanation may have to do with the short time frame in which this treatment was given. Another reason might point to the discrepancy in age between the comparison and the treatment group, as there were more ELLs in grade 4 in the comparison group (67%) than in the treatment group (47%). These results do, however, confirm the language transfer theory suggested by Cummins (1981), according to which students need to develop a threshold of proficiency in their first language to facilitate language transfer into the second language. The theory suggests that stronger academic language and skills learned in students' first language will lead to better academic outcomes in the second language. As mentioned in the population description, for many of these students, this was not the case. In fact, most of the students in the treatment group came to this country with academic deficiencies in Spanish.

These results validate the idea that continued support in the development of proficiency in their first language may become key to the success of content learning transfer in the second language.

When controlling for grade, results indicate that those ELLs in grade 4 outperformed those enrolled in grade 5. Interpreting these results may point to the disproportionate number of ELLs within their first year in U.S. schools that were present among the grades. There were more year-one ELLs in grade 4 (who generally outperformed year-two and year-three ELLs) than in grade 5; this may have skewed these results. While the question of why students enrolled in year-one outperformed those in year two or year three was discussed in this research, further exploration may be warranted.

Finally, controlling for subject content (reading vs. math), results demonstrate that the positive treatment effects on math may not have replicated to other subjects. Such a discrepancy in academic growth attained by the treatment group may be explained by the fact that ELL participants received content instruction in Spanish for math and not for reading. These results may validate previous research that suggests that students' conceptual knowledge learned in one language is likely to transfer into the second language, yet the language skills acquired in the transfer do not necessarily generalize to other academic areas. Here the focus was math content, and therefore the predicted outcome happened to be in that particular subject. Another explanation for the variance between reading and math scores may have to do with the short time frame the treatment was given. Instruction given during a longer time frame could potentially result in different outcomes—perhaps improving language generalization and thus leading to positive effects in other subjects.

In sum, statistical analyses indicate that the growth the treatment group experienced was most likely due to the treatment and not to random error. ELLs who received content instruction

in their first language experienced more academic growth than did those who received math instruction in English—agreeing with prior research on dual-language instruction. Yet while this study is unique in the sense that a group of ELLs and a subject not often studied were examined, there is still room for improvement. These findings may inspire future researchers to look further into how a longer time frame of treatment, a wider range of elementary grades, and a larger number of participants could significantly enhance the quality of these results.

These findings may also raise questions about more subtle causes that potentially impacted the treatment effect: Was the positive treatment effect attributable to the fact that these ELLs received math instruction in Spanish, or was it due to the cultural congruence of instructor (also the researcher), or both? According to the affective filter, the fact that students received instruction in a low-anxiety environment (one wherein the instructor knew much about their culture, being himself a former ELL) could affect how well the comprehensible input was received (Krashen, 2003). Another observation those interpreting these results may consider is to ask to what extent the favorable results were impacted by the fact that the assigned teacher was a language teacher. In other words, would the outcome have been more favorable if the teacher had been a math teacher or both a language and a math teacher combined? Perhaps some would argue that a language teacher would know better how to facilitate math instruction to this unique group of ELLs. For others, a math teacher and not necessarily a language teacher would have done a better job due to their greater familiarity with the content material. Arguably, a combination of both attributes would be ideal.

Linkage of the Findings to Previous Research

One of the primary conceptual theories used to ground this research project involved the Common Underlying Proficiency Theory postulated by Cummins (1981). According to this

language acquisition theory, certain commonalities exist among languages. Specifically, Cummins claims that while every language is different at the surface level, skills that demand more complex thinking (such as content learning) are characteristics common among languages. As such, having developed complex thinking skills in one language can have positive outcomes when learning a second language. Ideally, a threshold of proficiency in the first language should be developed for the language transfer to occur in the second language.

Drawing upon this hypothesis, numerous studies on dual-language education have sought to examine the connection between underlying proficiency and academic achievement in ELLs and non-ELLs. Of those, very few have been conducted with the specific population characteristics (newcomer ELLs) used in this research. Despite the nuances in population, results in this study for the most part resemble those found in previous major research.

In general, prior research on dual-language indicates that students' academic abilities learned in their first language will transfer over to the second language without interfering with second-language development (Cummins, 1981; Howard et al., 2003; Lindholm-Leary, 2001; Maxwell, 2015; Mora et al., 2001; Ramirez et al., 1991). Such reports were proven true in this research, as evident by the significant growth in math attained by the treatment group, $t(61) = 3.58$, $p < 0.05$, without impacting their academic performance in other subjects such as reading. In other words, if learning in Spanish had affected ELLs' second language development, it would have manifested in lower scores on tests of English-language proficiency in reading or other subjects. This was not the case. In fact, students in the treatment group who received math instruction in Spanish not only outperformed the comparison group ELLs in math but also—to an extent—in reading.⁴²

⁴² Statistically, however, the growth in reading experienced by the treatment group was not significantly higher than that of the comparison group.

Further, based on Cummins' theory, it is hypothesized that the more proficient a student is in their first language, the more the cognitive and academic skills thus acquired will transfer to the second language. In several prior studies, this seemed to be the case. Thomas and Collier (1997), for example, found that students instructed in both languages (L1 and L2) outperformed those instructed in English-only settings. In a similar study, replicated 13 years later and controlling for subgroups, Thomas and Collier (2010) reported that all students, despite their subgroup status (e.g., low social-economic status, African Americans, Whites, and the like), could benefit from dual-language approaches. Consistent with prior research, results found here demonstrated no significant difference in scores between those students in year one of U.S. schooling who received instruction in Spanish and those who received instruction in English. Examining the low level of proficiency these year-one ELLs had acquired in their first language may validate the notion suggested in Cummins' theory. That is, most students in the treatment group had had interrupted schooling in their countries of origin, leading them to have major academic deficiencies even in Spanish. Had these students developed high levels of proficiency prior to enrolling in a U.S. school, it would most likely have resulted in different outcomes—perhaps the treatment group outperforming the comparison group by a wide margin.

Conclusion and Recommendations

As Central American immigrant children continue to enter American's schools (Chishti & Hipsman, 2016)—often with limited academic backgrounds (Cloud et al., 2000)—reforms and practices to better accommodate them should be considered. Clearly, some politicians seem to think that spending more on educating immigrant children is unnecessary because there is no gain in doing so—there is no clear or quick return on investment (ROI). McMahon (2006) notes that this type of reasoning may present a problem, noting that the criteria for making education

investment decisions may be shortsighted in terms of time frame. He observes that although some educational reforms may see quick positive results—e.g., in five to ten years—others may take generations—up to 40 years. To illustrate, funding programs (e.g., high-quality bilingual programs) that can potentially narrow achievement gaps and increase graduation rates among minority students must be viewed as a long-term investment, since the positive effects of that higher education and higher academic student achievement “will spill over” to future generations (McMahon, 2006). Furthermore, examining the future costs associated with having no such investments is of vital importance as well. In other words, these investment decisions must be guided by the potential negative effects that uneducated populations could have in this country, as it may lead to future undesired social consequences such as higher costs in the criminal justice system and health care (McMahon, 2006).

Funding more high-quality bilingual programs presents another positive financial implication, as overall savings can be expected as a result of reducing the number of years ELLs would need ESL services. According to Cummins (1979), ELLs take approximately two to three years to reach the level of having Basic Interpersonal Communicative Skills (BICS—i.e., informal, survival language) and five to seven years to reach Cognitive Academic Language Proficiency (CALP—i.e., academic language), at which point ELLs no longer need ESL services.⁴³ This would suggest that students receiving these services (through ESL standard pullout models) would need at least seven years to exit such programs. Therefore, the continued investment in ineffective pullout, English-only models can be expensive. Conversely, language programs with dual-language features can not only shorten the number of years ELLs would need to remain in those programs but may also narrow academic achievement gaps, thus creating tremendous cost benefits and more equitable outcomes.

⁴³ This is an estimated time when student are served in regular, less effective pullout models.

Despite such persuasive research on the benefits of dual-language instruction in closing achievement gaps, most U.S. public schools continue to use English-only methods to support ELLs. It is clear that a divide exists between those who support English-only instruction and those who support dual-language approaches. At one extreme, advocates of English-only programs maintain that in order to accelerate the time ELLs take to learn English, they need to be fully immersed in the new language. Opposing views from advocates of bilingual education claim that both ELLs and non-ELLs benefit when they receive content instruction in two languages. The latter argument is supported by persuasive research, suggesting that a possible path for closing achievement gaps among ELLs lies in dual-language instruction. To that end, school principals at the elementary level may have several vehicles for providing ELL newcomers with the supplemental support that may expedite their transition to their new culture and language, potentially narrowing the achievement gaps. The section that follows presents both recommendations for future research and implications for practice.

Recommendations for Future Research

This research intended to answer the question of whether ELLs can improve their academic achievement by receiving instruction in their first language (Spanish). Based on data analysis, the researcher concluded that there is a positive link between those two variables, agreeing with the available previous research. Data collected came from district quarterly assessments that strongly aligned with North Carolina End of Grade Tests (EOGs). Despite using such valid statistical tools and test instruments, there were limitations to this study, and it was far from perfect. As such, there is an open window for exploration in other areas within the field.

To broaden the generalizability of its findings, future research could consider: (a) including other content subjects and other languages; (b) expanding research to all elementary

grades; (c) extending the time of the intervention (three years or more); (d) separating the role of the researcher and the provider of treatment; (e) using other test instruments such as EOGs in addition to I-Ready quarterly tests to measure both growth and proficiency; and (j) examining affective filter measurements as part of the overall treatment effect analysis. To further strengthen the validation of the results, future research may also consider adding qualitative data. Interviewing principals and teachers, as well as observing students may provide valuable information that could potentially help identify nuances within each group.

Implications for Practice

Considering different factors that affect ELL newcomers as they transition into a new language and culture is essential: Are there efforts that can be put in place by school principals, in particular in elementary and middle schools, to strengthen and supplement what is already out there? Could a semi-structured, within-school (or afterschool/weekend), dual-language program with a generally improved school and community context—where successful family and community outreach is practiced, culturally competent teachers and principals are hired and supported, and appropriate human and financial resources are allocated—offer some solution?

In general, as part of the solution to supplement and improve standard ESL pullout services for newcomers, elementary school leaders should consider increasing the number of high-quality bilingual personnel in their schools—particularly bilingual teachers who reflect student demographics—e.g., more Hispanics, Arabic, and Chinese teachers—thus helping to bridge the cultural and language divide for these students. Because of their bilingual abilities and cultural knowledge, these teachers enhance the engagement and academic learning for ELLs and are a great asset to any ESL program overall (August & Shanahan, 2006). Granted, limitations in bringing such initiatives up to scale exist, including the shortage of bilingual teachers who would

assume these teaching roles. However, an effort should be made to strengthen current international teaching exchange programs such as the popular Visiting International Faculty (VIF) initiative. Even if the teachers hired are not bilingual, understanding that the success of an ESL program for elementary newcomer students will greatly depend on how much value the newcomers' language and culture is given as a resource to scaffold learning and academically challenge these students, as well as making it imperative for prospective teachers to understand how cultural competency can function in education (Ladson-Billings, 1995, p. 483) can be fundamental.

Furthermore, it is vital for school principals to understand that allocation disparities that have a negative effect on minority students do not just happen at the district and intra-district levels, but can and often do occur within a school. Therefore, principals—especially those leading schools with high numbers of ELL newcomers—should reflect on their financial and human resource allocation priorities with social justice in mind by asking themselves if they are (1) prioritizing expenditures on cultural competency professional development for regular classroom teachers; (2) hiring the right person who is able to culturally understand their students; and (3) allocating teachers adequately for this minority group in their schools. Rothstein (2010) reasons that although most principals assign students with greater needs (e.g., ELLs) to effective teachers, there are those who unethically assign these students to less experienced teachers, likely to avoid upsetting veteran teachers “who might resist those assignments” (Rothstein 2010, p. 13). Recognizing this fact can help principals make better and more equitable human resource allocation decisions within their schools.

Further, it is of paramount importance that these children not only have access to and opportunity with high-quality teachers, which can have an impact on their intellectual

development as well as “significant long-term” financial and other positive effects (Chetty et al., 2011), but they should also have access to the standard curriculum through their first language (August & Shanahan, 2006; Cheung & Slavin, 2005; Genesse, Lindolm-Leary, Saunders, & Christian, 2005; Krashen, 2003). With that in mind, principals should consider adding dual-language features into their ESL programs where both language and content development are taught simultaneously. One example of such a program would include features of late-exit bilingual programs (discussed in previous sections), where students can continue to learn core content in a language they understand for longer periods of time (Fillmore, 2000; Krashen, 1999; Thomas & Collier, 2012). As such, this practice would not only satisfy equity by providing students the tools they need, but also excellence as students are likely to succeed as they move into upper grades, thus narrowing academic achievement gaps (Fillmore, 2000). Further, in the context of bilingual support, principals should make an effort to work with community partners—local universities and community colleges—to develop programs that can better reach and support newcomer families (e.g., through adult literacy and ESL programs). Pfautz (1975) and others found that school-community relations improved when the school leader acted as a “street leader” socially attached to the community he served (Khalifa, 2012).

Finally, while great progress has been made toward using dual-language approaches, more needs to be done. According to a report from 2012, only 260 dual-language programs existed in the U.S. in the year 2000. As demand increased, these programs had reached 2000 by 2011 (Gross, 2012). At first glance, this growth may seem significant, but is it? When one considers the rising number of ELLs in public schools in the last two decades, such growth in bilingual programs seems minimal. With that said, expecting to bring such programs up to scale—where traditional schools with high numbers of newcomer ELLs change to a dual-

language setting in an effort to accommodate these students—is not realistic due to limitations such as program design and implementation, the limited number of bilingual teachers, and accountability issues (Lindholm-Leary, 2012). These are limitations, indeed, but a third alternative might exist: a middle ground approach. To an extent, this study sought to examine that middle ground.

As previously described, the district where the project took place currently serves more than 34,000 K-12 students—more than 10% of those receive some type of ESL service. This number is representative of the population of ELLs in the country overall and is higher than that for the state (6.2% are ELLs in NC). Most ELLs receive instruction in English-only classes, with ESL instructional support time ranging from 30 minutes two days a week to an hour and a half every day. Despite the high number of ELLs, only one of the 53 schools in the district offers a structured dual-language program. Not surprisingly, the academic achievement gap among this group continues to be an issue. Data found in this study indicate that supporting ELL newcomers even for a short time can make a difference in narrowing achievement gaps. As such, replicating a program similar to the one implemented for this research could potentially help ELL newcomers in schools with similar settings.

Table 5.1 illustrates a comparison between dual-language programs and the standard pullout model. These two extremes are contrasted with a proposed alternative—a middle-ground approach to support ELL newcomers. Specifically, the dual-language approach has been proven to be effective, but it is not free from flaws. Bilingual teacher shortages, program design, implementation, and the like could be challenges. Similarly, the current standard pullout model offers some benefits, but the fact that is English-based instruction with a focus on English language development is clearly a problem. The approach recommended here lies between these

two models. While it requires that at least one teacher be bilingual at each site, the logistics for implementation do not seem unachievable. As is evident from this study's results, the alternative approach could help schools with similar settings (e.g., high number of ELLs) make a difference in achievement gaps. What follows are some specific steps for this program implementation in similar settings:

- (1) newcomer ELLs (< 3 years in U.S. schools and < 3.5 ACCESS scores) enrolled in grades 4 and 5 are selected to participate;
- (2) a bilingual teacher serves these students during math block in a separate setting (i.e., with no other English-native speakers);
- (3) math instruction is given in students' first language (Spanish);
- (4) while instruction is given in Spanish, math written assessments are given in English;
- (5) instructional co-planning between regular math teacher(s) and the bilingual math teacher occurs every week;
- (6) most instructional materials are translated into Spanish; and
- (7) ELLs continue to receive regular ESL classes.

More specifically, to replicate this program implementation in a similar setting, consider:

- (1) newcomer ELLs in grades 4 and 5 were pulled into a separate classroom for the math block and received math instruction in Spanish;
- (2) grade 4 and grade 5 math curriculum is different, so the students were served separately by grade;
- (3) an English written test was given every three weeks;
- (4) instruction and focus was guided by test results;
- (5) the level of challenge in a typical math class was expected here, too—no watered-down, remedial classes; and
- (6) English was used, but at a very minimum.

Table 5.1

Comparison of ESL Models—Dual-Language, Proposed Model, and Current Standard ESL Models

	Dual-language model	Proposed middle-ground model	Current standard ESL Model
General description of program in elementary schools	Uses two languages to instruct content to minority-language students and majority-language students.	Hispanic ELL newcomers receive content (e.g., math) instruction in Spanish for a period of six months to a year. This model does not require the school to adopt school-wide dual-language approaches, as the focus is on newcomer ELLs only—instructing them in Spanish for a relatively short period of time as they develop English proficiency	Pullout English-based models that focus on language development and to a lesser extent on content. This model does not directly address achievement gaps.
Effectiveness in narrowing academic achievement gaps	Research-based approach in narrowing achievement gaps for ELLs (Thomas and Collier, 2012). Majority and minority-language groups may benefit from this approach.	Based on empirical evidence found in this study, ELL newcomers who receive instruction in their first language for six months to a year may increase math achievement, leading to narrower academic achievement gaps.	Most commonly used models to serve ELLs—expensive and ineffective in narrowing achievement gaps. The focus is placed on language acquisition, oftentimes sacrificing content development.
Challenges in implementation	Bilingual teacher shortage, program design, accountability issues, etc. (Lindholm-Leary, 2012)	Bilingual teacher shortage; funding; may be too short a time to truly see the benefits of language transfer.	While there might be challenges in implementation, this is the most widely used model in U.S. schools.
Teachers needed	Depending on the depth of program, up to 50% of teachers must be bilingual.	One bilingual teacher per school to teach content (math, science, and reading) to newcomer students in grades 4-5.	Teacher-student ratio may vary by state; in NC it requires one ESL teacher for every 50 ELLs.

Summary

By no means are these recommendations intended to solve the multitude of educational and social challenges elementary ELLs are facing. However, these recommendations do provide controllable alternatives for principals to better serve the ELL newcomer populations at their schools. In times of scarce resources, identifying ways to shortening the time of ELLs' transition into a mainstream classroom is not only fair but cost effective. The longer these students are in ESL programs, the more financial resources are needed. However, it is important to recognize that practices like these will only work if principals are able to use their influence to bring them to fruition. It is here that the opportunity for principals to become agents of change presents itself. This also provides an opportunity for policy makers to use their influence to scale up to other settings those practices proven to be effective and to advocate for these students.

Finally, and from a social justice perspective, a call has been made to school leaders to "take the roles of transformative intellectuals, public intellectuals, and critical intellectuals" (Cambron-McCabe, 2005, p. 202) in the sense that they have an opportunity to potentially change the status quo of inequality placed on a minority group such as ELLs. Understanding that there are deeper racial issues embedded in this society that may be impeding implementing researched-based bilingual programs (Gorski, 2012) is of great importance, as the absence of policies that address the academic challenges ELLs (in particular newcomers) face can have devastating generational effects going forward. Well-designed dual-language on-site programs, supported by high-quality bilingual teachers, culturally competent and supportive staff, and family outreach support can potentially narrow achievement gaps, increase graduation rates, and achieve more overall social justice. Ignoring these facts would be a mistake.

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