

Seton Hall University

eRepository @ Seton Hall

Seton Hall University Dissertations and Theses
(ETDs)

Seton Hall University Dissertations and Theses

Summer 8-21-2020

The Impact of the Language Allocation Plan on Student Outcomes in Two-Way Dual Language Immersion Programs

Bonnie Sue Molina

bonnie.molina@student.shu.edu

Follow this and additional works at: <https://scholarship.shu.edu/dissertations>



Part of the [Bilingual, Multilingual, and Multicultural Education Commons](#)

Recommended Citation

Molina, Bonnie Sue, "The Impact of the Language Allocation Plan on Student Outcomes in Two-Way Dual Language Immersion Programs" (2020). *Seton Hall University Dissertations and Theses (ETDs)*. 2815.
<https://scholarship.shu.edu/dissertations/2815>

The Impact of the Language Allocation Plan on Student Outcomes in
Two-Way Dual Language Immersion Programs

by

Bonnie Sue Molina
Seton Hall University

Dissertation Committee

Monica Browne, Ed.D., Mentor

Richard Blissett, Ph.D., Committee Member

Renee Whelan, Ed.D., Committee Member

Courtney Pepe, Ed.D., Committee Member

Submitted in partial fulfillment
of the requirements for the degree
Doctor of Education

Department of Education Leadership Management and Policy
Seton Hall University
August 21, 2020

© 2020 Bonnie Sue Molina

SETON HALL UNIVERSITY
College of Education and Human Services
Office of Graduate Studies

APPROVAL FOR SUCCESSFUL DEFENSE

Doctoral Candidate, Bonnie Sue Molina, has successfully defended and made the required modifications to the text of the doctoral dissertation for the **Executive Ed.D.** during this **Summer Semester 2020**.

DISSERTATION COMMITTEE
(please sign and date beside your name)

Mentor:

Monica Browne, Ed.D. _____

Committee Member:

Richard Blissett, Ph.D. _____

Committee Member:

Renee Whelan, Ed.D. _____

Committee member:

Courtney Pepe, Ed.D. _____

The mentor and any other committee members who wish to review revisions will sign and date this document only when revisions have been completed. Please return this form to the Office of Graduate Studies, where it will be placed in the candidate's file and submit a copy with your final dissertation.

ABSTRACT

This quantitative study investigated the achievement in English language arts (ELA) and math of students in grades four through six in 50/50 two-way dual language immersion (DLI) programs, as measured by the Spring 2018 PARCC assessments. The study builds on previous research indicating that students in DLI programs perform as well or better than their general education counterparts, and expands on that research by investigating two DLI programs with differing language allocation plans as the program variable of interest: a weekly plan in Englewood, NJ, and a daily plan in Woodstock, IL. Linear multiple regression analysis was used to control for gender, race, socioeconomic status (SES), and English learner status. Findings indicate that, in both districts, students in the DLI program outperformed their peers in the non-DLI program on the PARCC ELA and Math assessments, regardless of the language allocation plan. In comparing the two program models, the positive differences in the scores for students in the DLI program were statistically significant for both assessments in Woodstock, and in Englewood they were statistically significant for PARCC Math and marginally significant for PARCC ELA. In Englewood, the sizes of the differences were larger and represented a larger percentage of the standard deviation. This indicates that there is some evidence that academic outcomes for students in the DLI program with a weekly language allocation plan were higher, as measured by PARCC. The study offers practical guidance to school districts for the implementation of dual language immersion programs that facilitate positive student outcomes. Limitations and delimitations of the study, as well as suggestions for future research are discussed.

Keywords: academic achievement, bilingual education, dual language education, dual language immersion program, English immersion, language allocation plan, program design and development, PARCC, two-way immersion program

DEDICATION

This dissertation is dedicated to my husband, Alfredo Mauricio Molina, the first English learner in my life. You have been my endless love and my constant support for more than thirty years. This accomplishment belongs to both of us.

...To my incredible children, Cassidy Rosalia, Alfredo Mauricio, Jr., and Daniel Dominick. I am grateful for every moment that I am blessed to be your mother.

...To my aunt, Susanne Kathleen Doris, who always has a patient ear to listen and who helped me work through the rough spots, as she has done throughout my life.

...To the loving memory of my grandmother by marriage, Leonor Balseca de Quesada (Mami Leonor), whose patience and kindness started me on my journey to becoming bilingual.

...To the loving memory of my grandparents, Martha Ann Denice, Dominick Vincent Denice, Emma May Doris, and Daniel Patrick Doris, who taught me that with hard work and dedication I could accomplish anything. I miss them every day and I know they would be so proud.

...and until we meet again, may God hold you in the palm of His hand.

-excerpt from An Irish Blessing

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the many people who helped me along the way, and I am so thankful.

I would like to thank my dissertation committee for all of their guidance and support. To my mentor, Dr. Monica Browne, I am grateful for your constant enthusiasm and words of encouragement that helped me navigate through this academic process, pushing me to believe in myself and to never lose faith that I could arrive at the journey's end. Dr. Richard Blissett, thank you for your expertise, for your constant feedback for Chapter IV, and for being so generous with your time and support. Dr. Courtney Pepe, thank you for your positivity, your encouragement, and for always sharing your Can-Do attitude! Dr. Renee Whelan, I am grateful for your collegiality and friendship. You were truly an inspiration for me to join the Seton Hall Executive Ed.D. family.

Thank you to Robert Kravitz and Dr. Michael Moan for granting permission for me to conduct research in their respective districts. A special thanks to Keely Kruger, Michelle Stiller, Teresa DiVincent, and Nikki Auriemma who worked patiently to provide me with the data required to conduct my study, even under the most challenging and unimaginable of circumstances. I am so grateful to each of you.

Finally, thanks to Cohort 22 in the K – 12 School Administration Executive Ed.D. program at Seton Hall University, and to all of my professors in the program, especially Dr. Daniel Gutmore, Dr. Charles Mitchell, Dr. David Reid, and Dr. Christopher Tienken. I learned so much from all of you, and this program has been academically, personally, and spiritually transformational.

TABLE OF CONTENTS

ABSTRACT	iv
DEDICATION	v
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xi
LIST OF FIGURES	xii
CHAPTER I: INTRODUCTION	
Context of the Problem	1
Statement of the Problem and Theoretical Foundations	3
Demographic Shifts	4
Achievement Gap or Opportunity Gap	5
Bilingual Program Models for English Learners	7
Two-Way Dual Language Immersion Programs	9
Implementation Factors	10
Purpose of Study	11
Significance of Study	12
Research Questions	13
Research Design	14
Limitations and Assumptions	15
Definition of Terms	17
Organization of the Study	22

CHAPTER II: REVIEW OF THE LITERATURE

Introduction	24
Historical Background of Bilingual Education	24
Early to mid-20th Century	26
Title VII: Bilingual Education Act and Two Legal Precedents	27
State and Federal Legislation Promoting English Immersion	28
Standardization and High-Stakes Testing	30
Instructional Programs for English Learners	33
Second Language Acquisition Theory	36
Dual Language Immersion Program Types and Models	40
Demand and Rationale for Bilingual Education	43
Economic Rationale and the Seal of Biliteracy	44
Cognition and Dual Language Immersion	45
Academic Achievement and Dual Language Immersion	46
Gaps in the Literature	54
Chapter Summary	55

CHAPTER III: METHODOLOGY

Introduction	57
Research Questions	58
Research Design	58
Setting	60
Population Sample and Procedures	61
Ethical Considerations	61

Instrumentation	62
Data Collection	63
Data Analysis	65
Research Question 1	65
Research Question 2	65
Research Question 3	66
Limitations and Delimitations	66
Chapter Summary	67
CHAPTER IV: RESULTS	
Introduction	68
Data Overview	69
Research Question 1	73
Research Question 2	79
Research Question 3	84
Chapter Summary	89
CHAPTER IV: CONCLUSIONS AND DISCUSSION	
Introduction	91
Summary of Study	92
Summary of Findings and Interpretation of Results	95
Research Question 1	95
Research Question 2	96
Research Question 3	97
Implications for Policy and Practice	98

Limitations, Delimitations, and Recommendations for Future Research	102
Conclusion	107
REFERENCES	110
APPENDIX A: Letters of Solicitation	121
APPENDIX B: Permission Letters	123
APPENDIX C: IRB Exemption Letter	125

LIST OF TABLES

Table 1. Typology of Program Models for Bilingual Students	8
Table 2. Percent of Students Who Met or Exceeded Standards on the 2017 PARCC Test.....	32
Table 3. Types and Models of Dual Language Immersion Programs	41
Table 4. Descriptive Statistics	69
Table 5. Descriptive Statistics for Control Variables	71
Table 6. Regression Model Summary – Englewood	75
Table 7. Regression Model Summary – Woodstock	81
Table 8. Regression Coefficients Comparison – Dual Language Program Enrollment in Englewood and Woodstock	85
Table 9. Summary of Findings by Research Question	86

LIST OF FIGURES

Figure 1. Common Underlying Proficiency Theory, Adapted from Cummins (1981)	37
Figure 2. The Threshold Theory, Adapted from Cummins (1976)	38
Figure 3. Patterns of K-12 English Learners' Long-Term Achievement in NCEs on Standardized Tests Compared Across Six Program Models, Thomas and Collier (1997)	47

CHAPTER 1: INTRODUCTION

Context of the Problem

English learners (ELs) are the fastest-growing segment of the student population in the United States (U.S. Department of Education Institute for Educational Sciences, 2019).

Effectively educating this group of students is one of the biggest challenges schools face, particularly with current educational policies that require high standards and strong accountability for both schools and students (Genesee et al., 2005). Too often, the programs implemented to educate English learners have produced less than adequate results, as evidenced by the gaps in achievement that exist between ELs and general education students. There is an urgency to design innovative programs that address their specific needs in order to close the gaps and achieve educational parity with native English speakers. To meet this challenge, there has been a rapid proliferation of dual language immersion programs, designed to promote the development of students' linguistic and academic proficiency in two languages and to promote high levels of bilingualism.

Although the political climate in the United States has historically been one in which opposition to bilingual education has been prominent, the growth in the number of dual language immersion programs over the last two decades has been exponential. Bilingual education programs have traditionally been associated with the education of language-minority students and controversy has surrounded the issue of how best to educate them. Amidst demands for 'English-only' educational programs within a conservative political environment wrought with anti-immigrant sentiment, dual language immersion programs have flourished.

Along with the dramatic increase in the number of English learners and the urgent need to provide them with an appropriate education, a number of factors have contributed to the growth and popularity of dual language immersion programs. A considerable body of research indicates that for students enrolled in well-designed dual language immersion programs, the gaps between English learners and native English speakers on standardized measures of achievement can be closed completely, and they can even outperform their general education counterparts (Collier & Thomas, 2004, 2017; Lindholm-Leary, 2001; Lindholm-Leary & Genesee, 2014; Steele et al., 2017; Thomas & Collier, 1997, 2002; Umansky et al., 2016; Valentino & Reardon, 2015). Dual language immersion programs, by design, integrate both language-majority students and language-minority students in a balanced, inclusive educational environment that appeals to the American societal values of diversity and inclusion, and this has garnered greater community support for them (Torres-Guzmán et al., 2005; Valdés, 1997). The societal focus on the development of citizens who are capable of communicating in more than one language in an increasingly global economy has created a demand for an effective educational model that promotes bilingualism and biliteracy as a career-readiness skill. Dual language education has the potential to be transformative not only in terms of shifting the mindset from monolingualism to bilingualism in the United States, but also as a “...dynamic (model) of school reform for all students (in which) ...minority and majority language students together...prepare for a constantly changing world” (Thomas & Collier, 1997, p. 23).

In order to identify ways to ensure authentic transformation of the instructional environment that impacts educational attainment and achievement, it is necessary to study the decision-making factors in the design and implementation of dual language immersion programs (Calderón & Carreón, 2000; de Jong, 2002, 2014; Torres-Guzmán et al., 2005). The definition

of a ‘well-designed’ dual language immersion program varies, and there is a lack of research around specific implementation factors and their possible impact on student learning (Howard et al., 2018). One program-level variable is the language allocation plan, or the amount of time that students are exposed to each language within the educational program. The focus of this study was the analysis of the relationship between the language allocation plan and student achievement in English language arts and math. The purpose was to provide guidance to administrators and teachers around decisions that will ensure the development of effective, sustainable dual language immersion programs that have the potential to fulfill the ultimate goal of education for English learners: long-term educational parity with native English speakers in content-area subjects (Thomas & Collier, 1997).

Statement of the Problem and Theoretical Foundations

Bilingual education has been a controversial issue since the first bilingual program was established in Florida in the 1960s, and a great deal of research has focused on program effectiveness (de Jong, 2014). The debate is centered around the following question about best practices for the education of English learners: Is English immersion more effective or is bilingual education more effective in educating English learners and narrowing the achievement gap that exists between ELs and native English speakers (Collier & Thomas, 2004; de Jong, 2002; Thomas & Collier, 1997)?

Proponents of English immersion instruction believe that English must be learned quickly to avoid an academic gap in achievement between English learners and their native English-speaking peers. They cite the need for integration with mainstream students, bilingual program costs, a shortage of bilingual teachers, and the lack of bilingual resources as additional factors

that support placing English learners into English immersion programs rather than into bilingual programs (Umansky et al., 2016). On the contrary, proponents of bilingual programs point to research that indicates that students who develop literacy skills in their home language will develop English literacy skills more effectively (Cummins, 2000). They also argue that bilingual programs offer English learners full access to the curriculum while they are learning English, as well as providing them with the opportunity to maintain their native language. They further argue that effective bilingual programs can serve to focus on and build a student's asset, the potential to be bilingual and biliterate, rather than turning it into a deficit that impedes their performance on academic tasks provided in English without appropriate support (Gándara, 2013; Thomas & Collier, 1997).

Research on the benefits of bilingualism indicates that there are cognitive and social benefits, including but not limited to reduced discrimination, improved self-esteem, stronger cross-group relationships, multiple approaches to problem-solving, broader perspectives in approaching ecological and social science issues, better executive functioning, and lower incidences of Alzheimer's disease (Bialystok, 2011; Thomas & Collier, 1997; Umansky et al., 2016). In fact, according to Bialystok (2011), "...what is clear is the evidence: in controlled studies of cognitive performance across the lifespan, bilinguals consistently outperform their monolingual counterparts." (p. 229)

Demographic Shifts

The debate about bilingual education is an important one because the demographics of the United States have shifted dramatically over the last few decades, resulting in an exponential increase in the number of English learners enrolled in public schools. Between 1994 and 2017, the population of English learners more than doubled, from 2 million to 5 million students, and

this trend is expected to continue (U.S. Department of Education Institute for Educational Sciences, 2019). This represents an increase in English learners from 5.1% to 10 % of the total student population. One in five school-aged children in the United States speaks a language other than English at home and 44% were born in the United States (Camarota & Ziegler, 2014). By 2025, nearly one out of every four public school students will be an English learner (National Education Association [NEA], n.d.). According to Thomas and Collier (1997), “Schooling must...be made accessible, meaningful, and effective for all students, lest we create an undereducated, under-employed generation of young adults...” (p. 13).

Achievement Gap or Opportunity Gap

These demographic shifts support the belief among many educators and researchers that “...bridging the achievement gap is a national imperative” (Chubb & Loveless, 2002, p. 10). Educators must provide the rapidly-expanding population of English learners, the vast majority of whom speak Spanish, with access to instructional programs that meet their needs academically, socially, and culturally. School districts across the country are faced with challenges around programming and best practices to effectively educate this group of students, while the gap in academic achievement between English learners and native English speakers remains as persistent and pervasive now as it was when it was first reported over fifty years ago (Hanushek et al., 2019). One of the ways this gap is measured is by analyzing the scores of the National Assessment of Educational Progress (NAEP), which is administered every two years to students in all states in grades 4 and 8 in reading and math. According to the Office of English Language Acquisition (OELA) (2015), a forty-percentage-point difference in average between the scores of English learners and non-English learners has persisted from 2007 to 2017. While the national graduation rate of English learners improved by about 10% between 2010 and 2016,

there was still a gap: English learners graduated at an average rate of 66.9% and non-English learners graduated at an average rate of 84.1% in 2016 (OELA, 2018). It is imperative that policymakers and educators seek research-based ways to educate this large subgroup of students and narrow these achievement gaps.

Welner and Carter (2013) argue that framing these discrepancies in terms of ‘achievement gaps’ places an emphasis on the symptoms or the measured student outcomes, rather than the causes, which they describe as “...deficiencies to the foundational components of societies, schools, and communities that produce significant differences in educational - and ultimately socioeconomic – outcomes” (p. 3). They posit that such a mindset promotes narrow thinking about groups of students and leads to policies grounded in high-stakes testing without a commitment to providing the educational supports necessary to provide equitable learning opportunities for all groups of students. Instead, they suggest that the achievement gap can best be understood as a predictable result of systemic causes, and that framing these discrepancies in terms of ‘opportunity gaps’ will shift the focus from the problems to possible solutions. They state:

...schools must become part of a larger effort to address unequal opportunities...(and) must respond to students’ actual needs, build on their unique strengths, be culturally responsive, and provide opportunities necessary to give every student a fair chance at academic success. (p. 5)

The question remains: how can educational programs best meet the needs of English learners so that they are provided with equitable opportunities to reach the same levels of academic achievement as their general education counterparts? It has been a challenge for educators to develop and implement programs that adequately address the needs of an increasingly diverse student population. While opponents of bilingual education point to bilingualism itself and insufficient exposure to English as possible ‘causes’ of the achievement

gap, Baker and Wright (2017) also state that underachievement for this population of students is linked to impoverished economic, social, and educational environments - an opportunity gap that exists for English learners. They state that bilingual education, which capitalizes on the use of the home language, is the ‘cure’ for this underachievement (p. 194). Collier and Thomas (2017) indicate that to close the gap, English learners require, “...peer-equivalent, grade-level bilingual schooling, so that they are not falling behind in cognitive and academic development” (p. 208). Their research indicates that strong forms of bilingual education, such as dual language immersion programs, can close the achievement or opportunity gaps, and have more of an influence on student achievement than other background variables of disadvantaged students such as socioeconomic status.

Bilingual Program Models for English Learners

While policymakers and educators engage in the debate around English immersion education and bilingual education, proponents of bilingual education seek to understand which model is most effective. Baker and Wright (2017) identify eleven types of education programs for bilingual students that fall into three categories: monolingual, weak, and strong forms of bilingual education (see Table 1). They indicate that dual language immersion is a ‘strong form’ of bilingual education. To contribute to the debate over bilingual education models, research has been conducted to determine which program model is most impactful in narrowing academic achievement gaps (Collier & Thomas, 2004, 2017; Lindholm-Leary, 2001; Lindholm-Leary & Genesee, 2014; Steele et al., 2017; Thomas & Collier, 1997, 2002; Umansky et al., 2016; Valentino & Reardon, 2015). Thomas and Collier (1997; 2002) and Collier and Thomas (2004; 2017) conducted longitudinal research over a period of 32 years, in which they analyzed over 7.5 million student records from 36 school districts in 16 states. They found that English-only and

transitional bilingual programs closed about half of the achievement gap, while “...high quality, long-term bilingual programs (closed) all of the gap after 5 - 6 years of schooling through the students’ first and second languages (L1 and L2)” (p. 203). Other positive effects of dual language immersion programs include better attendance in school, greater interest in school, and higher levels of satisfaction and enjoyment in dual language classes (Collier & Thomas, 2017).

Table 1

Typology of Program Models for Bilingual Students

Monolingual Forms of Education			
Type of Program	Audience	Instruction	Goal
English Immersion	Language Minority	Majority Language	English Proficiency
English Immersion with ESL support	Language Minority	Majority Language	English Proficiency
Sheltered English	Language Minority	Majority Language	English Proficiency
Segregationist	Language Minority	Minority Language (forced, no choice)	Monolingualism
Weak Forms of Bilingual Education			
Type of Program	Audience	Instruction	Goal
Transitional Bilingual	Language Minority	Moves from Minority to Majority Language	Relative Monolingualism
Early Exit	Language Majority	Majority Language with Foreign Language Lessons	Limited Bilingualism
Mainstreaming with World Language Teaching	Language Majority	Majority Language with Foreign Language Lessons	Limited Bilingualism
Separatist	Language Minority	Minority Language (Out of Choice)	Limited Bilingualism
Strong Forms of Bilingual Education			
Type of Program	Audience	Instruction	Goal
Immersion	Language Majority	Bilingual with Initial Emphasis on Second Language	Bilingualism
Maintenance/Heritage Language	Language Minority	Bilingual with Emphasis on First Language	Bilingualism
Two Way/Dual Language	Mixed Language Majority and Minority	Minority and Majority	Bilingualism
Mainstream Bilingual	Language Majority	Two Majority Languages	Bilingualism

Note. adapted from Baker & Wright (2017), p. 199; García & Kleifgen (2018), pp. 32-3

In developing and implementing programs to meet the needs of English learners and achieve educational parity with native English speakers, research indicates that educators should focus on the types of programs that are strong forms of bilingual education, including dual language immersion programs, which they found to be the most successful model.

Two-Way Dual Language Immersion Programs

Two-way dual language immersion programs provide literacy and content instruction to a group of students that are language minority students and a group of language majority students, usually at a ratio of 1:1 in each class. Most dual language immersion programs in the United States are implemented with Spanish as the minority language and English as the majority language. Content area instruction is provided in both languages with the goal of developing high levels of bilingualism for all students in the program (de Jong, 2002). Additional goals include academic performance at or above grade level for both groups of students, and the development of positive cross-cultural attitudes and behaviors among them (Howard & Christian, 2002). According to Soltero (2016), the promise of dual language immersion lies in the possibility to narrow the achievement gap by providing an additive education program that is enriched and culturally responsive, in which both languages and cultures are valued, promoted, and developed. She states: "...carefully planned and well-implemented dual language programs can provide the type of enriched and culturally responsive education needed to narrow the achievement gap for ELs and other minority groups" (p. 7). Other benefits include: increased flexibility and creativity in thinking, higher self-esteem, and preservation of the minority language (Baker & Wright 2017; Guglielmi, 2008; Honigsfield, 2009; Rumbaut, Massey, & Bean, 2006, as cited in Babino, 2017).

There has been a rapid proliferation of dual language immersion programs in the United States (Steele, et. al., 2017). In 2000, there were approximately 260 dual language immersion programs in the U.S., and there are now over 2000 dual language immersion programs across the country, with more being implemented each year (Wilson, 2011), in states such as California, Georgia, Illinois, Minnesota, New Jersey, New Mexico, New York, Ohio, Oregon, and Texas. In 2012-13 a majority of states reported having at least one dual language immersion program (Boyle et al., 2015). Statewide dual language immersion program funding initiatives have been established in several states, including Delaware, Georgia, Indiana, Kentucky, Oregon, and Utah. This dramatic increase in the number of programs has led to concerns and questions about how to design and implement effective two-way dual language immersion programs, particularly with regard to the fundamental characteristics that must be in place for the programs to be successful (Howard & Christian, 2002). According the U.S. Department of Education, this has created a need for research-based information around program-level factors in order to guide states, districts, schools, and families so that students enrolled in dual language immersion programs can achieve academic success (Howard et al., 2018).

Implementation Factors

While studies have been conducted to determine the effects of dual language immersion programs on English learners' academic achievement, few studies have examined the effects of various implementation factors that may differ among dual language immersion programs. One such factor that varies greatly and is key to the success of a dual language immersion program is the language allocation plan (Babino, 2017; Warhol & Mayer, 2012). When school districts design dual language immersion programs, the amount of time dedicated to each language can vary on a daily basis, or on a weekly basis. One of the most common ratios for a language

allocation plan is 50/50; that is, 50% of instruction is in English and 50% of instruction is in the partner language (Baker & Wright, 2017; Freeman, Freeman, & Mercuri, 2018; Thomas & Collier, 1997). Delaware, Indiana, Kentucky and Utah have incorporated this model into their statewide dual language education initiative plans (Boyle et al., 2015). Even this ratio varies among school districts, with some programs indicating a 50/50 weekly language allocation plan in which students are exposed to each language on a week-to-week basis, and others indicating a 50/50 daily language allocation plan in which students are exposed to both languages each day. The language allocation plan must be clearly-defined and correctly implemented in order for the program to be successful (Warhol & Mayer, 2012).

Purpose of the Study

The purpose of the current quantitative study was to examine the relationship between dual language immersion program design and student outcomes in ELA and math in grades four through six, as measured by a state-mandated standardized assessment. The models of interest were two-way dual language immersion programs with a 50/50 daily language allocation plan and two-way dual language immersion programs with a 50/50 weekly language allocation plan. The study also examined the outcomes of each type dual language immersion model as compared to the general population of students within the respective district, and as measured by a state standardized assessment. A key consideration was the contextualization of dual language immersion programs and their outcomes in order to inform programmatic decisions.

Administrators, program directors, and supervisors need practical guidance as they design their dual language immersion programs and there is a lack of research around the impact of the language allocation plan on student outcomes (Howard et al., 2018). While program

effectiveness research indicates that dual language immersion programs have a positive impact on student achievement, there is a growing need to examine what influence various program-level contextual factors, such as the language allocation plan, may have on student outcomes (Genesee et al., 2005). This study fills a gap in the literature in terms of studying the language allocation plans of dual language immersion programs as a program-level factor, in order to provide practical guidance to policymakers and administrators as they design, implement, and monitor dual language immersion programs (Howard et al., 2018).

Significance of the Study

According to de Jong (2002), research-based program designs are needed to support educators in their efforts to provide access to quality education for bilingual students (p. 80). As the popularity of dual language immersion programs increases in the United States, attention must be paid to specific implementation factors when developing and implementing new programs, or when evaluating existing programs, so that the desired positive student outcomes are facilitated. Administrators must appropriately allocate time in the schedule, as well as available resources for each language of instruction. In order to do so effectively and with fidelity to the model, there is a need for research around implementation factors of successful dual language immersion programs upon which to base program design decisions.

Students in dual language immersion programs have the potential to develop bilingualism and biliteracy, high levels of academic achievement, and cross-cultural awareness. Dual language immersion is a very complicated and challenging model of education to implement because it involves the provision of instruction in two languages to two integrated groups of students (Howard & Christian, 2002, p. 8). When implemented poorly, especially with regard to

language allocation policies, dual language immersion programs can be ineffective, can lead to misconceptions about the model, and may not experience the longevity needed to produce positive student outcomes (Torres-Guzmán et al., 2005; Warhol & Mayer, 2012). Careful attention must be paid to design and implementation issues, and research around effective program-level implementation factors such as program structure must be considered for the continual program-planning, implementation, and evaluation of the model (Calderón & Carreón, 2000; de Jong, 2014; Howard et al., 2018).

Research Questions

To investigate the achievement in ELA and math of students in grades four through six in two dual language immersion programs, with program enrollment and the language allocation plan as the variables of interest, the following research questions were formulated:

Research Question 1: What is the relationship between student participation in a two-way dual language immersion program with a 50/50 weekly language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Englewood?

Research Question 2: What is the relationship between student participation in a two-way dual language immersion program with a 50/50 daily language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Woodstock?

Research Question 3: Does the relationship between the dual language program model and student achievement vary across districts?

Research Design

This quantitative study compared student achievement results in the academic year 2017-18 from two suburban districts: one in Englewood, New Jersey that implemented a 50-50 weekly language allocation plan within their dual language immersion program, and one in Woodstock, Illinois that implemented a 50-50 daily language allocation plan within their dual language immersion program. Both programs were two-way immersion programs, with approximately half of the students consisting of English learners and half of the students consisting of native English speakers when they entered the program in kindergarten. The specific districts were chosen in order to control for a number of variables, including stability by way of length of time in existence of the two-way dual language immersion programs, the percentage of English learners in each district, the administration of common state assessments, and the enrollment process to control for student mobility effects.

To measure student achievement, the results from the 2018 PARCC assessments were analyzed, as that was the last year in which New Jersey and Illinois administered a common standardized assessment. Only 50/50 program models were considered, as that is the most common program model and the one that has been studied extensively in seminal longitudinal research (Collier & Thomas, 2004, 2017; Thomas & Collier, 1997, 2002). The grade levels were chosen based on knowledge of second language acquisition theory (see Chapter II) as well as longitudinal research findings which indicate that it takes an average of six years for students enrolled in quality dual language immersion programs since kindergarten, with at least half of their instruction in their native language, to reach grade-level achievement in their second language (Collier & Thomas, 2017).

The data were collected from administrators in the respective school districts who had access to the Student Information System, after proper permissions from each superintendent were granted. Student performance on the PARCC ELA and Math tests for grades four through six were compared to see if there was a significant difference in achievement between students enrolled in a dual language immersion program who were exposed to a 50/50 weekly language allocation plan in Englewood, as opposed to exposure to a 50/50 daily language allocation plan in Woodstock. Achievement results between dual language immersion students and their general education peers within each district were analyzed using an Independent Samples *t* Test to determine the influence of program enrollment on student achievement. Linear multiple regression models were run to control for gender, race, socioeconomic status, and English learner status. The results of the regression models were compared to analyze the differences in student outcomes between the two districts. The methodology and design of the study will be discussed in more detail in Chapter III.

Limitations and Assumptions

This study was limited to student-level data analysis for the academic year 2017-18 in two suburban districts, Englewood, NJ and Woodstock, IL. The results may not be generalizable to student populations in smaller or larger districts, in states in other geographic regions of the United States, or to other academic years. The two-way dual language immersion programs in this study both implemented a 50/50 program model for the percentage of instructional time in each language. Although some programs employ a 90/10 or an 80/20 model for instruction, in which 80-90% of instruction is in the minority language, this is typically utilized in early grades for the purpose of developing a strong foundation in literacy in a one-way program where native

English speakers are not included. Since the focus of the study was on two-way programs in grades four through six, only 50/50 instructional models were included, and the 90/10 program that existed in Woodstock was not included.

The two-way dual language immersion programs in this study included English and Spanish-speakers only, and dual language immersion programs for other languages were not included. One-way dual language immersion programs, such as a program strand that existed in Englewood, were also not included in the study. Special education students were not included in the study. Students were selected for the dual language immersion program in each district through an application process. Students were not selected randomly for the study. They had to be continuously enrolled in the program for at least five years (since kindergarten). The effects on achievement of students who were in the program but did not fall into that category were not analyzed.

The current study assumed that the PARCC assessment was implemented in each district with fidelity, according to the state testing requirements as outlined by New Jersey and Illinois in 2018. It was further assumed that the PARCC assessment was a valid and reliable instrument for assessing reading and math ability of students in grades four through six, and could be utilized as a measure of student achievement to compare the impact of various program models in the area of dual language education. It was also assumed that the researcher was provided with PARCC data and demographic data that were entered into the respective Student Information System and subsequently reported with accuracy, and that participation or non-participation in the two-way dual language immersion program was also accurately coded in the respective systems.

Definition of Terms

In the field of bilingual education, there are many terms whose meaning and use not only vary but also can be confusing to the reader, as many are often used interchangeably. There are also a number of program models for bilingual education. It is necessary to clarify the definitions of important terms used within the study that are associated with English learners and the various bilingual education program models implemented to educate them.

Achievement Gap (or Gap)

An achievement gap “...occurs when an outcome—for example, average test score or level of educational attainment—is higher for one group than for another group, and the difference between the two groups’ outcomes is statistically significant” (U.S. Department of Education Institute for Educational Sciences, 2019). It is often measured by grades, standardized-test scores, patterns of course selection, dropout rates, and college completion rates (Ansell, 2011).

Bilingual Education Program

A bilingual education program is a full-time program of instruction in academic content in two languages: a child’s native language (L1) and second language (L2).

Bilinguals

According to Grosjean (2012), bilinguals include “...those who use two or more languages (or dialects) in their everyday lives” (p. 4). This definition puts the emphasis on the use of languages rather than fluency, includes dialects as well as languages, and can include more than two languages.

Dual Language Education

Dual language education is “...a long-term additive bilingual and cross-cultural program model that consistently uses two languages for content instruction, learning, and communication, where students develop high levels of bilingual, biliterate, academic, and cross-cultural competencies” (Soltero, 2016).

Emergent Bilinguals

An alternate term for English Language Learners, or Limited English Proficient students, that emphasizes bilingualism as a positive resource and an advantage with the potential to be developed along a continuum through a bilingual educational program, rather than as a deficit such as is associated with the traditional labels that have been placed on these students (García, 2009).

English as a Second Language (ESL)

A program designed to teach English learners language skills in 4 domains: listening, speaking, reading, and writing. Typically, instruction is provided in English with little or no use of the native language in instruction by a teacher who has earned a special certification to teach ESL.

English Immersion or Monolingual Education Program

English immersion is a program in which English learners are placed in an all-English setting in general education classes with native English-speaking students and are not provided with native language support or development (Umansky et al., 2016).

English Language Learner (ELL or EL)

An English Language Learner (ELL) is a student whose native language is other than English. Typically, these students are not able to communicate fluently or learn effectively in

English and require specialized or modified programs to educate them in their English language development as well as their content-area knowledge. According to the Great Schools Partnership's Glossary of Education Reform (n.d.), a number of terms are used to refer to *English Language Learners*, including *English learner (EL)*, *limited English proficient (LEP) student*, *non-native English speaker*, *language-minority student*, and *either bilingual student or emerging bilingual student*. The term English learner (EL) is used throughout this study to refer to students whose native language is not English.

50/50 Daily Language Allocation Plan

A 50/50 daily language allocation plan is a dual language immersion program model in which the language of instruction consists of 50% English and 50% the partner language. The instructional day is divided so that students receive instruction in both languages each day. The district in Woodstock, IL utilized this model in 2017-18.

50/50 Weekly Language Allocation Plan

A 50/50 weekly language allocation plan is a dual language immersion program model in which the language of instruction consists of 50% English and 50% the partner language. The language of instruction alternates from week to week (i.e. 'English Week' and 'Spanish Week'). The district in Englewood, NJ utilized this model in 2017-18.

Heritage Language (L1)

The heritage language (L1) is the student's first language or L1, and is usually the language of the native country where someone is born.

High-Stakes Testing

A high-stakes test is any test that is used to make important decisions about students, educators, schools, or districts. Typically, they are mandated and used for state and federal

accountability purposes. At the student level, they can be used for program placement, grade-level promotion, or graduation. At the district or state level, they can be used to determine funding eligibility. The use of high-stakes testing is highly controversial, especially in terms of equity for subgroups of students such as English learners, who historically have underperformed on such tests.

Language-Minority Student

A language minority student does not speak the same language as the majority of the population in a community or country. In the United States, students for whom English is not their first language may be referred to as language minority students.

Language-Majority Student

A language majority student speaks the same language as the majority of the population in a community or country. In the United States, students for whom English is their first language may be referred to as language majority students.

One-Way Dual Language Immersion Programs

One-way dual language immersion is a program in which one language group is being educated in two languages. For example, all students enrolled are English learners whose native language is Spanish, and the goal is for them to be bilingual and biliterate in English and in Spanish (Collier & Thomas, 2004). This study did not include one-way dual language immersion programs.

Opportunity Gap

An opportunity gap “...refers to the ways in which race, ethnicity, socioeconomic status, English proficiency, community wealth, familial situations, or other factors contribute to or perpetuate lower educational aspirations, achievement, and attainment for certain groups of

students” (Glossary of Education Reform). These are generally factors that are external to the student.

Partnership for Assessment of Readiness for College and Careers (PARCC)

The Partnership for Assessment of Readiness for College and Careers (PARCC) is a consortium of states that collaboratively developed a common set of assessments to measure student achievement and preparedness for college and careers. In the academic year 2017-18, both New Jersey and Illinois used this standardized assessment to measure English language arts (ELA) and mathematics achievement.

Sequential Bilingual Learners

Learners who acquire another language after they have learned their first language, typically after the age of three.

Simultaneous Bilingual Learners

Learners who have been exposed to two languages since before age 3 and develop fluency in both languages at the same time.

Student Subgroup

The term student subgroup, or subgroup, in education refers to a group of students who share similar characteristics, such as gender, race, socioeconomic status, language ability, or special needs. Federal and state legislation typically defines and collects data for particular subgroups that are employed to track their educational performance and attainment. English learners are typically identified as a subgroup of a district’s general population.

Transitional Bilingual Program

A transitional bilingual program is an educational program in which a student’s native language is used in instruction as a bridge to English language acquisition and to make content

area instruction comprehensible. The goal of this program is to transition students to English as quickly as possible, without an emphasis on maintaining their native language (Umansky et al., 2016). Most bilingual programs in the United States are transitional programs.

Two-Way Dual Language Immersion Programs

Two-way dual language immersion is a type of dual language education program in which both English learners (language-minority students) and non-English learners (language-majority students) are enrolled and the goal is for them to become bilingual and biliterate in both languages (Collier & Thomas, 2004, Umansky et al., 2016).

In a 50/50 program model, half of the student population consists of native English speakers and half of the student population consists of English learners. Researchers have used a minimum balance of 70/30 as a requirement for a study to be considered a two-way dual language immersion program (Collier & Thomas, 2004). This study focused on 50/50 two-way dual language immersion programs.

Organization of the Study

The current study is organized into five chapters, according to the guidelines provided by Seton Hall University. The present chapter introduced the research topic by providing background information, contextualizing the problem as it relates to previous research, and outlining the need for research around implementation factors of successful dual language immersion programs upon which to base program design decisions. It also delineated the research questions that were addressed by the study, briefly outlined the research design and its limitations, and clarified important terms that are discussed throughout the study.

Chapter II includes a literature review that outlines the historical background of bilingual education and instructional issues related to educating the growing number of English learners, as well as the various models that have been most effective in educating them. It also focuses on the current research around the effects of dual language immersion on student achievement and the need to study implementation factors in designing effective programs.

Chapter III explains the methodology of the study, including a description of the design of the study, as well as the methods and procedures used to collect and analyze the data.

Chapter IV addresses the research questions by analyzing the results of the study.

Chapter V summarizes the statistical findings, interprets their results, and discusses practical applications for the design and implementation of dual language immersion programs by district administrators and teachers. Suggestions for future research to further investigate this topic are also included.

CHAPTER II - REVIEW OF THE LITERATURE

Introduction

Chapter II reviews the existing literature on dual language immersion and the impact of this type of bilingual education program on student achievement. It begins with outlining the impact of legislation and policies around funding and accountability measures on bilingual programming. Then, the various program models that have been implemented in educating English learners are discussed, with a focus on language orientations as a lens through which to view varying programmatic decisions. Next, the review discusses second language acquisition theories that form the basis of dual language immersion program models, as well as the various dual language program types and models. The review presents the economic, cognitive, and academic rationales for dual language immersion programs, with a focus on the results of a number of studies that have been conducted around the cognitive benefits of bilingualism and the effects of dual language immersion on academic achievement. The chapter concludes with the need to study program-level implementation factors as a gap in the research.

Historical Background of Bilingual Education

English learners are the fastest-growing and lowest-performing subgroup in the United States (U.S. Department of Education Institute for Educational Sciences, 2020). The most appropriate model to educate this group of students has been debated since before the *Title VII Bilingual Education Act 1968* was passed. The controversy has centered around whether these students acquire English faster in an English immersion setting, or whether bilingual education is more effective in terms of increasing student achievement. This has posed two crucial issues for

both policymakers and researchers: whether bilingual education has a positive impact on language-minority students' academic performance, and, if so, which types of bilingual education programs result in the largest improvements (Marian et al., 2013).

Over the past 50 years, bilingual education has been influenced by state and federal legislation, with current policies largely based on standardization and funding mechanisms that emphasize accountability for English learners' progress through high-stakes testing and promote English immersion or transitional bilingual programming (Menken, 2008). At the same time, a movement grounded in research on the benefits of bilingualism and biliteracy, as well as the need for the development of skill sets required by economic globalization, has led to the rapid proliferation of dual language immersion programs across the United States. This has resulted in a great deal of variability in programming for English learners across states and school districts that range from bilingual education options to a complete ban on bilingual education (Goldenberg, 2008, & Rolstad et al., 2005, as cited in Valentino & Reardon, 2015).

The history of bilingual education in the United States is both complex and controversial, framing an "...effectiveness debate that has plagued bilingual education for many decades" (August & Hakuta, 1997, as cited on de Jong, 2014). The ways in which English learners are educated have been influenced and impacted by federal and state policies that have shifted between a monolingual perspective in which the native language is viewed as a deficit to be overcome, and a multilingual perspective that values bilingualism as an asset to be developed (Beeman & Urow, 2013, Fitts, 2006). Menken (2008) stated: "Like a pendulum swinging between opposing ends, U.S. schooling has historically approached linguistic diversity with alternating restriction and tolerance" (p. 13). In order to understand the current state of bilingual education and the need for well-designed, research-based programs for the education of English

learners, it is necessary to understand the historical context and political movements that have influenced how this group of students has been educated in the United States.

Early to mid-20th Century

As a country of immigrants, the United States has always been characterized by language diversity and, until World War I, this linguistic diversity was often accepted (Wiley & Wright, 2004). While English monolingual education was dominant in the cities at the turn of the century, there were some examples of bilingual education in very specific, isolated areas. Early in the 20th century, factors such as increased immigration patterns, the subsequent movement for assimilation and Americanization, and U.S. entry into World War I led to more restrictive policies on bilingual education. In 1906, the *Nationality Act* in Texas established English as the only language to be taught in schools and made the speaking of English a requirement for naturalization (Freeman, Freeman, & Mercuri, 2018; Nieto, 2009). By 1923, English was declared as the sole language of instruction in 34 states.

The political pendulum shifted in the opposite direction later in the 20th century, after the Russian launch of Sputnik. Policymakers began to rethink the need for foreign language instruction, and in 1958 the *National Defense Education Act* promoted the teaching of foreign languages in public schools. In the 1960s, the Civil Rights movement and the call for equal opportunity for all people led to the *Civil Rights Act* of 1964, prohibiting discrimination on the basis of race, color, or national origin. This contributed to the discussion of bilingual education as a civil right (Ruíz, 1984). The spark for the restoration of bilingual education came with the wave of Cuban immigrants into the U.S., and the formation of Coral Way Elementary School in Florida in 1963 as the first modern dual language school (Baker & Wright, 2017). Bilingual programs were also established in Texas, New Mexico, California, and Arizona in the 1960s to

serve the educational needs of Mexican-Americans, and there was a call for legislation regulating bilingual education.

Title VII: The Bilingual Education Act and Two Legal Precedents

The *Bilingual Education Act 1968* was an amendment, also known as *Title VII*, to the *Elementary and Secondary Education Act (ESEA) 1965*. It was the first federal legislation to address the needs of language-minority groups. It authorized the use of federal funds to educate English learners by developing and implementing language instruction programs to accommodate their needs, but it did not provide specific guidance on program types or models, and the funds were limited to use for students from low-income families. Although this limit was lifted with the reauthorization of *Title VII* in 1974, it “...had the unfortunate side effect of linking bilingualism to poverty and remediation.” (Crawford, 1991, as cited in Fitts, 2006)

The *Bilingual Education Act 1968* did not require states to participate in the establishment of educational programs to meet the needs of English learners, but the Supreme Court’s landmark decision in *Lau v. Nichols 1974* made it very difficult for states to continue the prevailing practice of English immersion without additional services. The Supreme Court upheld that the San Francisco School District violated the *Equal Protection Clause* of the 14th Amendment and *Title VI* of the *Civil Rights Act 1964* when it failed to provide approximately 800 Chinese students access to a meaningful education by not providing them with a program that met their linguistic needs (Baker & Wright, 2017; Nieto, 2009). According to the Court, “...there is no equality of treatment merely by providing students with the same facilities, textbooks, teachers, and curriculum; for students who do not understand English are effectively foreclosed from any meaningful education...” (*Lau v. Nichols*, 1974, p. 566). The type of instructional program required to meet their needs was not specified.

After this ruling, the Office of Civil Rights was tasked to create and enforce a set of guidelines for school districts, called the Lau Remedies, that emphasized the establishment of English as a Second Language (ESL) programs and bilingual education programs. Most bilingual programs that were implemented were transitional in nature, employing a monolingual perspective and promoting subtractive bilingualism, in which the native language is used as a bridge to English and is then abruptly removed from the educational program once students are determined to be proficient in English (Beeman & Urow, 2013; Fitts, 2006).

The federal court decision in *Castañeda v. Pickard 1981*, “...upheld the *Lau* precedent that schools must take ‘appropriate action’ to educate language-minoritized students and that such action must be based on a three-part assessment for English learner education programs. In particular, they must be based on sound educational theory, produce results, and provide adequate resources, including qualified teachers and appropriate materials, equipment, and facilities (García & Kleifgen, 2018). The Lau Remedies were replaced with these federal guidelines that still remain in effect, but there was still no particular mandate regarding any specific program that would fulfill these requirements.

State and Federal Legislation Promoting English Immersion

In the 1980s, an ‘English Only’ movement was gaining political support in the country, and the emphasis shifted to English fluency as the primary goal of the education program for ‘Limited English Proficient’ students. The 1984 and 1988 reauthorizations of *Title VII* incentivized programs that emphasized English instruction, while also imposing limits on the number of years permitted for participation in a transitional bilingual program. The pendulum of support for bilingual education in some states swung very far to the conservative right in 1998 when *Proposition 227*, also known as the ‘English for the Children’ initiative in California,

became a state law prohibiting bilingual education. English learners were allowed one year of ESL instruction and were then required to be mainstreamed. A similar proposition passed in Arizona in 2000 and in Massachusetts in 2002, but did not pass in Colorado (García & Kleifgen, 2018).

According to García and Kleifgen (2018), "...a space for bilingual education was found during this time in the implementation of 'dual-language' programs..." (p. 39). Notwithstanding the political shifts that were evident within each reauthorization of the *Bilingual Education Act 1968*, dual language immersion programs grew slowly but steadily in the 1970s and 1980s. With the 1994 reauthorization of *Title VII*, there was greater flexibility and availability of federal funding which increased attention toward bilingual education programs, and dual language immersion programs grew more rapidly (García & Kleifgen, 2018; Torres-Guzmán et al., 2005).

With the reauthorization of the *Elementary and Secondary Education Act (ESEA) 2002*, known as the *No Child Left Behind (NCLB) Act*, federal policy also moved conservatively away from bilingual education, even removing the word 'bilingual' completely from federal legislation. Emphasis was placed on narrowing the achievement gaps of limited English proficient (LEP) students through testing and English immersion (García & Kleifgen, 2018). This 'subgroup' of students was required to make 'adequate yearly progress (AYP)' based on annual assessments under *Language Instruction for Limited English Proficient and Immigrant Students*, also known as *Title III*, which replaced the *Bilingual Education Act*. *Title III* established evaluation procedures to identify English learners in need of services as well as accountability for their academic proficiency and English proficiency. According to Baker and Wright (2017):

NCLB's use of the term 'limited English proficient' (LEP) brought back a deficit view of students, focusing on what they lack (English) rather than who they are

(emergent bilinguals) (and) what they are actively doing (learning English and other languages). (p. 181)

The focus on accountability through high-stakes English-only testing placed pressure on school districts to focus on test-driven content and mastery of English in order to meet AYP requirements. While there was not specifically a federal ban on bilingual education imposed by this legislation, there was considerably less emphasis on bilingual programming and more emphasis on monolingualism due to accountability requirements (Cervantes-Soon et al., 2017).

Standardization and High-Stakes Testing

According to Menken (2008), because the United States does not have an official language planning policy, most policy decisions that have been made regarding English learners have been driven by a national emphasis on standardized testing and the high-stakes consequences attached to them. Since high-stakes tests shape the content that is taught in school, including how and in what language content is taught, it is “...an extremely significant language policy issue, because high-stakes tests become *de facto* language policy in education when schools respond to the pressures they create” (p. 9). Gándara (2013) believes that such policies “...are squandering an asset – students who have potential to be bilingual and biliterate – and turning it into a deficit” (p. 157).

The emphasis on standardization and high-stakes testing in the United States gained momentum in 1983 with the release of *A Nation at Risk* by the National Commission on Excellence in Education, which claimed that “...the educational foundations of our society are presently being eroded by a rising tide of mediocrity” (National Commission, 1983, p. 112). According to the report, the United States was losing its competitive edge, and to ensure success in the information age, the level of expected learning needed to be raised through the development of rigorous and measurable standards (Horn, 2011, p. 30). For the past thirty-five

years policymakers have “...embraced the notion of standardization as the panacea to all of our educational ills” (Rubin & Kazanjian, 2011, p. 102), with the intention of reforming education by narrowing student achievement gaps, improving teacher effectiveness, and ensuring college and career readiness for all students (Tienken, 2017, p. 3).

In 2009, the *Race to the Top* grant helped to propel the national movement toward the adoption of common standards for college and career readiness by the states as well as common standardized assessments, such as the PARCC assessment, to measure mastery of the English Language Arts and math standards. The *Every Student Succeeds Act (ESSA) 2015*, a reauthorization of the *Elementary and Secondary Education Act 1968*, required states to develop education plans that for the first time included accountability measures for the progress of English learners in both language development and academic content in order to receive federal funding. While there was still an emphasis on addressing the needs of English learners under *Title III* through the requirement of ‘effective programming’ for English learners aligned to the guidelines set forth in *Castañeda v. Pickard*, there was no requirement regarding which specific educational program types or models to implement for this population. Legislation also continued to require states to implement high-stakes testing as a measure of progress, the results of which formed the basis of federal and state funding formulas.

Proponents of the nationwide standardization of curricula and the implementation of high-stakes testing claim that such policies increase equity by standardizing expectations and providing interventions to improve educational opportunities for disadvantaged students such as English learners. Tienken (2017) calls into question what he refers to as, the “subtle bigotry of standardized expectations” (p. 20). According to Tienken and Zhao (2013), these policy initiatives have been counterproductive. Opponents of this movement point out that monolingual

standards and standardized assessments do not consider the needs of ‘emergent bilinguals’ and the “...dynamic interplay of languages in their repertoires and daily practices” (Kibler, Valdés, & Walqui, 2014, p. 437). They point out that standardized assessments are typically not provided in languages other than English, further discouraging bilingual education. They warn that a lack of emphasis on meeting the needs of individual students according to their language proficiency could lead to increased drop-out rates among English learners, which has historically remained drastically lower than the national graduation rate for general education students. “What research has been able to show, thus far, is that high-stakes testing is not improving the quality of teaching and learning in schools, and in fact may be having the complete opposite effect, especially for poor, minority, and ELL students” (Wiley & Wright. 2004, p. 161).

Table 2

<i>Percent of Students Who Met or Exceeded Standards on the 2017 PARCC Test</i>						
	ELA			Math		
	Gr 4	Gr 5	Gr 6	Gr 4	Gr 5	Gr 6
New Jersey						
English Learners	11	12	7	12	12	10
All Students	56	59	53	47	46	44
Illinois	Gr 4	Gr 5	Gr 6	Gr 4	Gr 5	Gr 6
English Learners	6	2	2	6	4	3
All Students	37	37	35	31	30	28

Source: Sugarman & Geary (2018)

Although disadvantaged students continue to drastically underperform on standardized measures of achievement, school districts have narrowed the curriculum to improve test scores, with a focus on the tested areas of English Language Arts (ELA) and math, providing students with fewer opportunities to receive diverse educational experiences tailored to their needs (Tienken & Zhao, 2014). With the pressure of accountability thorough high-stakes testing that

has been placed on school districts, especially those that serve disadvantaged students, the educational opportunity gaps have widened (see Table 2). In 2017, only 2 - 6% of English learners in grades four through six met or exceeded standards on the PARCC 2017 ELA and Math assessments in Illinois, demonstrating a gap of up to 35% when comparing their achievement to all students in the state in those grades. Approximately 7 – 12% of English learners met or exceeded standards on the same assessments in grades four through six in New Jersey, revealing a gap of up to 47% when compared to all students in the state in the same grades.

The need for programs that improve the quality of teaching and learning and effectively educate English learners and narrow these gaps remains evident, and the guidelines set forth following *Castañeda v. Pickard 1981* require states to provide programs to English learners based on sound educational theory and positive results. As administrators seek to develop successful programs, they must look to research for guidance. Longitudinal research has demonstrated that long-term, well-developed dual language immersion programs may contribute to cognitive advantages for bilinguals, which can impact student academic achievement and close the opportunity gaps (Collier & Thomas, 2004, 2017; Thomas & Collier, 1997, 2002). In advocating for the proliferation of this program model on the basis of the benefits for English learners, Steele et al., (2017) suggested that policymakers seeking “path-breaking 21st-century reform” should expand access to language immersion from early childhood, and posited that this movement “...could become the next frontier in the struggle for educational opportunity in 21st-century America” (p. 303-4S).

Instructional Programs for English Learners

The controversial history of language policy and planning goals has led to the implementation of different types of programs for English learners, with an emphasis on monolingualism or bilingualism, depending on the language orientation that has driven a particular policy or socio-political movement. Ruíz (1984) defined *orientation* as "...a complex of dispositions toward language and its role, and toward languages and their role in society...orientations determine what is thinkable about language in society" (p. 16). He outlined three lenses with which to view language orientation in language planning and policy: language-as-problem, language-as-right, and language-as-resource.

Historically, linguistic differences have been associated with disadvantaged populations and have been viewed as problematic to their academic development and cultural assimilation. According to Baker and Wright (2017), early reviews of the research on bilingual education by Baker and de Kanter (1983) and by Willig (1985) were criticized as being flawed in their approach to analysis, and an early longitudinal study by J.D. Ramírez (1992) was criticized as being flawed in its design (i.e. the lack of inclusion of 'strong' forms of bilingual education programs, such as dual language education). Still, they were emphasized by opponents of bilingual education in the argument for English immersion and transitional bilingual programs (pp. 246-248). Ruíz (1984) posited that transitional bilingual education models employed a language-as-problem orientation with a deficit view of linguistic and cultural differences, treating such differences as a problem to be remediated. Federal funding mechanisms like *No Child Left Behind* 2002, and the *Every Student Succeeds Act* 2015, with their incorporation of high-stakes accountability systems that emphasized rapid English acquisition within a constricted

curriculum requiring test-based instruction, have all employed the language-as-problem orientation (Zúñiga, 2016).

Various federal policies resulted from “...a strong movement...(advocating) consideration of language as a basic human right” (Ruíz, 1984, p. 22). Federal decisions such as *Lau v. Nichols 1974* and *Castañeda v. Pickard 1981* provided protections for minority language groups. Non-specificity of guidelines, inconsistency of practices, and non-compliance through legal manipulation may have conflicted with the notion of language-as-right. Ruíz (1984) offered a suggested orientation, language-as-resource, as a way to address language planning needs (p. 25). He stated: “Language planning efforts which start with the assumption that language is a resource to be managed, developed and conserved would tend to regard language-minority communities as important sources of expertise” (p. 28). With an emphasis on bilingualism as an asset to be developed, dual language immersion programs are based on a language-as-resource orientation toward language (Freeman, Freeman, & Mercuri, 2018; Gómez, Freeman, & Freeman, 2005).

Another layer of the bilingual programming debate focuses on concerns about the traditionally dichotomous approach towards the schooling of English learners, placing them into bilingual classes or English-only classes. There is a concern even among bilingual education advocates that placing students into a bilingual and/or ESL program without access to any mainstream classes is a form of segregation through tracking that condemns them to what Valdés (1998) called an ESL ‘ghetto’ (as cited in Faltis & Arias, 2008). The alternate option in which students are placed into mainstream classes upon entry into school has also resulted in marginalization that has led to unequal access to instruction and a lowering of expectations for this group of students. Dual language immersion programs, by design, address these equity

issues through an integrated approach (de Jong & Howard, 2009). Grounded in second language acquisition theory, dual language immersion programs employ an additive view of bilingualism, allowing students to add English to their linguistic repertoire, while maintaining and developing skills in their native language (Lambert, 1974, as cited in Fitts, 2006). They also provide enriched education for all students and avoid the stigma of segregation and remediation historically associated with other forms of bilingual education (de Jong & Howard, 2009). The integration of two different student groups provides support for all three goals dual language immersion programs as students work together through two languages with the opportunity to be both language learners and language models for their peers, encouraging acceptance and cultural pluralism (Lindholm-Leary, 2001).

Second Language Acquisition Theory

Researchers over the last 40 years have developed frameworks for understanding the developmental processes involved learning a second language that are related to bilingualism and academic achievement (García & Kleifgen, 2018). Dual language immersion is a research-based model for educating language learners, grounded in these frameworks.

Jim Cummins proposed the Developmental Interdependence Hypothesis which states that the development of the native language provides a strong base for the development of a second language, and the more developed one language is, the more potential for transfer into a second language (Cummins, 1981; Thomas & Collier, 2002, as cited in Babino, 2017). This potential for transfer is predicated upon another of his theoretical constructs, which posits that both languages share a common underlying proficiency controlled by a central processing system that operates both languages. This is known as the Common Underlying Proficiency (CUP) model of

bilingualism, or the Dual Iceberg Theory (see Figure 2). To illustrate this hypothesis, Cummins employed an analogy wherein two icebergs may seem separated at the surface in the same way that the production of two languages by a bilingual learner may seem visibly different. Beneath the surface the icebergs are fused, just as the bilingual learner has an underlying central processing system that operates both languages (Baker & Wright, pp. 158-9; Freeman, Freeman, & Mercuri, 2018). According to this theory, bilingual students have a wide range of linguistic resources to draw upon that comes from one integrated source of thought when they engage in academic work. The level of development of their native language influences their ability to perform cognitive tasks in the second language (Baker & Wright, 2017, pp. 159, 168).

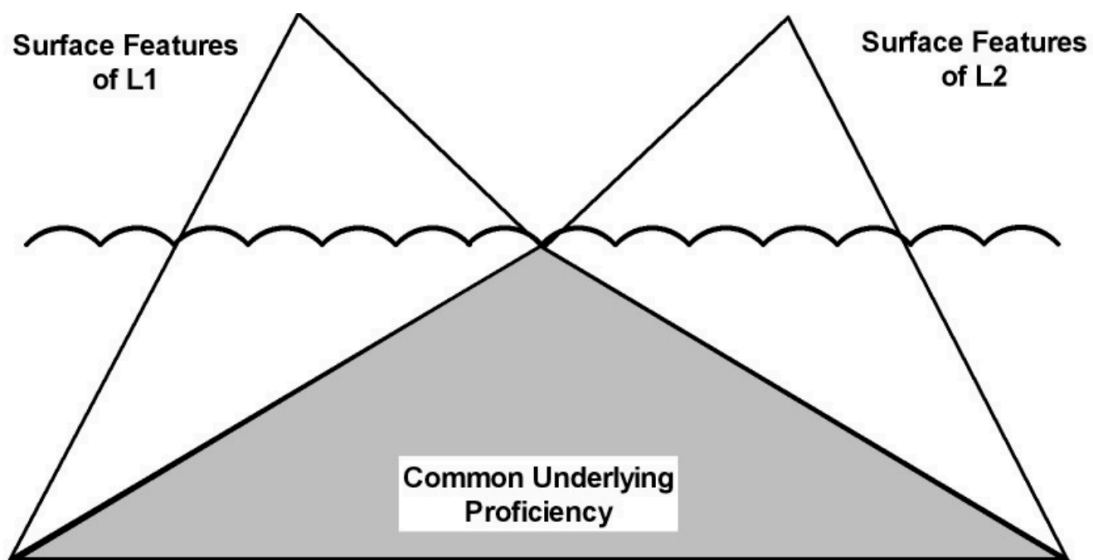


Figure 1. Common Underlying Proficiency Theory, Adapted from Cummins (1981) (Wink, J. n.d.)

The Developmental Interdependence Hypothesis suggests that the level of competence that a child achieves in his or her first language partially determines the level of competence that can be achieved in the second language (Cummins 2000a, as cited in Baker & Wright, 2017, pp.

160-1). It takes about two to three years for children to acquire everyday language and develop conversational fluency, which is referred to as *basic interpersonal communicative skills* (BICS), but it takes five to seven years to develop the more complex language abilities needed to be successful with academic curricula, which is referred to as *cognitive academic language proficiency* (CALP) (Cummins, 1979, as cited in Baker & Wright, 2017).

Baker and Wright (2017) describe Cummins' Thresholds Theory (1976), which suggests that cognitive advantages of bilingualism can be explained by two thresholds, or levels of language competence. The first threshold is the one at which a student avoids negative consequences of bilingualism and the second is the one at which a student can experience possible benefits of bilingualism (see Figure 3). It follows that students who have developed age-appropriate ability in both languages may have cognitive advantages over monolinguals, and research has demonstrated support for this hypothesis (Bialystok, 2011; Thomas & Collier, 1997; Umansky et al., 2016).

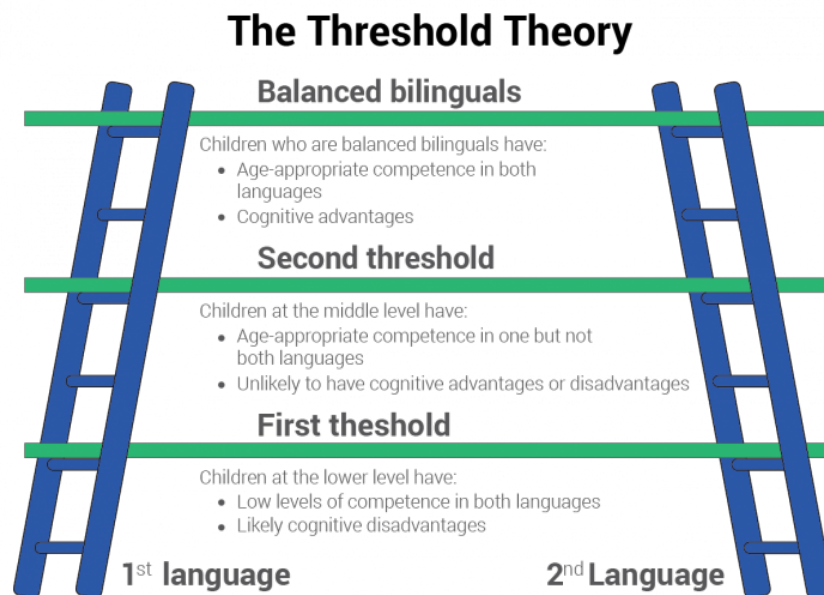


Figure 2. The Threshold Theory (Adapted from Cummins, 1976) (The Bell Foundation, n.d.)

These theories have a number of implications related to dual language education that have been supported by research (Babino, 2017; Umansky et al., 2016; Valentino & Reardon, 2015). They suggest that not only must there be a long-term commitment to bilingualism and biliteracy, but also that measuring outcomes before a student has participated for at least five years may not provide an accurate measure of achievement due to a possible temporary lag in achievement. Researchers have found that measuring short-term outcomes (through second grade) can lead policymakers to drawn false conclusions about the impact of dual language immersion programs on academic achievement and to focus on English immersion models for educating English learners.

By providing English learners with very limited, if any, support in their native language and focusing on rapidly exiting students from the program, English immersion and transitional bilingual models are not grounded in second language acquisition theory, and can have harmful effects on students. Exiting students too early can create long-term academic difficulties. Based on conversational fluency (BICS), educators may falsely assume that a student's level of English proficiency is adequate and that support for language development is no longer required, when in fact, the student still must develop cognitive academic language proficiency (CALP) in order to be successful in school. The student can have persistent academic difficulties that impact long-term educational experiences and opportunities, and may even lead to an inaccurate identification as learning-disabled. The long-term commitment (typically, at least six years in the program) to bilingualism and biliteracy that is inherent in dual language immersion programs as an educational model for educating English learners is more aligned with second language

acquisition theory and the need for sufficient time for language learners to develop academic language and processes for success in school.

Proponents of dual language immersion also point to the Thresholds Theory to explain why students who may not have developed competency their native language and are educated through their second language (i.e. English immersion programs, or transitional bilingual programs) may be limited in their ability to cope with the curriculum (Baker & Wright, 2017, p. 160). Students enrolled in dual language immersion programs, with a focus on developing bilingualism and biliteracy, may exhibit superior performance than students educated primarily through one language, particularly if it is their second language (Collier & Thomas, 2004, 2017; Lindholm-Leary, 2001; Lindholm-Leary & Genesee, 2014; Steele et al., 2017; Thomas & Collier, 1997, 2002; Umansky et al., 2016; Valentino & Reardon, 2015). In dual language immersion programs, students are provided with the opportunity to develop their native language, which supports their second language development, and allows them to draw on their entire linguistic repertoire when engaging in learning tasks.

Dual Language Immersion Program Types and Models

Dual language education and dual language immersion are terms that are used interchangeably to refer to programs in which students are taught both literacy and academic content in English and in a partner language. While the three goals of these programs are to develop high levels of proficiency, high levels of academic achievement, and cross-cultural understandings in both languages, the paths they take to achieve these goals may be different in terms of their program structure and how they are implemented (Christian, Howard, & Loeb, 2000; Freeman, Freeman, & Mercuri, 2018).

Table 3

Types and Models of Dual Language Immersion Programs

Type	Student Group
Two-Way Immersion	<ul style="list-style-type: none"> • A balanced number of native English speakers and native speakers of a partner language • Language groups are fully integrated and serve as models for one another, depending on the language of instruction • At least 50% of instruction in the partner language • Students are enrolled for at least 5 – 6 years in the program
Developmental Bilingual	<ul style="list-style-type: none"> • Students are primarily native speakers of the partner language (generally English learners only)
One-Way Immersion	<ul style="list-style-type: none"> • Students are primarily from one language group • In most cases, they are all native English speakers • Some districts use this label for programs that enroll all native speakers of the partner language
Heritage Language	<ul style="list-style-type: none"> • Students are dominant in English but have family members who spoke the partner language
Model	Characteristics
50/50 Model	<ul style="list-style-type: none"> • English and the partner language are each used for 50% of instruction at all grade levels
90/10 Model	<ul style="list-style-type: none"> • The partner language is used for instruction 90% of the time and English is used 10% of the time for the first 1 – 2 years of instruction
Language Division, by Schedule	<ul style="list-style-type: none"> • Students speak in one language at a time and the schedule for instruction in each language is defined by a language allocation plan, which can vary by district • Language allocation plans can alternate by day, by week, or by several week periods (i.e. 50/50 weekly plan) • Daily language allocation plans can switch languages each day by subject or by time of day (i.e. 50/50 daily plan) • Language allocation plans can vary by subject
Language Division, by Instructor	<ul style="list-style-type: none"> • A self-contained model has one teacher who teaches in both languages, as specified by the language allocation plan • A side-by-side model has two teachers, one for each language, who share the responsibility to teach a group of students and switch according to the language allocation plan

Note. Adapted from Boyle et al. 2015; de Jong, 2016; and Tran, et al. 2015

There are four types of dual language immersion programs: two-way immersion, developmental bilingual, one-way immersion, and heritage learner programs (see Table 3).

These program types vary by the particular student group that is enrolled in the program. Dual language immersion models can also vary by the percentage of time that students are exposed instructionally to each language (i.e. 90/10 or 50/50), as well as the frequency with which the language of instruction changes (i.e. daily, 3-day/2-day cycles, or weekly). Within each model, the language of instruction can be determined by the time of day, or the subject. Classes may be self-contained and taught by one bilingual teacher, or may have one teacher for each language.

Although the program structure can vary considerably, there is a common set of implementation guidelines that has been developed, as researchers have reviewed the outcomes of well-implemented dual language immersion programs. According to de Jong (2016), these include:

- 1) a minimum of 6 years of bilingual instruction;
- 2) a focus on the core academic curriculum;
- 3) high quality language arts instruction in both languages;
- 4) separation of the two languages for instruction;
- 5) use of the non-English language for at least 50% of the instructional time, with as much as 90% in early grades; in an additive bilingual environment;
- 6) promotion of a culture of positive interdependence;
- 7) highly qualified instructional personnel who are fully proficient in the language of instruction; and
- 8) active parent engagement.

All types dual language immersion programs must incorporate three non-negotiables: a long-term commitment, a separation of languages, and a minimum of 50% instruction in the non-English language. A further non-negotiable characteristic specific to two-way immersion programs is the balance of native speakers of English with native speakers of the partner language (p. 8).

This study focused on two-way dual language immersion programs in which there was a balanced number of native English speakers and native speakers of Spanish as the partner language. Since programs can also vary by models that are implemented, as outlined above, this study focused on a 50/50 model in which English and Spanish were each used for 50% of the instruction. The language division by schedule, as defined by the language allocation plan, was the variable of interest. The two districts that were included in the study implemented two different language allocation plans: a daily model in which both languages were employed for instruction daily, and a weekly model in which both languages were employed for instruction on a week-to-week basis.

Demand and Rationale for Dual Language Immersion Programs

The growing demand to implement dual language immersion programs has contributed to the nationwide expansion of this model of bilingual education, as well as to an increasingly positive view toward bilingualism from an additive, multilingual perspective. Dual language immersion programs are framed as enrichment programs, rather than as remediation programs, and emphasize students' home languages as linguistic assets or resources rather than as deficits or obstacles to overcome (Beeman & Urow, 2013; Ruíz, 1984). According to Steele et al.

(2018), the demand to implement dual language immersion programs may be driven by three complementary factors supported by economic, cognitive, and academic rationales.

Economic Rationale and the Seal of Biliteracy

Despite state and federal policies that have emphasized monolingualism since the 1980s, in many states there has been a focus on language diversity and bilingualism as a 21st century skill that can benefit all students and increase economic competitiveness. Factors such as rapid economic globalization and geopolitical events like 9/11 have placed an emphasis on multilingualism as an important skillset for all students and have contributed to the dramatic increase in dual language immersion programs as an effective educational model that promotes bilingualism and biliteracy as a career-readiness skill (Cervantes-Soon et al., 2017; Steele et al., 2018).

In 2012, the state of California implemented the *Seal of Biliteracy*, which is awarded upon graduation from high school to students meeting specified requirements, and this movement spread rapidly across the country. By May 2020, thirty-nine states and the District of Columbia had approved it, three states had it under consideration, six states were in the early stages of consideration, and one state had no *Seal of Biliteracy* (Californians Together, n.d.). In promoting this program, proponents have focused on the need to promote language learning, cultural competence, and global awareness as a 21st-century skill (Freeman, Freeman, & Mercuri, 2018; Partnership for 21st Century Skills, 2011) and have emphasized the advantages students who earn the *Seal of Biliteracy* may have when competing for jobs in an increasingly globalized economy. They point to studies which indicate that bilingualism can raise the occupational status and earning power of individuals (Rumbaut, 2014, as cited in Boyle et al., 2015).

The *Seal of Biliteracy* is an initiative that has impacted bilingual education, as it marks an important move away from the restrictions were passed in several states, the elimination of the *Title VII Bilingual Education Act*, and the lack of recognition and value of bilingualism under *NCLB and ESSA* (Baker & Wright, 2017). This initiative reflects the language-as-resource orientation, promoting bilingualism and biliteracy as an asset to be developed, and it has contributed to the rapid increase in dual language programs across the United States.

Cognition and Dual Language Immersion

The cognitive rationale is grounded in research that suggests that dual language immersion improves cognitive functioning, which impacts academic achievement and leads to increased test scores, improved graduation rates, greater college access, and greater employment potential (Freeman, Freeman, & Mercuri, 2018; Genesee et al., 2005; Rumbaut, 2014, as cited in Christian, 2016). Collier and Thomas (2017) published a summary of their research findings and discussed the relationship between cognition and dual language immersion. They cited two major outcomes of their studies: “...students schooled bilingually have higher levels of cognitive or academic development (as measured by school tests and teacher ratings) and they are much more deeply engaged with the learning process than their peers not in dual language classes” (Collier & Thomas, 2017, p. 209). Bialystok (2011) found that “...bilinguals consistently outperformed monolinguals in controlled studies of cognitive performance across the lifespan (p. 229).” There is evidence that bilinguals may have several health benefits that include better executive functioning (ability to plan, focus attention, remember instructions, and manage multiple tasks) and lower incidences of Alzheimer’s disease (Bialystok, 2011; Bialystok & Craik, 2010; Umansky et al., 2017). Since both languages in a bilingual speaker are always active, they must carefully attend to correct language use within a specific social context, rapidly

switching between two different representational systems. Researchers believe that this enhances cognitive skills by creating a conflict that is resolved in bilinguals by the executive control system and that this system strengthens with practice over time (Bialystok, 2011). Enhanced executive functioning has been cited by researchers as the probable reason for high levels of academic achievement in bilingual students, especially in math. Dual language immersion instruction also promotes cross-linguistic transfer, which increases metalinguistic awareness and sharpens students' reading skills (Beeman & Urow, 2013; Marian et al., 2013). The cognitive rationale supports the idea of the English learners as emergent, simultaneous bilinguals with the need to employ their entire linguistic repertoire when completing a task. The emphasis on the use of both languages as assets in dual language immersion programs reflect this rationale.

Academic Achievement and Dual Language Immersion

According to Steele et al. (2018), the academic rationale flows logically from the cognitive rationale and focuses on the idea that instruction in two languages beginning in early grades leads to higher academic achievement in core academic content areas such as language arts, mathematics, and science (pp. 421-2). The academic rationale forms a basis for the two of the three goals of dual language immersion programs: high levels of proficiency in both languages and high academic achievement. The purpose of most research related to dual language education is understanding its processes and outcomes as they are related to these goals (Christian, 2016).

Thomas and Collier (1997; 2002) and Collier and Thomas (2004; 2017) contributed a great deal to the body of research related to dual language immersion for more than thirty years. Their seminal longitudinal research suggests that dual language immersion has the greatest long-

term effects on student achievement when compared with other program types, including English immersion (see Figure 3). They found that dual language education closes the academic achievement gap for English learners completely, when students are enrolled in the program for more than 6 years. Many researchers have subsequently studied the effects of enrollment in a dual language immersion program on academic achievement and have had similar findings (Lindholm-Leary, 2001; Lindholm-Leary & Genesee, 2014; Steele et al., 2017; Umansky & Reardon, 2015; Umansky et al., 2016; Valentino & Reardon, 2015).

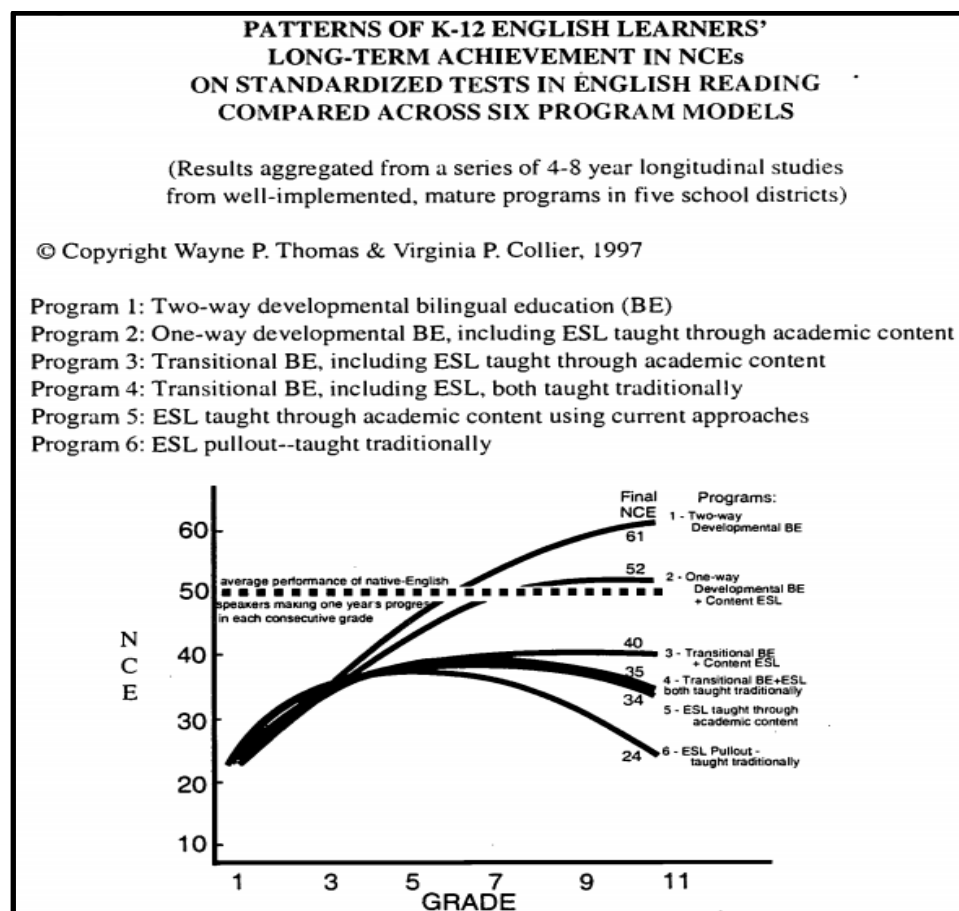


Figure 3. Patterns of K-12 English Learners' Long-Term Achievement in NCEs on Standardized Tests Compared Across Six Program Models, Thomas & Collier (1997).

Several large-scale longitudinal studies by Thomas and Collier (1997; 2002) and Collier and Thomas (2002; 2017) were conducted over a thirty-two-year period and included the analysis of over 7.5 million student records from 36 school districts in 16 states. They compared up to eight different program models for educating English learners in order to determine which model was the most successful in closing the academic achievement gaps between English learners and their native English-speaking peers. They found that students in dual language immersion programs, both one-way and two-way models, outperformed their native English-speaking peers over the long-term on standardized tests of English reading. Their findings indicated that only high-quality, long-term bilingual (one-way and two-way dual language) programs were successful in closing the achievement gap for English learners, enabling them to reach the 50th percentile in all subjects in both languages after five or six years of program participation. English immersion and transitional bilingual program models were not successful. Dual language immersion programs also had the fewest high school dropouts (Thomas & Collier, 2002). When controlling for SES as a predictor of student achievement in multiple linear regression models, findings also indicated that the amount and quality of support in the native language that was provided by the school program was the most powerful predictor of long-term student success. When controlling for ethnicity as well as special education eligibility, they also found that all groups who participated in dual language classes outperformed their peers in monolingual programs by middle school (Collier & Thomas, 2017).

Another large-scale, comprehensive study of dual language schools was conducted by Lindholm-Leary (2001), with a sample of 4,854 students enrolled in several program types: English-only, transitional bilingual, and two models of dual language immersion (90/10 and 50/50). She found that dual language immersion programs promoted high proficiency levels in

English and Spanish, high academic achievement, and positive student attitudes. By grade 6, dual language immersion students outperformed students in the transitional bilingual program in English, and by grade 10 they outperformed their monolingual peers in math.

Marian et al. (2013) examined the effects of bilingual two-way immersion education on reading and math achievement, as measured by state-mandated standardized tests, for both language minority and language majority students in grades 3 through 5. They compared the test scores of students in two-way immersion programs and transitional bilingual programs. Their results were consistent with other studies, and they found that reading and math scores for both language groups were higher than those of the general population. Students in the higher grades performed better than students in the lower grades. The limitations of this correlational study include a small sample size, lack of random assignment into treatment groups, and lack of controls for student characteristic variables.

A number of additional smaller-scale studies also examined the academic performance of students enrolled in dual language immersion programs, and their results were also aligned to these findings. Several comprehensive reviews of these studies indicated that well-implemented programs had positive effects on academic performance in reading, math, and science for majority and minority language speakers, and that they can outperform their peers in monolingual programs (Howard et al., 2003; Lindholm-Leary & Genesee, 2014). In a review of research on two-way dual immersion programs, Krashen (2004) cautioned that relatively few studies had been implemented. Most were short-term studies with small sample sizes, and they typically did not control for individual differences or programmatic differences (Krashen, 2004). He suggested the need for further longitudinal research with larger samples sizes, designed to control for such differences.

Genesee et al. (2005) conducted a comprehensive, systematic investigation of peer-reviewed research on the educational outcomes of English learners, with academic achievement as an area of focus. They noted that most studies used standardized achievement tests to measure student outcomes and focused on evaluations of program models in order to address policy issues related to the education of English learners (p. 374). They found that research consistently demonstrated that students in bilingual programs performed as well or better than their peers in monolingual classrooms, and that English learners provided with extended native language instruction in two-way immersion and late-exit programs outperformed students who received short-term native language support in early-exit transitional bilingual programs. The studies reviewed also indicated that both languages bilingual proficiency and academic achievement were related, suggesting an interdependence that supports the development of full bilingual and biliterate competencies in dual language immersion programs (p. 376).

Genesee and his colleagues raised several concerns regarding the literature related to academic achievement for English language learners. They cautioned that there were a limited number of studies and that most were correlational in nature. There was also a lack of definition or specificity around program-level factors of various bilingual program models, such as the language allocation plan. They suggested the need for caution in drawing conclusions, as well as the need for future research to consider variables related to such factors (p. 375).

Umansky and Reardon (2014) and Umansky et al. (2016) conducted a longitudinal study in which they analyzed 12 years of data from a large urban district in California for 5,423 English learners enrolled in four different program models: English immersion, transitional bilingual, maintenance bilingual, and dual immersion. The outcomes they compared added to this body of research by including not only English proficiency development and academic

growth, but also reclassification rates for Latinx students from English learner status to English proficient status (Umansky et al., 2016). To strengthen the study, researchers analyzed the data using multiple regression models and controlled for student-level variables, such as selection into instructional program and student background (i.e. home language and free/reduced lunch eligibility status).

In their analysis of academic growth in ELA, Umansky and Reardon (2014) and Umansky et al. (2016) found that more English learners reached academic proficiency in dual language immersion programs than in English immersion programs. In contrast to the findings of Thomas and Collier, there was no statistical difference between transitional bilingual and dual language immersion students by seventh grade (Umansky & Reardon, 2014; Umansky et al., 2016). In math, they found that growth was more moderate, and that English learners' scores did not differ much across programs, but students in the transitional program scored moderately higher (p. 15). These researchers emphasized the need for long-term evaluations of bilingual programs, because while their short-term results for second grade may have indicated that English immersion programs were more effective, analyzing results over a longer period of time revealed that achievement of English learners in dual immersion and transitional bilingual programs in seventh grade was equal to or better than their peers in the English immersion program. They cautioned that making programmatic decisions based on achievement levels in the early grades could erroneously lead to policies and programs that focus on English immersion and transitional bilingual education rather than the bilingual programs which have more long-term benefits (pp. 16-17). Umansky and Reardon (2014) suggested that future research focus on analysis of the characteristics of successful two-language programs to better inform program design, and that policymakers and practitioners must ensure that English

learners have full access to academic content that supports higher linguistic and academic outcomes (pp. 29-30).

Valentino and Reardon (2015) added to the body of research by investigating longitudinal academic achievement in ELA and math of English learners through middle school, and by considering differences in ethnicity/home language and initial English proficiency. Subjects were matched based on parental preferences to control for initial program placement variables. Their study design attempted to address previous gaps and concerns in the literature regarding the study of long-term academic effects of EL programs, effects by subgroup, and the use of rigorous methods (pp. 618). Their sample included 13,750 students from a large urban district and student outcomes were measured by state standardized tests in ELA and math. To examine the relationship between student outcomes and program enrollment, data were analyzed using hierarchical regression models, with student characteristics, school fixed effects, and parent preferences added as predictors. Consistent with the findings of Umansky and Reardon (2014), they found that students in dual language immersion programs scored substantially lower in the short term (through second grade), but that they ‘caught up’ or surpassed their peers enrolled in English immersion programs by middle school (p. 632).

Watzinger-Tharp et al. (2018) compared the achievement of dual language students and their non-dual language peers in grades 3 and 4 in 26 dual language immersion programs across Utah. Their sample included over 4,800 students. They used multiple regression analysis to detect the possible effects of native language and program type, while controlling for gender, free/reduced lunch eligibility, special education, English learner status, and race/ethnicity. To strengthen their study, they incorporated within-subjects controls and propensity-matching to ensure that the comparisons made were equitable and students in the dual language immersion

group were academically and demographically similar to the non-dual language groups. In contrast with Umansky and Reardon's (2016) math achievement results, Watzinger-Tharp et al. (2018) found that students in the dual language immersion program performed better on the state math assessment than their matched non-dual language peers. While the sample size was fairly large and from a large geographical region, and the statistical method was superior to correlational methods, the study was limited to math outcomes in grades 3 and 4 and analyzed data for one academic year.

The largest random-assignment study of dual language education was conducted over four years in a large, urban district in Portland, Oregon by Steele et al., (2017). This longitudinal study compared achievement in ELA, math, and science, as measured by state-mandated accountability assessments for cohorts of students from kindergarten to eighth grade to examine causal effects of program enrollment over time. Program entry was determined by a lottery. The researchers compared students who applied to dual language immersion programs and were randomly assigned to the various programs to students who applied but were not randomly assigned. This enabled the researchers to control for selection bias, which had not been accomplished in previous studies of dual language immersion. There were 1,625 students in the sample from 12 varying dual language immersion programs across a large, urban district. They examined effects at scale and found that students randomly assigned to immersion programs in kindergarten outperformed their counterparts in fifth grade reading by 13% of a standard deviation and in eighth grade reading by more than a fifth of a standard deviation, controlling for the students' native language (p. 284S). The effects in math and science were less evident, but there was also no apparent detriment. Like Umansky and Reardon (2014), Steele et al. (2017) found that the effects on outcomes of dual language immersion programs were greater over time.

Each of these studies added to a large body of research that has formed the basis for the academic rationale behind the implementation of dual language immersion programs. Studies suggest that that, over the long-term, students enrolled in dual language immersion programs perform as well or better than their peers in monolingual programs in academic content areas.

Gaps in the Literature

With the rapid proliferation of dual language immersion programs, there is an urgent need to understand which models have the greatest impact on student academic achievement. While a number of studies have been conducted to examine the academic outcomes of students enrolled in dual language immersion programs, few studies have examined the program-level implementation factors of effective programs (Chestnut et al., 2018). Researchers have found that dual language immersion programs must be well-implemented in order for students to benefit significantly from them, and the implementation of these programs varies (Boyle et al., 2015; Lindholm-Leary & Genesee, 2014; Umansky & Reardon, 2014).

Lindholm-Leary (2012) cautioned against labeling a program as dual language immersion and implementing a few components of the model if successful student outcomes are expected. She emphasized that successful outcomes are associated with a clear understanding of the model and the implementation of characteristics associated with high-quality programs (p. 257). In order to develop the most effective programs and maximize student success, there is a need for school administrators to understand the characteristics of successful dual language immersion programs. One characteristic that varies from program to program is the language allocation plan. According to *Guiding Principles of Dual Language Education (3rd Edition)*, there is no research that has compared the weekly language allocation plan to the daily allocation plan

(Howard et al., 2018, p. 16). The language allocation plan must be clearly-defined and correctly implemented in order for the program to be successful (Warhol & Mayer, 2012). While research indicates that dual language immersion programs have a positive effect on academic achievement, there is a need to study the relationship between program-level factors such as the language allocation plan and student outcomes to determine which model of dual language immersion is the most impactful.

By focusing on planning and implementation factors, new studies can serve to inform leaders and policymakers as they design and implement new programs. This dissertation may contribute to the research-based knowledge of the relationship between program models and student achievement in 50/50 two-way dual language immersion programs. The audience for this study is educational leaders and policymakers who are designing, expanding, or evaluating dual language immersion programs nationwide.

Chapter Summary

Chapter II reviewed the existing literature on dual language immersion and the impact of this type of bilingual education program on student achievement. The historical background of the debate surrounding bilingual education was provided and the impact of legislation and policies around funding and accountability measures on bilingual programming was discussed. Various program models that have been implemented in educating English learners were presented, along with second language acquisition theories that form the basis of dual language immersion program models. The review presented three rationales for dual language immersion programs, and the corresponding research that supports each of them. Finally, the chapter

presented a gap in the research and the need to study program-level implementation factors of dual language immersion programs, such as the language allocation plan.

CHAPTER III - METHODOLOGY

The methodology of this study is described in Chapter III. The chapter begins with an explanation for the research design, including the setting, the study population, the sampling procedures, and the control variables. Then, the ethical considerations and instrumentation of the study are reviewed. Next, the procedures for data collection and methods of analysis, as related to the research questions, are discussed. Finally, limitations and delimitations of the study are outlined.

Introduction

As the popularity of dual language immersion programs increases in the United States, attention must be paid to the most effective design for each program so that the desired positive effect on student achievement is possible. Administrators must appropriately allocate time in the schedule, as well as available resources, for each language of instruction. In order to do so successfully, there is a need for research upon which to base the implementation plan for effective dual language immersion programs.

This quantitative study explored the relationship between student outcomes as measured by standardized test scores in English language arts and math, and student participation in two-way dual language immersion programs that were structured by either a 50/50 daily language allocation plan or a 50/50 weekly language allocation plan. The purpose of this study was to examine the relationship between the structure of a two-way dual language immersion program based on the language allocation plan and student outcomes, in order to better inform the design and implementation of two-way dual language immersion programs. By analyzing the relationship between this contextual implementation factor and student outcomes, the current

study offers practical guidance to administrators as they design, implement, and evaluate two-way dual language immersion programs.

Research Questions

To investigate the achievement in ELA and math of students in grades four through six in two dual language immersion programs, with program enrollment and the language allocation plan as the variables of interest, the following research questions were formulated:

Research Question 1: What is the relationship between student participation in a 50/50 two-way dual language immersion program with a weekly language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Englewood?

Research Question 2: What is the relationship between student participation in a 50/50 two-way dual language immersion program with a daily language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Woodstock?

Research Question 3: Does the relationship between the dual language program model and student achievement vary across districts?

Research Design

This was a non-experimental, *ex post facto* quantitative study that examined the relationship between student participation in two types of two-way dual language immersion programs and student performance, as measured by the fourth, fifth, and sixth grade PARCC English language arts and math results in 2018. Student achievement results in grades four

through six from two suburban districts were compared, one in Englewood, NJ and one in Woodstock, IL. Both districts administered the same assessments during the spring assessment window in 2018. Both programs were two-way dual language immersion programs in which half of the students were English learners whose first language was Spanish and half of the students were native English speakers at the time of enrollment into the program. Scores of students participating in both models of dual language immersion programs were compared with the scores of their district peers in the general education program to determine whether there was a relationship between participation in a dual language immersion program and student achievement.

Student data were collected from each district's Student Information System (SIS) with the assistance of an authorized administrator within the district, after appropriate permissions were granted by the respective district superintendent. Samples from several groups of students were analyzed, inclusive of all students in grades four through six in the 2017-18 academic year, who had been enrolled in the two-way dual language immersion program since kindergarten. These grade levels were chosen in order to obtain the largest sample possible, considering the following factors: state standardized tests were not administered before third grade in New Jersey and Illinois; third grade was eliminated as it was the first year of exposure to such testing; and the two-way dual language immersion program in Englewood did not continue beyond sixth grade.

To strengthen the study, the academic performance of the students who participated in the two-way dual language immersion program was compared to academic performance of their district peers in their respective grade-span cohort. This allowed the researcher to compare the performance of students in a cohort comprised of three grade-levels who did not participate in

the two-way dual language immersion program to a similar district grade-span cohort of students who did participate in the two-way dual language immersion program.

Setting

Englewood is a suburban public-school district in New Jersey that implemented a two-way dual language immersion program using a 50/50 weekly language allocation plan. Of the 3,000 students enrolled in the district, 11.1% were English learners and 63.5% were economically disadvantaged, according to the state data summary for 2017-2018. Woodstock is a suburban public-school district in Illinois that implemented a two-way dual language immersion program using a 50/50 daily language allocation plan. Of the 6,300 students enrolled in the district, 16% were English learners and 41.5% were economically disadvantaged, according to the state data summary for 2017-18.

The two school districts selected for the study were matched for the purpose of comparison to control for a number of variables. The students were non-randomly selected for each program based on an application process for enrollment in kindergarten or first grade, and there were no other entry points into the program. Both districts were suburban public-school districts and administered the PARCC assessment in the 2017-18 academic year. The percentage of English learners in each district was similar: 11.1% in Englewood and 16% in Woodstock, according to each district's respective state data summary for 2017-18. The districts were also matched on program longevity to ensure program stability: each two-way dual language immersion program had been in existence for more than 10 years as a smaller program embedded into a larger school setting, or a strand program, and had a grade span of at least kindergarten through grade six.

Population Sample and Procedures

The student-level performance data, as measured by the PARCC English language arts and math scores, were collected for 457 students in grades four through six in Englewood were collected, and for 1,014 students in Woodstock. The sample included both English learners and native English speakers. The PARCC English language arts and math scores from the general population in grades four through six were also examined for comparison purposes. In Englewood, there were 313 students in the general program sample and 144 students in the 50/50 two-way dual language immersion program sample across all three grade levels. In Woodstock, there were 587 students in the general program sample and 427 students in the 50/50 two-way dual language immersion program sample across all three grade levels. The students were selected non-randomly by the district to participate in the two-way dual language immersion program based on their application for entry in kindergarten or first grade. Approximately 50% of the students selected were English learners and 50% were native English speakers at the time of their enrollment into the two-way dual language immersion program.

Ethical Considerations

The identity of the students was protected in the current study by design. Information for each district was provided by the respective data administrator for analysis without student names or identifiable information. The names of teachers and schools were also protected. Student-level, de-identified data were analyzed as district-level cohorts. For these reasons, the researcher sought and received an exemption through an IRB Scientific Review Process conducted by Seton Hall University.

Instrumentation

The Partnership for Assessment of Readiness for College and Careers (PARCC) is a consortium of states that collaboratively developed a common set of assessments to measure student grade-level achievement and preparedness for college and careers. In the academic year 2017-18, both New Jersey and Illinois used this standardized assessment to measure English language arts (ELA) and mathematics achievement in grades three through eight and high school. The assessment was aligned to the Common Core State Standards (CCSS) and purported to measure students' achievement of grade-level standards, and their ability to apply their knowledge of concepts by requiring critical thinking to respond to performance-based tasks.

The use of the PARCC ELA and Math assessments as instruments for measuring student performance ensured validity and reliability of the instrument. The state-mandated standardized test was research-based, nationally-normed, and independently tested for validity. The following special studies were conducted by the test developer to ensure reliability and validity of the instrument: content alignment studies, a benchmarking study, a longitudinal study of external validity, a mode comparability study, and a device comparability study (PARCC & Pearson, 2019). Additional information regarding the validity and reliability of the 2018 PARCC assessment can be found in the PARCC Final Technical Report for 2018 Administration (PARCC & Pearson, 2019). The states of New Jersey and Illinois provided standardized guidelines to local school districts regarding the process of administration to maintain test security before, during, and after testing to obtain valid results. Scoring was completed by a third party according to standardized guidelines.

The PARCC scale scores for ELA and Math were the dependent variables (PARCC ELA and PARCC Math) in the study and the scores ranged from 650 to 850. The following was

provided in the PARCC Score Interpretation Guide (2018) to interpret the scores and provide performance level descriptors:

- Level 1 - Did not yet meet expectations
- Level 2 - Partially met expectations
- Level 3 - Approached expectations
- Level 4 - Met expectations
- Level 5 - Exceeded expectations

The ranges for levels 4 and 5 varied depending on grade level and content area. Based on this scale, students who performed at level 4 (generally 750 - 789) or 5 (generally 790 - 850) were determined to have demonstrated readiness for the next grade level and to likely be on track for college and careers (PARCC, 2018).

Data Collection

Since the quantitative data analyzed in the current study were collected during a test administration prior to the initialization of the study, it was considered an *ex post facto* study. Scores from the PARCC ELA and Math assessments for individual students in grades four through six were collected by each district from the Pearson Access Next System and entered into their respective Student Information Systems. The data administrator disaggregated the data by using the Student Information System to identify English learners and non-English learners, as well as two-way dual language immersion program participants and general education program participants. Students who were in the special education program were excluded from the study in order to control for possible effects on student outcomes related to student disabilities.

The following student-level data were provided to the researcher for both the 50/50 two-way dual language immersion program and the general education program in Englewood and Woodstock: grade level in 2017-18; program of enrollment; gender; race; socioeconomic status (as determined by free and reduced lunch eligibility status); English learner status; PARCC ELA scale score; and PARCC Math scale score. Woodstock provided the Former Limited English Proficient (FLEP) status (yes or no) of students in the sample, regardless of program enrollment. Due to extenuating natural circumstances, Englewood was unable to provide FLEP information in the original data file. That information was sent in a separate file at a later time for the dual language students only. Since the data were de-identified, the data files could not be merged and FLEP status was eliminated as an independent variable in the study. The PARCC ELA and PARCC Math scores were the dependent variables in the study, and all other variables were the control variables.

Data were organized and coded in preparation for analysis. In Englewood, seven student records were removed from the analysis because the PARCC ELA score was missing. Six of the students were female and one was male. Six student records were removed from the Englewood analysis because the PARCC Math scores were missing. Four of the students were female and two of the students were male. Dummy variables were used for coding purposes. Variables and labels were coded as follows: District: 1 = Englewood and 0 = Woodstock; Program: 1 = dual language and 0 = general program; Gender: 1 = female and 0 = male; FRL: 1 = eligible for free or reduced lunch and 0 = paid lunch; EL: 1 = English learner and 0 = non-English learner. For race, the following categories were used: Latinx; Asian/Native American/Pacific Islander/More Than One; Black. The Asian, Native American, Pacific Islander, and More Than One race categories were collapsed into one category, henceforth referred to as 'Other,' because the

number of students in each group represented between 0% and 3.8% of the total population in each district. Each category was dummy-coded; 1 = yes and 0 = no. The grade levels were not considered separately, as grade level was not a variable of primary interest or a consideration in the research questions.

Data Analysis

Quantitative data analysis was performed in order to address the research questions. Statistical tests were run using IBM SPSS Statistics version 25 software, to answer each of the research questions in turn. PARCC ELA and Math scale scores for the 2017-18 academic year were analyzed, and the following variables were used as controls: gender, program, race, SES, and EL status. Statistical significance was set at $p \leq .05$. Marginal significance was set at $p \leq .10$.

Research Question 1: To understand the difference in PARCC ELA and Math scores based on program enrollment in Englewood, an Independent Samples t Test was conducted for each set of test scores to see if there was a statistically significant difference between student scores on the PARCC ELA and Math tests and participation in a dual language immersion program. These tests were necessary to compare categorical and continuous variables. The continuous variable was performance on the PARCC ELA or Math assessments. The categorical variable was program enrollment, and the groups were independent of each other. To control for program participation, gender, race, SES, and EL status, a linear multiple regression analysis was run, with all variables entered at once.

Research Question 2: To understand the difference in PARCC ELA and Math scores based on program enrollment in Englewood, an Independent Samples t Test was conducted for

each set of test scores to see if there was a statistically significant difference between student scores on the PARCC ELA and Math tests and participation in a dual language immersion program. These tests were necessary to compare categorical and continuous variables. The continuous variable was performance on the PARCC ELA or Math assessments. The categorical variable was program participation, and the groups were independent of each other. To control for program participation, gender, race, SES, and EL status, a linear multiple regression analysis was run, with all variables entered at once.

Research Question 3: In order to understand how the relationship between the program model and student achievement varied across the two districts, the results from the Independent Samples *t* Tests and the linear multiple regression analyses that were completed for Research Questions 1 and 2 were compared. First, the statistical significance and the relative sizes of the coefficients were compared. Then, the coefficients were compared based on the percentage of the standard deviation in PARCC scores each one represented, since the sample sizes for each district differed. The percentage of the standard deviation was calculated by dividing the unstandardized coefficient by the total standard deviation for the district and multiplying by 100. Similarities and differences in student performance on PARCC ELA and Math were then compared, based upon the dual language immersion program in which they were enrolled.

Limitations and Delimitations

This study was limited to student-level data analysis for the academic year 2017-18 in two suburban districts, Englewood, NJ and Woodstock, IL. The results may not be generalizable to student populations in smaller or larger districts, in states in other geographic regions of the United States, or to other academic years. The two-way dual language immersion programs in

this study both implemented a 50/50 program model for the percentage of instructional time in each language. The 90/10 program that existed in Woodstock was not included. The two-way dual language immersion programs in this study include English and Spanish-speakers only, and dual language immersion programs for other languages were not included. One-way dual language immersion programs, such as one that existed in Englewood, were also not included in the study. Special education students were not included in the study. Students were not selected randomly for the study, and they had to be continuously enrolled in the program for at least five years (since kindergarten or grade 1). The effects on achievement of students who were in the program but did not fall into that category were not analyzed.

Chapter Summary

Chapter III outlined the methodology of this study, describing the design, setting, population, sample, data sources, data collection, and methods for data analysis in order to answer the research questions presented in the study. The methods to ensure reliability, validity, and to address ethical concerns were outlined. Potential limitations and delimitations that may have affected the results of the study were described.

Chapter IV analyzes the results of the study.

CHAPTER IV - RESULTS

This chapter outlines the results of the study and begins with an introduction and an overview of the data collected from Englewood, NJ and Woodstock, IL. Then, an analysis of the data that addresses each of the three research questions is provided. Finally, the findings from all of the research questions are summarized.

Introduction

The purpose of this quantitative study was to examine the relationship between student performance in ELA and math, as determined by a standardized state test that was administered to measure progress toward meeting grade-level standards, and enrollment in a two-way dual language immersion program that implemented a 50/50 weekly language allocation plan in Englewood, NJ, and a two-way dual language immersion program that implemented a 50/50 daily language allocation plan in Woodstock, IL. First, the study focused on outcomes within the two different districts by comparing the ELA and math scores of students enrolled in the dual language immersion program and the scores of students enrolled in the general program in grades four through six. Next, the results from students in the two-way dual language immersion programs in both districts were compared to examine the relationship between enrollment in a program with a weekly language allocation plan or a program with a daily language allocation plan, and student performance in ELA or math.

This study was designed and implemented to address the following research questions:

Research Question 1: What is the relationship between student participation in a 50/50 two-way dual language immersion program with a weekly language allocation plan, and student

performance in English language arts and math, as indicated by their scores on a standardized state test in Englewood?

Research Question 2: What is the relationship between student participation in a 50/50 two-way dual language immersion program with a daily language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Woodstock?

Research Question 3: Does the relationship between the dual language program model and student achievement vary across districts?

Data Overview

Data were collected from Englewood, with a weekly language allocation plan, and Woodstock, with a daily language allocation plan, from the respective data administrator. Data were provided for the following fields: PARCC ELA scale scores, PARCC Math scale scores, general and dual language program participation, gender, race, free and reduced lunch eligibility status (as a measure of socioeconomic status), and English learner status.

Table 4

Descriptive Statistics

Descriptive Statistics						
Englewood				Woodstock		
PARCC English Language Arts Scores						
<i>Program</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Dual Lang.	139	746.69	28.215	426	748.42	29.188
General	312	749.49	32.041	587	753.28	28.576
Total	451	748.63	30.908	1013	751.24	28.921
PARCC Math Scores						
<i>Program</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Dual Lang.	144	739.04	26.646	427	734.96	29.257
General	313	738.37	25.355	587	740.84	27.448
Total	457	738.58	26.107	1014	738.36	26.107

The first step in the data analysis included descriptive statistics in order to gain a general understanding of the demographics and student characteristics for the sample for each district (see Table 4). In both districts, the total sample size for ELA and math differed slightly, with a larger sample size for math, since several more students were tested in math than in ELA. In Englewood, there were 451 students tested in ELA in grades four through six in 2017-18, and there were 457 students tested in math. In Woodstock, a total of 1,013 students were tested in grades four through six for ELA, and 1,014 were tested in math. The total sample sizes were larger in both ELA and math for Woodstock because it was a larger district: Woodstock had a student population of approximately 6,500 students, and Englewood had a student population of approximately 3,000 students, according to the respective state data summary for 2017-2018.

Table 4 also displays the average PARCC ELA and Math scores in Englewood, which implemented a weekly language allocation plan, and Woodstock, which implemented a daily language allocation plan, as well as the standard deviations by student group: district, general program, and dual language program groups. The students in Woodstock, on average, outperformed the students in Englewood on the PARCC ELA assessment, by an average of 3.79 points. The PARCC Math scores were more varied: the students in the general program in Woodstock did better, on average, than the students in Englewood by 2.47 points, but for the district average and the dual language program average, Englewood was higher.

According to the Performance Level Descriptors published by PARCC, a score of 750 was the benchmark for ‘meeting expectations.’ In both districts, the average score was below or slightly below this benchmark score, with the exception of the district average and the general program average on PARCC ELA in Woodstock, with its daily language allocation plan. In both districts, the average Math scores were lower than the average ELA scores. In Englewood, with

its weekly language allocation plan, the average PARCC Math scores in the dual language immersion program were higher than the scores in the general program by 0.46 points, while the ELA scores were only 1.94 points below the district average in the dual language immersion program. In Woodstock, the differences in average scores were slightly higher between the dual language immersion program and the district scores, with the dual language students performing an average of 2.82 points lower in ELA and 3.4 points lower in math.

Table 5 presents the characteristics of students in Englewood and Woodstock, for both the ELA and the math samples. Since the sample size was slightly larger for math in both districts, the descriptive statistics for math only were analyzed because the differences varied by approximately 1% or less for several characteristics. For exact differences in frequencies and percentages between the ELA and math samples, see Table 5.

Table 5

<i>Descriptive Statistics for Control Variables</i>				
	Englewood		Woodstock	
	ELA (<i>n</i> = 451)	Math (<i>n</i> = 457)	ELA (<i>n</i> = 1013)	Math (<i>n</i> = 1014)
Dual Language	30.8%	31.5%	42.1%	42.1%
General	69.2%	68.5%	57.9%	57.9%
Male	49.7%	49.7%	50.6%	50.7%
Female	50.3%	50.3%	49.4%	49.3%
Latinx	52.3%	52.3%	30.5%	30.6%
Other	3.8%	4.4%	5.0%	6.0%
Black	34.1%	33.3%	3.0%	3.0%
White	9.8%	10.1%	61.5%	61.4%
FRL Eligible	67.6%	67.0%	47.7%	47.6%
English Learner	9.1%	10.1%	10.6%	10.6%

Note. FRL Eligible = Free or Reduced Lunch Eligible;
Other = Asian/Native American/Pacific Islander/More Than One

In Englewood, the majority of students in the sample were enrolled in the general program, and about one-third of students were enrolled in the two-way dual language immersion

program with a weekly language allocation plan in the 2017-18 academic year. The ratio of males to females was approximately 1:1, with the percentage of females slightly higher than that of males. The largest racial group included Latinx students (52.3%), followed by Black students at 33.3%, White students at 10.1%, and Other students at 4.4%. Approximately two-thirds of the students were eligible for free or reduced lunch, and this indicator was used to control for socioeconomic status. English learners represented approximately 10% of the population.

In Woodstock, the majority of students in the sample were enrolled in the general program, but a larger percentage of students (42%) were enrolled in the dual language program with a daily language allocation plan, than in Englewood. The ratio of males to females was approximately 1:1, with the percentage of males slightly higher than that of females. The majority of students were White students at 61.4%, followed by Latinx students at 30.6%, Black students at 3%, and Other students at 5.0%. Approximately half of the students were eligible for free and reduced lunch (47.6%), and 10.6% were English Learners.

The characteristics of the samples from the two districts varied in terms of the number of students enrolled in dual language immersion, with approximately 10% more students enrolled in Woodstock than in Englewood. The racial makeup of the student samples was also different, with the largest group being Latinx students in Englewood, and White students in Woodstock. Englewood also had a higher population of Black students, by about 30%. In Englewood, about 20% more students were eligible for free or reduced lunch than in Woodstock, but both districts had a very large population of eligible students. The districts had almost the same percentage of English learners in the sample, with the population of ELs in Woodstock slightly higher than Englewood, by 1%.

Research Question 1

The first research question focused on the differences in outcomes for students in the dual language immersion program with a weekly language allocation plan in Englewood, when compared to outcomes for students in the general program. To get a general sense of the differences between programs within the district, PARCC ELA and Math scores were first analyzed using Independent Samples t Tests to determine if there was a significant difference in test scores between the two groups. Two multiple linear regression models were then calculated to predict PARCC ELA and PARCC Math scores, based on enrollment in the dual language immersion program, controlling for gender, race, socioeconomic status (as determined by free and reduced lunch eligibility), and English learner status. The purpose of running the regression models was to isolate the influence of the predictor variable, dual language program enrollment, while holding the other individual predictor variables constant. These particular variables were identified in the literature review as possible confounding variables, and by holding these variables constant a fairer comparison between groups could be ensured.

First, an Independent Samples t Test was performed to see if there was evidence of a relationship between the type of program students attended and their PARCC ELA score in Englewood. The total number of students in the general program was 312, and in the two-way dual language immersion program was 139. The average score on the PARCC ELA assessment for students in grades four through six for students in the dual language program was 746.69, and students tended to vary from the mean by 28.215 points. The average on the same assessment for students in the general program was 749.49, and students tended to vary from the mean by 32.041 points. The dual language immersion program students with a weekly language allocation plan, on average, scored 2.797 points lower than the students in the general program.

Based on the p value for the Levene's test ($p = .124$), the equal variances assumption of the Independent Samples t Test was met and the p value with 'equal variances assumed' was used to determine statistical significance. The difference between the two programs was not statistically significant because the p value was .376, which is greater than .05. The researcher failed to reject the null hypothesis, because there was a 37.6% chance that the difference occurred by chance alone. Based on the p value alone, there was no evidence that there was a statistically significant difference between program enrollment and the PARCC ELA score in Englewood.

An Independent Samples t Test was also performed to see if there was evidence of a difference in PARCC Math scores and enrollment the general program or the dual language program with a weekly language allocation plan in Englewood. There were 313 students in the general program and 144 students in the two-way dual language immersion program with a weekly language allocation plan. The average score on the PARCC Math assessment for students in grades four through six in the dual language program was 739.04, and students tended to vary from the mean by 25.646 points. The average on the same assessment for students in the general program was 738.37, and students tended to vary from the mean by 26.355 points. Students in the two-way dual language immersion program with a weekly language allocation plan, on average, scored .674 points higher than the students in the general program.

Based on the p value for the Levene's test ($p = .727$), the equal variances assumption of the Independent Samples t Test was met and the p value with 'equal variances assumed' was used to determine statistical significance. The relationship was not statistically significant because the p value was .798, which is greater than .05. There was a 79.8% chance that the

difference occurred by chance alone and the researcher failed to reject the null hypothesis.

Based on the p value alone, there was no evidence that there was a significant difference in PARCC Math scores based on the type of program attended in Englewood.

Table 6

<i>Regression Model Summary – Englewood</i>						
	ELA: Model 1a			Math: Model 1b		
Variable	<i>B</i>	<i>SE</i>	<i>Sig.</i>	<i>B</i>	<i>SE</i>	<i>Sig.</i>
(Constant)	785.742	8.300	.000	749.245	3.787	.000
Program	6.145	3.322	.065	9.674	2.835	.001
Female	7.619	2.657	.004	1.076	2.246	.632
Latinx	-34.959	8.534	.000	-6.813	4.081	.096
Other	-4.706	1.594	.003	10.431	6.368	.102
Black	-22.727	4.371	.000	-12.217	4.033	.003
FRL Eligible	-5.483	2.932	.062	-5.338	2.456	.030
English Learner	-40.972	4.973	.000	-34.872	4.075	.000
<i>n</i>	451			457		
<i>R</i> ²	.201			.187		
a. ELA Dependent Variable: PARCC ELA						
b. Math Dependent Variable: PARCC Math						

Model 1a: In order to isolate the effect of enrollment in a dual language immersion program while holding other variables constant, a linear multiple regression analysis was used. A linear multiple regression model was run for Englewood to determine the relationship between enrollment in a two-way dual language immersion program with a weekly language allocation plan, the independent variable of interest, on PARCC ELA scores, the dependent variable, while controlling for the other independent variables entered into the model: Female, Latinx, Other, FRL Eligible, and English Learner (see Table 6). The R^2 was .201, which indicates that 20.1% of the variance in PARCC ELA scores in Englewood was explained by the predictors that were included in the model. This regression model was statistically significant $F(7,443) = 15.926, p = .000$.

The predictor dual language program enrollment was not statistically significant at the $p \leq .05$ threshold, though it was statistically significant at the $p \leq .10$ threshold. It may be considered a marginally significant predictor of PARCC ELA scores ($p = .065$), especially when considering the size of the coefficient was 6.145. There was a 6.5% chance that this effect occurred by chance. This predictor may be important to note in terms of practical significance, because it would mean that students in the two-way dual language immersion program had, on average, PARCC ELA scores that were 6.145 points higher than scores of students in the general program, holding all other predictors constant. Since the p value was just above .05, the results may not be as generalizable to the population compared to the other regression coefficients that were statistically significant at the $p \leq .05$ threshold.

FRL eligibility was also a marginally significant predictor of PARCC ELA scores ($p = .062$). All of the other predictors were significant predictors of PARCC ELA scores: Female ($p = .004$), Latinx students ($p = .000$), Other students ($p = .003$), Black students ($p = .000$), and English Learner ($p = .000$).

The Independent Samples t Test revealed no significant differences in PARCC ELA scores between students in the two-way dual language immersion program and students in the general program. The multiple linear regression analysis revealed that when holding gender, race, socioeconomic status, and English learner status constant, enrollment in the dual language enrollment was a marginally significant predictor of PARCC ELA scores, and students in the two-way dual language immersion program with a weekly language allocation plan scored an average of 6.145 points higher than students in the general program.

Model 1b: A second linear multiple regression model was run for Englewood, to determine the relationship between enrollment in a dual language immersion program with a

weekly language allocation plan, the independent variable of interest, on the dependent variable, PARCC Math scores. The control variables were Female, Latinx, Other, FRL Eligible, and English Learner (see Table 6). The R^2 for this model was .187. This indicates that 18.7% of the variance in PARCC Math scores was explained by the predictors entered into the model, which is statistically significant $F(7, 449) = 14.714, p = .000$.

The predictor dual language program enrollment, the independent variable of interest, was statistically significant ($p = .001$). Students in the dual language program scored an average of 9.674 points higher on the PARCC Math assessment than students in the general program, holding all other predictors constant.

There were three predictors that were not statistically significant: Female students ($p = .632$), Latinx students ($p = .096$), and Other students ($p = .102$). Three predictors were statistically significant: Black students ($p = .003$), FRL eligible students ($p = .030$), and English Learners ($p = .000$).

The Independent Samples t Test revealed no significant differences in PARCC Math scores between students in the two-way dual language immersion program and students in the general program. The multiple linear regression analysis revealed that when holding gender, race, socioeconomic status, and English learner status constant, enrollment in the dual language enrollment was a significant predictor of PARCC Math scores, and students enrolled in the two-way dual language immersion program with a weekly language allocation plan scored an average of 9.674 points higher than students enrolled in the general program.

In determining the influence of enrollment in a two-way dual language immersion program with a weekly language allocation plan on PARCC ELA and Math scores in Englewood (Research Question 1), the Independent Samples t Tests did not provide evidence of a difference

in scores in either content area. The linear multiple regression analyses revealed that, when holding the independent variables constant, there was a statistically significant, positive difference in PARCC Math scores for students enrolled in the dual language immersion program with a weekly language allocation plan. Students enrolled in the two-way dual language immersion program scored, on average, 9.674 points higher than students enrolled in the general program. The PARCC ELA scores of students enrolled in the dual language immersion programs were on average 6.145 points higher than the scores of students enrolled in the general program. Confidence in the generalizability of these results was not as strong as with the PARCC Math results because the p value was slightly higher than the standard .05 significance threshold, and the probability that the effect of enrollment in the two-way dual language immersion program with a weekly language allocation model on PARCC ELA scores was due to chance was also slightly higher, by 1.5%.

While there was a statistically significant positive difference of almost 10 points in PARCC Math scores for students in the dual language immersion program in Englewood, there was a marginally significant positive difference in PARCC ELA scores between students who were in the dual language immersion program with a weekly language allocation plan and their peers in the general program ($p = .065$). The size of the coefficient indicated that, on average, students in the dual language immersion program scored about 6 points higher than students in the general program, which may indicate practical significance.

Research Question 2

The second research question focused on the differences in outcomes for students in the dual language immersion program with a daily language allocation plan in Woodstock, when

compared to outcomes for students in the general program. To get a general sense of the differences between programs within the district, PARCC ELA and Math scores were first analyzed using Independent Samples t Tests to determine if there was a significant difference in test scores between the two groups. Two multiple linear regression models were then calculated to predict PARCC ELA and PARCC Math scores, based on enrollment in the dual language immersion program, controlling for gender, race, socioeconomic status (as determined by free and reduced lunch eligibility), and English learner status. The purpose of running the regression models was to isolate the influence of the predictor variable, dual language program enrollment, while holding the other individual predictor variables constant. These particular variables were identified in the literature review as possible confounding variables, and by holding these variables constant, a fairer comparison between groups could be ensured.

An Independent Samples t Test was performed to see if there was a difference in PARCC ELA scores and program enrollment in Woodstock, with a its daily language allocation plan. There were 587 students in the general program, and 426 students in the two-way dual language immersion program. The average score on a state ELA assessment for students in grades four through six in the dual language immersion program was 748.42, and students tended to vary from the mean by 29.188 points. The average on the same assessment for students in the general program was 753.28, and students tended to vary from the mean by 28.576 points. The students in the dual language immersion program with a daily language allocation plan, on average, scored 4.862 points lower than the students in the general program.

Based on the p value for the Levene's test ($p = .444$), the equal variances assumption of the Independent Samples t Test was met, and the p value with 'equal variances assumed' was used to determine statistical significance. The difference between the two programs was

statistically significant because the p value was .008. The p value was less than .05. The probability is low that the difference happened by chance alone, and the researcher rejected the null hypothesis. Based on the p value alone, there was evidence that program enrollment was associated with a significant difference in PARCC ELA scores, and that scores for PARCC ELA were higher for students in the general program.

An Independent Samples t Test was performed to see if there was a difference in PARCC Math scores based on the type of program students attended, general or dual language immersion with a daily language allocation plan, in Woodstock. There were 587 students in the general program and 427 students in the two-way dual language immersion program with a daily language allocation plan. The average score on a state math assessment for students in grades four through six in the general program in Woodstock was 740.84, and students tended to vary from the mean by 27.448 points. The average on the same assessment for students in the two-way dual language immersion program with a daily language allocation plan was 734.96, and students tended to vary from the mean by 29.257 points. The two-way dual language immersion program students, on average, scored 5.876 points lower than the students in the general program.

Based on the p value for the Levene's test ($p = .260$), the equal variances assumption of the Independent Samples t Test was met, and the p value with 'equal variances assumed' was used to determine statistical significance. The relationship was statistically significant because the p value was .001, which was less than .05. There was less than a 1% chance that the difference occurred by chance alone and the researcher rejected the null hypothesis. Based on the p value alone, there was evidence that there was a significant difference in PARCC Math

scores based on program enrollment, and the general education students scored higher than students in the two-way dual language immersion program with a daily language allocation plan.

Table 7

Regression Model Summary – Woodstock

Variable	ELA: Model 2a			Math: Model 2b		
	<i>B</i>	<i>SE</i>	<i>Sig.</i>	<i>B</i>	<i>SE</i>	<i>Sig.</i>
(Constant)	753.153	1.506	.000	746.889	1.475	.000
Program	4.519	2.079	.030	5.745	2.037	.005
Female	9.524	1.641	.000	-2.221	1.607	.167
Latinx	-3.751	2.517	.136	-6.904	2.466	.005
Other	-12.955	3.982	.001	10.439	3.903	.008
Black	-11.573	5.060	.022	-11.958	4.958	.016
FRL Eligible	-9.394	1.853	.000	-10.041	1.812	.000
English Learner	-29.730	3.075	.000	-28.475	3.002	.000
<i>n</i>	1013			1014		
<i>R</i> ²	.206			.207		

- a. ELA Dependent Variable: PARCC ELA
- b. Math Dependent Variable: PARCC Math

Model 2a: In order to isolate the effect of enrollment in a dual language immersion program while holding other variables constant, a linear multiple regression analysis was used. A linear multiple regression model was run in order to determine the relationship between program enrollment in Woodstock, with a daily language allocation plan, and PARCC ELA scores or the dependent variable (see Table 7). Dual language program enrollment was the independent variable of interest, controlling for the other independent variables entered into the model: Female, Latinx, Other, Black, FRL Eligible, and English Learner. The R^2 was .206, which indicates that 20.6% of the variance in PARCC ELA scores in Woodstock was explained by the predictors that were included in the model. This regression model was statistically significant $F(7,994) = 36.754, p = .000$.

Dual language program enrollment was a significant predictor of PARCC ELA scores ($p = .030$). Students in the dual language program with a daily language allocation plan with a daily language allocation plan had, on average, PARCC ELA scores that were 4.519 points higher than the scores of students in the general program, holding all other predictors constant.

While Latinx students ($p = .136$) was not a significant predictor, the other predictors were significant. Female students ($p = .000$), Other students ($p = .001$), Black students ($p = .022$), FRL eligible ($p = .030$), and English Learner ($p = .000$) were all significant predictors of PARCC ELA scores.

The Independent Samples t Test revealed significant differences in PARCC ELA scores which indicated that the average score of students in the general program was higher than the average score of students in the two-way dual language immersion program. The linear multiple regression analysis revealed that, when holding the other variables constant, enrollment in the two-way dual language immersion program was a significant positive predictor of PARCC ELA scores. Students enrolled in the two-way dual language immersion program with a daily language allocation plan scored an average of 4.519 points higher than students enrolled in the general program, holding gender, race, socioeconomic status, and English learner status constant.

Model 2b: A second linear regression model was run for Woodstock in which the dependent variable was PARCC Math scores, and the predictors were dual language program enrollment, Female, Latinx, Other, Black, FRL Eligible, and English Learner (see Table 7). The R^2 for this model was .207. This indicates that 20.7% of the variance in PARCC Math scores was explained by the predictors entered into the model, which was statistically significant $F(7, 995) = 37.198, p = .000$.

Dual language program enrollment, the independent variable of interest, was a statistically significant predictor ($p = .005$). Students in the dual language program with a daily language allocation plan had, on average, PARCC Math scores that were 5.745 points higher than scores of students in the general program, holding all other predictors constant.

In this model, Female students ($p = .167$) was not a statistically significant predictor. Latinx students ($p = .005$), Other students ($p = .008$), Black students ($p = .016$), FRL eligible students ($p = .000$) and English Learners ($p = .000$) were statistically significant predictors.

The Independent Samples t Test revealed significant differences in PARCC Math scores which indicated that the average score of students enrolled in the general program was higher than the average score of students enrolled in the two-way dual language immersion program. The linear multiple regression analysis revealed that, when holding the other variables constant, enrollment in the dual language immersion enrollment was a significant positive predictor of PARCC Math scores. Students in the two-way dual language immersion program with a daily language allocation plan scored an average of 5.745 points higher than students in the general program, holding gender, race, socioeconomic status, and English learner status constant.

In determining the effect of program enrollment on PARCC ELA and Math scores in Woodstock with a daily language allocation plan (Research Question 2), both Independent t Tests that were administered seemed to indicate that there was a relationship between participating in the dual language immersion program with a daily language allocation plan and having lower scores in both ELA and math. The regression analyses revealed that when holding the other independent variables constant there was a statistically significant, positive difference in PARCC ELA and Math scores for students enrolled in the dual language program

with a daily language allocation plan. Students in the two-way dual language immersion program in Woodstock scored, on average, 4.519 points higher than students in the general program in ELA and 5.745 points higher than students in the general program in math, when holding the other variables constant.

Research Question 3

This study was designed and implemented to examine the relationship between the program model, as defined by the language allocation plan, and student achievement across districts, to determine the difference, if any, in student outcomes based on enrollment in a two-way dual language immersion program with a weekly language allocation plan and enrollment in a two-way dual language immersion program with a daily language allocation plan. Englewood implemented a 50/50 weekly language allocation plan in which students were exposed to English and Spanish for equal amounts of instructional time, but the language of instruction varied week-to-week. Woodstock implemented a 50/50 daily language allocation plan in which students were instructionally exposed to both languages equally each day.

To determine if there were significant differences in PARCC ELA and Math scores for students in the dual language immersion program based on the language allocation plan as a program-level variable (Research Question 3), the same four linear multiple regression models that were run for Research Question 1 and Research Question 2 were compared. Table 8 presents a summary of all four regression coefficients for dual language program enrollment, as the independent variable of interest in each model. Gender, race, socioeconomic status, and English learner status were included as controls in the models. First, the statistical significance

and the relative sizes of the coefficients were compared. Then, the coefficients were compared based on the percentage of the standard deviation that each one represented.

Table 8

Regression Coefficients Comparison – Two-Way Dual Language Immersion Program Enrollment in Englewood and Woodstock

	<i>n</i>	<i>B</i>	<i>SE</i>	<i>Sig.</i>	<i>% SD</i>
ELA					
Model 1a	451	6.145	3.322	.065	21.78
Model 2a	1013	4.519	2.079	.030	15.48
Math					
Model 1b	457	9.674	2.835	.001	36.31
Model 2b	1014	5.745	2.037	.005	19.64

- a. Models 1a and 2a: dependent variable is PARCC ELA
- b. Models 1b and 2b: dependent variable is PARCC Math
- c. $\% SD = B / SD * 100$

In Englewood, there was a marginally significant positive difference in PARCC ELA scores between students who were enrolled in the two-way dual language immersion program with a weekly language allocation plan and their peers enrolled in the general program ($p = .065$). Since dual language students scored an average of 6.145 points higher than their peers in the general program on this assessment, holding gender, race, socioeconomic status, and English learner status constant, this suggested significance but there was less confidence in the generalizability of the results. There was a statistically significant positive difference in PARCC Math scores in Englewood, with students in the two-way dual language immersion program outperforming their general program peers by an average of 9.674 points, holding gender, race, socioeconomic status, and English learner status constant. In Woodstock, holding the same independent variables constant, students in the two-way dual language immersion program with a daily language allocation plan outperformed their peers in the general program

on both the PARCC ELA and the PARCC Math assessments. Dual language students scored an average of 4.519 points higher in ELA and an average of 5.745 points in math. These results revealed that enrollment in a two-way dual language immersion program, regardless of the model, had a positive effect on PARCC ELA and Math scores (see Table 9).

In comparing the two program models, the positive differences in the scores for students in the dual language immersion program were statistically significant for both assessments in Woodstock, and in Englewood they were statistically significant for PARCC Math and marginally significant for PARCC ELA. In Englewood, the sizes of the average differences in the scores were larger. Students enrolled in the dual language immersion program with the weekly language allocation plan in Englewood scored slightly higher than the students in the dual language allocation program with the daily language allocation plan in Woodstock, by an average of 1.626 points on the PARCC ELA assessment and 3.929 points on the PARCC Math assessment. This indicates that there is some evidence that academic outcomes for students in the dual language immersion program with a weekly language allocation plan in Englewood were higher, as measured by the PARCC assessments in 2018, although in ELA there is less confidence in the generalizability of the findings.

Since the sample size for Woodstock was more than double the sample size for Englewood, there was a greater probability of finding statistical significance in the larger sample. To strengthen the comparison between the two programs, the percentage of standard deviation represented by each two-way dual language immersion program enrollment coefficient was compared (see Table 8). In Englewood, students enrolled in the dual language immersion program with a weekly language allocation plan scored an average 6.145 points higher on the PARCC ELA assessment than students enrolled in the general education program, and this

represented approximately 22% of the standard deviation in the PARCC ELA scores for the district. The students enrolled in the two-way dual language immersion program also scored an average of 9.674 points higher on the PARCC Math assessment than students enrolled in the general education program, and this represented approximately 36% of the standard deviation in the PARCC Math scores for the district. In Woodstock, students enrolled in the dual language immersion program with a daily language allocation plan scored an average 4.519 points higher on the PARCC ELA assessment than students enrolled in the general education program, and this represented approximately 15% of the standard deviation in the PARCC ELA scores for the district. The students enrolled in the two-way dual language immersion program also scored an average of 5.745 points higher on the PARCC Math assessment than students enrolled in the general education program, and this represented approximately 20% of the standard deviation in the PARCC Math scores for the district. The percentage of the standard deviation of PARCC scores in both ELA and Math was higher for students enrolled the dual language immersion program with the weekly language allocation plan in Englewood, by a difference of 6.3% in ELA and by 16.67% in Math.

These results indicated that the difference in the average scores of students enrolled in the dual language immersion program with the weekly language allocation plan in Englewood represented a greater percentage of the district's standard deviation in both PARCC ELA and Math scores, compared to the coefficients in Woodstock. This further suggests that the weekly language allocation plan may have had a greater impact on these outcomes.

Table 9

Summary of Findings, by Research Question

Research Question 1 - Weekly Language Allocation Plan		
Findings		
	Independent Samples <i>t</i> Test	Linear Multiple Regression
PARCC ELA	$p = .376$ No significant difference	$p = .065$ Marginally significant ($p \leq .10$) DLI avg. scores 6.145 points higher
PARCC Math	$p = .798$ No significant difference	$p = .001$ Statistically significant DLI avg. scores 9.674 points higher
Research Question 2 - Daily Language Allocation Plan		
Findings		
	Independent Samples <i>t</i> Test	Linear Multiple Regression
PARCC ELA	$p = .008$ Statistically significant DLI avg. scores 4.862 points lower	$p = .030$ Statistically significant DLI avg. scores 4.519 points higher
PARCC Math	$p = .001$ Statistically significant DLI avg. scores 5.876 points lower	$p = .005$ Statistically significant DLI avg. scores 5.745 points higher
Research Question 3 - Language Allocation Plan Comparison		
PARCC ELA		
Weekly Model	Marginally significant results DLI students averaged 6.145 points higher than non-DLI students, representing 21.78 % of <i>SD</i>	
Daily Model	Significant results DLI students averaged 4.519 points higher than non-DLI students, representing 15.48% of <i>SD</i>	
<i>Some evidence that students in DLI weekly model outperformed students in daily model on PARCC ELA, by average of 1.626 points. Percentage of total SD higher by 6.3%. Less confidence in generalizability of results due to marginal significance.</i>		
PARCC Math		
Weekly Model	Significant results DLI students averaged 9.674 points higher than non-DLI students, representing 36.31% of <i>SD</i>	
Daily Model	Significant results DLI students averaged 5.745 points higher than non-DLI students, representing 19.64% of <i>SD</i>	
<i>Students in DLI weekly model outperformed students in daily model on PARCC Math, by average of 3.929 points. Percentage of total SD higher by 16.67%.</i>		

Chapter Summary

Chapter IV outlined the results that were obtained from running Independent Sample *t* Tests and linear multiple regression models to address the research questions. Findings indicate that all students in both dual language immersion programs outperformed their non-DLI peers in ELA and math, holding gender, race, socioeconomic status, and English learner status constant. Students in the dual language immersion program with a weekly language allocation plan outperformed their non-DLI peers by an average of 6.145 points on the PARCC ELA assessment. This finding was marginally significant and may indicate practical significance. The math results were statistically significant, with students in the dual language immersion program with a weekly language allocation plan outperforming non-DLI peers by an average of 9.674 points on the PARCC Math assessment. Students in the dual language immersion program with a daily language allocation plan outperformed their non-DLI peers in both ELA and math, scoring an average of 4.519 points higher on the PARCC ELA assessment and an average of 5.745 points higher on the PARCC Math assessment. Although the positive program effect in Englewood on PARCC ELA scores was marginally significant, the size of the sample as well as the size of each of the coefficients must be considered for comparison purposes. The sample size was larger in Woodstock. The coefficients for PARCC ELA and PARCC Math in Englewood were larger than those in Woodstock, and they also represented a larger percentage of the standard deviation in PARCC scores for Englewood. These findings suggest that the outcomes on these assessments for students in the two-way dual language immersion program with a weekly language allocation plan in Englewood were better.

Chapter V discusses these research results and specifies implications for educators and policymakers. The limitations and delimitations of the study, as well as recommendations for future research are outlined.

CHAPTER V - DISCUSSION

The final chapter summarizes the statistical findings and interprets their results. It discusses implications for policy and practice, outlines the limitations and delimitations of the study, and makes recommendations for future research to further investigate this topic. It specifies practical applications for the implementation of two-way dual language immersion programs by district administrators.

Introduction

The need for research around successful dual language immersion programs is rooted in the complex and controversial debate about bilingual education that has ensued for the last 50 years. The manifestations of this debate have taken the form of local, state, and federal policies that have directly impacted the education of English learners and have led to a great deal of variability in educational programming. The majority of programs implemented for English learners have been based on subtractive models, such as English immersion and transitional bilingual education, in which the native language is slowly replaced by English, despite a body of research that indicates that these are not the most effective programs for English learners in terms of academic outcomes. A concurrent national trend has focused on bilingualism and biliteracy as beneficial assets to be developed and has led to the rapid proliferation of additive program models such as dual language immersion, in which the native language is developed at the same time as English is added to the students' linguistic repertoire.

Dual language immersion programs have been associated with high levels of academic achievement for both English learners and majority language students. The literature review focused on research which indicated the following: over the long-term, students enrolled in dual

language immersion programs academically perform as well or better than their peers who are not enrolled in dual language immersion; these programs must be well-implemented in order for students to benefit significantly from them; and although their design and implementation varies, program-level factors have not been studied extensively (Howard et al., 2018; Lindholm-Leary & Genesee, 2014; Umansky & Reardon, 2014). As the popularity of dual language immersion programs increases in the United States, attention must be paid to the most effective design for each program, so that the desired positive impact on student achievement is possible.

Summary of the Study

The current non-experimental, *ex post facto* quantitative study was designed to examine the relationship between enrollment in a two-way dual language immersion program and student outcomes in ELA and math in grades four through six, as measured by the 2018 PARCC ELA and Math assessments. The primary program-level variable of interest was the language allocation plan of the dual language immersion program, to examine possible differences in student outcomes based on enrollment in a 50/50 weekly language allocation plan or enrollment in a 50/50 daily language allocation plan. This study built on previous research which indicated that students enrolled in dual language immersion programs perform as well or better than their counterparts enrolled in general education programs, and expanded on that research by investigating two specific dual language immersion programs with differing language allocation plans. A key consideration was the contextualization of two-way dual language immersion programs and their outcomes in order to inform practical decisions around program design.

To investigate the differences in achievement in ELA and math of students in grades four through six enrolled in two-way dual language immersion programs, two suburban districts were

selected for comparison purposes: one in Englewood, NJ and one in Woodstock, IL. These districts were chosen because they both implemented 50/50 two-way dual language immersion program models, with differing language allocation plans: the program in Englewood used a weekly language allocation plan, and the program in Woodstock used a daily language allocation plan. The two districts were matched on the following characteristics:

- 1- the implementation of a two-way dual language immersion program, with the student population consisting of half English learners and half native English speakers at the time of enrollment in kindergarten or first grade;
- 2- the implementation of a 50/50 language allocation plan, in which half of the instruction was in English and half of the instruction was in Spanish;
- 3- the stability of the program, as determined by a length of time in existence greater than 10 years;
- 4- the incorporation of the two-way dual language immersion program as a strand within a larger school setting, rather than as a whole-school program;
- 5- an enrollment process that only admitted students in kindergarten or first grade, to control for student mobility effects;
- 6- the percentage of English learners in the district; and
- 7- the administration of a common state-mandated assessment in ELA and math.

The data were collected from the respective Student Information System (SIS) and disaggregated by the respective district's data administrator. There were 457 students in the sample from Englewood. The sample from Woodstock was more than twice as large, with 1014 students included. The difference in sample sizes was relative to the size of each district. The total population of Woodstock, at approximately 6,500 students, was also more than double that

of Englewood, at approximately 3,000 students, according to the state report for each district in 2017-18. The percentage of students enrolled in the two-way dual language immersion program in Woodstock was also higher, at approximately 42%, than in Englewood, where approximately 31% of the students were enrolled in the two-way dual language immersion program. The demographics of the samples were compared to further analyze similarities and differences between the districts. The ratio of male to female students was approximately 1:1 in both districts. Two demographic factors by which the districts were not matched were racial background and socioeconomic status of students. In Englewood, approximately half of the students were Latinx and one-third were Black students, with about two-thirds eligible for free or reduced lunch. In Woodstock, over 60% of students were White and about 30% were Latinx, with approximately 50% eligible for free or reduced lunch.

To examine the relationship between program participation and student outcomes in ELA and math, as measured by PARCC assessments, and to compare student outcomes for two different dual language immersion program types, the following three research questions were developed:

Research Question 1: What is the relationship between student participation in a two-way dual language immersion program with a 50/50 weekly language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Englewood?

Research Question 2: What is the relationship between student participation in a two-way dual language immersion program with a 50/50 daily language allocation plan, and student performance in English language arts and math, as indicated by their scores on a standardized state test in Woodstock?

Research Question 3: Does the relationship between the dual language program model and student achievement vary across districts?

Achievement results, as measured by 2018 PARCC ELA and PARCC Math scores, for students in the dual language immersion program in grades four through six and their peers in the general education program were analyzed for both districts. Independent Samples t Tests were used to determine if there were significant differences in their average scores based on program enrollment. Linear multiple regression models were run to predict PARCC ELA and Math scores based on the predictor variable, dual language immersion program enrollment, while holding constant gender, race, socioeconomic status (as determined by free and reduced lunch eligibility), and English learner status. These variables were identified in the literature review as possible confounding variables.

Summary of Findings and Interpretation of Results

Research Question 1 - Weekly Language Allocation Plan

The first research question focused on the differences in outcomes for students enrolled in the dual language immersion program with a weekly language allocation plan in Englewood, as compared to outcomes for students enrolled in the general program. The Independent Samples t Test did not indicate that statistically significant differences in PARCC ELA or Math scores existed between students in the two-way dual language immersion program and students in the general program. The linear multiple regression analysis revealed that when holding gender, race, socioeconomic status, and English learner status constant, enrollment in the two-way dual language immersion program was a marginally significant positive predictor of PARCC ELA scores and a statistically significant positive predictor of PARCC Math. Students

enrolled in the two-way dual language immersion program with a weekly language allocation plan scored an average of 6.145 points higher on PARCC ELA, and an average of 9.674 points higher on PARCC Math than students enrolled in the general program.

In Englewood, there was a positive relationship between student participation in a two-way dual language immersion program with a 50/50 weekly language allocation plan, and student performance in English language arts and math, as indicated by their scores PARCC ELA and Math in 2018. While there was statistically significant evidence that enrollment in the two-way dual language immersion program with the weekly language allocation plan had a positive impact on PARCC Math scores, and there was also some evidence that it had a marginally significant effect on PARCC ELA scores. These results suggest that enrollment in the two-way dual language immersion program with a weekly language allocation plan had a positive impact on PARCC ELA and Math scores.

Research Question 2 – Daily Language Allocation Plan

The second research question focused on the differences in outcomes between students in the dual language immersion program with a daily language allocation plan and students enrolled in the general program in Woodstock. The Independent t Tests used to analyze the differences in both PARCC ELA and PARCC Math scores based on program enrollment seemed to indicate that there was a relationship between participating in the dual language immersion program with a daily language allocation plan and having lower scores in both ELA and math. The regression analyses revealed that, when holding the other predictors constant, there was a statistically significant, positive difference in PARCC ELA and Math scores for students enrolled in the two-way dual language immersion program. Students in the two-way dual language immersion program with a daily language allocation plan in Woodstock scored an average of 4.519 points

higher than students in the general program in ELA and an average of 5.745 points higher than students in the general program in math.

In Woodstock, there was a positive relationship between student participation in a two-way dual language immersion program with a 50/50 daily language allocation plan, and student performance in English language arts and math, as indicated by their PARCC ELA and Math scores in 2018. These results suggest that enrollment in the dual language immersion program with a daily language allocation plan had a positive impact on PARCC ELA and Math scores.

Research Question 3 – Comparison of Both Models

In comparing the relationship between the two-way dual language immersion program model and student achievement across districts, the findings indicate that regardless of the language allocation plan, students enrolled in the two-way dual language immersion program outperformed their peers enrolled in the general program in both ELA and math, when controlling for gender, race, socioeconomic status, and English learner status.

While the positive differences in the average scores for students in the dual language immersion program with the daily language allocation plan were statistically significant in both PARCC ELA and PARCC Math in Woodstock, they were statistically significant in PARCC Math and marginally significant in PARCC ELA in Englewood, with the weekly language allocation plan. Based on statistical significance alone, there is tentative evidence that the dual language immersion program model with the daily language allocation plan may have had a more significant impact on average PARCC ELA scores. The sizes of the differences in average scores were greater in the dual language immersion program with the weekly language allocation plan, despite Englewood having a smaller sample size. Students enrolled in the dual language immersion program with the weekly language allocation plan in Englewood scored slightly

higher than the students in the dual language allocation program with the daily language allocation plan in Woodstock, by an average of 1.626 points on the PARCC ELA assessment and 3.929 points on the PARCC Math assessment. This indicates that there is some evidence that academic outcomes for students in the dual language immersion program with a weekly language allocation plan in Englewood were higher, as measured by the PARCC assessments in 2018, although in ELA there is less confidence in the generalizability of the findings.

To strengthen the comparison between the two-way dual language immersion programs in Englewood and Woodstock, considering the large difference in the sizes of the samples, the percentage of the standard deviation represented by each dual language enrollment coefficient for PARCC ELA and Math was calculated. The results indicated that the differences in the average PARCC ELA and Math scores of students enrolled in the two-way dual language immersion program with the weekly language allocation plan in Englewood represented a greater percentage of the district's standard deviation in PARCC scores, as compared to the coefficients in Woodstock. This further suggests that the weekly language allocation plan may have had a greater impact on these outcomes.

Implications for Policy and Practice

The results of the present study indicate that students in grades four through six who were enrolled in two-way dual language immersion programs in Englewood, NJ and in Woodstock, IL outperformed their peers in the general education program in ELA and math, as measured by a state-mandated assessment. These findings are aligned to previous research in the field of dual language education and support the academic rationale for the development and implementation of two-way dual language immersion programs as an effective educational program model. This

study also provides some evidence that the weekly language allocation plan may have a greater positive impact on student scores on a state-mandated assessment.

Thomas and Collier (1997; 2002) and Collier and Thomas (2004; 2017) found that students enrolled in dual language immersion programs after 5 or 6 years performed as well or better than their general education peers. Other researchers compared bilingual program models and had similar findings (Lindholm-Leary, 2001; Marian et al., 2013; Umansky & Reardon, 2014; Valentino & Reardon, 2015). The findings of this study are aligned to previous findings regarding academic achievement of students enrolled in dual language immersion programs, as compared to their peers in general education programs. The results of the present study neither support nor contradict previous findings that dual language immersion programs are the most effective models with the greatest long-term effects on student achievement, because other bilingual program types were not included and this was not a goal of the study.

Researchers have stated that ‘high-quality’ long-term program models could close the achievement gap after 5 or 6 years of program participation, but specific program-level factors such as the language allocation plan were not studied (Collier & Thomas, 2004; 2017; Thomas & Collier 1997; 2002). While previous longitudinal research compared up to 8 different educational program models, this study focused two-way dual language immersion - one program model that varied based on the program-level language allocation plan. The present study sought to extend previous research by focusing on program-level implementation factors in order to contextualize successful two-way dual language immersion programs and to provide guidance for school districts as they design and implement such programs.

Since this study analyzed student outcomes in grades four through six, there is some evidence to support the literature that indicates that the effects on outcomes of dual language

immersion programs are greater over time (Steele et al., 2017; Umansky & Reardon, 2014; Valentino & Reardon, 2015). The present study was similar to that of Watzinger-Tharp et al. (2018) in several ways, including a focus on dual language programs and student outcomes, the use of multiple regression analysis with similar controls for demographic factors; and an analysis of achievement results for one academic year. While Watzinger-Tharp et al. (2018) limited their study to grades three and four and found that students outperformed their peers on the state assessment in math, the present study also found that students enrolled in the dual language immersion program outperformed their peers on the state assessment in ELA. Perhaps this was due to the inclusion of achievement data for grades five and six in the present study, aligning with results from other studies that found greater effects on student outcomes at higher grade-levels.

The findings of this study may contribute to the debate over the viability of bilingual education programs, supporting the rationale for the development of two-way dual language immersion programs as additive bilingual programs that increase student achievement. These findings have implications for federal, state, and district policies around bilingual education as well as standardized testing. The federal guidelines set forth in *Castañeda v. Pickard 1981* require that school districts base programming decisions on sound educational theory to develop effective programs that produce results. The results of this study are aligned to longitudinal research that has demonstrated that over the long-term, dual language immersion programs can positively impact academic outcomes. School districts should implement two-way dual language immersion programs, where possible, to positively impact student achievement for both language-minority and language-majority students. The findings also tentatively suggest that a weekly language allocation plan may be more impactful. Additional research is needed around

this implementation factor (please see below) and administrators must also consider their district's specific needs in designing their own dual language immersion program.

According to Steele et al. (2017), policymakers should look to expand access to this model as a means to provide meaningful reform that impacts educational equity in the form of 'path-breaking' opportunities, especially for English learners. Federal and state funding formulas and accountability measures do not directly support the development of these programs. Menken (2008) noted that the national focus on standardized testing and the high-stakes consequences attached to them has served as a *de facto* language policy in education, placing an emphasis on subtractive language education programs. Gándara (2013) posited that such policies squander students' potential for bilingualism and biliteracy and turn it into a deficit. Through the language-as-problem lens, policymakers have treated linguistic and cultural differences as a problem to be remediated (Ruíz, 1984). At the federal and state levels, policymakers should consider providing more support for districts to develop dual language immersion programs and should look to state funding initiatives in Delaware, Georgia, Indiana, Kentucky, Oregon, and Utah for additional guidance. Federal and state funding formulas that rely on high-stakes testing as a measure of accountability should allow for additional flexibility by making tests available in multiple languages. Another consideration may be to delay testing for students in dual language immersion programs until at least the middle grades. This would allow students the time they need to develop academic language proficiency in both languages prior to being required to take a standardized test in English. It would also enable districts to make a long-term commitment to dual language education without fear of financial penalties from accountability measures imposed in the early grades when there may be an initial lag in

achievement. Since the goal in dual language immersion programs is to develop bilingualism and biliteracy, it may also be beneficial to test students in the partner language.

Limitations, Delimitations, and Recommendations for Future Research

The current study was limited by several factors, which may impact the generalizability of the results. Although Englewood and Woodstock were matched based on similar key characteristics, there were other characteristics by which they differed. Since the primary variable of interest was the language allocation plan, the researcher sought to isolate this variable by attempting to match the districts chosen for the study on as many other characteristics as possible. A number of constraints had to be considered in choosing the districts to include in the study.

Based on the literature review it was necessary to compare student outcomes in grade four or higher (Genesee et al, 2005; Lindholm-Leary, 2001; Marian et al, 2013; Thomas & Collier, 1997, 2004; Umansky & Reardon, 2014; Valentino & Reardon, 2015). It was also crucial that the districts included in the study implemented a common state-mandated assessment in order to allow for a comparison of student outcomes. Using New Jersey as a starting point, the researcher was unable to locate two similar districts with two-way dual language immersion programs that extended beyond grade four, and that implemented different language allocation plans. This led the researcher to compare programs that were located in two states, in different geographic regions of the United States, that were not matched demographically in terms of student race or socioeconomic status. Although these characteristics were controlled for in the linear multiple regression models comparing outcomes within each district, the between-district comparison did not control for these differences. Future researchers should attempt to compare

districts that are more balanced in terms of race and socioeconomic status, since these variables were identified in the literature review as possibly having confounding effects on student outcomes (Krashen, 2004).

Since Woodstock was a larger district than Englewood, a larger sample size for Woodstock was used in the study. Sample size can impact statistical significance, making a cross-district comparison more difficult. Although the percentage of standard deviation of the program coefficients was used as a common basis for comparison in the present study, future researchers may wish to compare districts that are matched in terms of district size as well as sample size in order to analyze the impact of programmatic differences on student outcomes. They may also wish to expand the number of districts included in their study in order to increase the generalizability of the results.

Students in the current study were not selected randomly for program enrollment and causal inferences could not be made regarding the impact of the language allocation plan on student achievement. To enable future researchers to draw causal conclusions about the influence of a particular language allocation plan on student outcomes, a randomized control trial (RCT) should be developed in which students are randomly assigned to a two-way dual language immersion program with a daily language allocation plan or a two-way dual language immersion program with a weekly language allocation plan within the same school district. Student outcomes should be measured longitudinally. While the findings of this study indicate that students in the two-way language immersion program with the weekly language allocation plan had higher average scores on the PARCC assessment, controlling for gender, race, socioeconomic status, and English learner status, there may be other independent variables that could have impacted the results. This study did not control for variables related to other possible

program differences that may include fidelity to the designated language allocation plan, teacher training, curriculum, teacher quality, pedagogical practices, parent involvement, and school-wide or district-wide support for the dual language immersion program. A randomized control trial conducted within the same school district could control for such confounding variables. This methodology could also control for program selection variables such as parental or student choice and program access, which have been identified as possible confounding variables by other researchers (Krashen, 2004; Steele et al., 2018; Valentino & Reardon, 2015).

An important goal of dual language immersion program research is to determine the extent to which enrollment in this program benefits English learners and helps to narrow achievement gaps (Watzinger-Tharp et al., 2018). With a focus on a program-level implementation factor and its possible impact on student outcomes, this study did not disaggregate the achievement of English learners based on program enrollment. Rather, student outcomes in each dual language immersion program were compared, based solely on program participation. To gain a fuller understanding of program benefits for English learners, the achievement of not only English learners but also of students who are former English learners (FLEPs) but remain in the dual language immersion program would need to be disaggregated. In general, as English proficiency improves, students who are identified as English learners are reclassified as English proficient students and are monitored by the district as FLEP (Former Limited English Proficient) students for a specific number of years. Disaggregation of FLEP data was not possible for this study, due to a number of issues. Information regarding students identified as FLEP students in both the general education program and the two-way dual language immersion program was not provided by Englewood, due to unforeseen and extenuating natural circumstances. When comparing programs in different states, FLEP status

can be problematic to determine because reclassification procedures and tracking of FLEP data can vary from state-to-state (Villegas & Pompa, 2020). Methods to track such status can also vary from district-to-district. State timeline requirements and student information systems vary in terms of how long this status is tracked and whether it is ultimately removed from Student Information Systems altogether. Without full access to historical data in the Student Information System for each district in order to accurately identify all former English learners in Woodstock and in Englewood, it was not possible to determine which students in both samples were FLEP students in this study. Future studies of two-way dual language immersion programs with varying language allocation plans should consider not only the outcomes of English learners enrolled in the program, but also outcomes of former English learners enrolled in the program in order to gain a fuller understanding of the impact of program enrollment on student outcomes.

The data analysis for the current study was delimited to grades four through six in the academic year 2017-18, and student outcomes were not analyzed over time. This was due, in part, to changes in state-mandated assessments in both New Jersey and Illinois that led the two states to implement differing state-specific assessments after 2018. Students in the two-way dual language immersion program in Englewood did not continue in the program beyond grade six, while students in Woodstock remained in the dual language immersion program through grade twelve. The research review suggested that student outcomes in dual language immersion programs should be measured over time in order to gain a more complete understanding of the impact of enrollment in the program on academic achievement (Genesee et al, 2005; Lindholm-Leary, 2001; Marian et al, 2013; Thomas & Collier, 1997, 2004; Umansky & Reardon, 2014; Valentino & Reardon, 2015). Future studies should employ a longitudinal design to consider the long-term effects of enrollment in a two-way dual language immersion program and the impact

of the language allocation plan on student achievement, by studying outcomes in high school and beyond. The lasting effects of dual language immersion program enrollment and the impact of various language allocation plans could be measured by indicators such as enrollment in advanced courses in middle and high school, scores on AP exams, average SAT scores, graduation rates, college attendance and degree attainment, as well as future employment benefits and career paths. The percentage of students earning a *Seal of Biliteracy* upon graduating from high school could also be considered.

This study included 50/50 two-way dual language immersion programs, with Spanish and English as the two languages of instruction. It was also delimited to the use of PARCC as a measure of student achievement, and did not consider achievement in Spanish as the partner language. As the research review indicated, high-stakes testing may not be the most valid and reliable measurement for student outcomes, especially for English learners (Kibler et al., 2014; Tienken, 2017; Wiley & Wright, 2004). Future research may focus on other measures of student achievement in all content areas in order to gain a better understanding of the impact of the language allocation plan on student outcomes. Since a primary goal of dual language immersion programs is to develop bilingualism and biliteracy in two languages, and this study did not include a measure of academic development in Spanish, future researchers may wish to incorporate a measure of the development of the partner language in order to compare student achievement in both languages based on the language allocation plan.

Students with a special education classification were not included in this study. Future studies may include students receiving special services to allow researchers to analyze the impact, if any, that enrollment in a dual language immersion program and the respective language allocation plan may have on academic outcomes for special education students.

Conclusion

The results of this study align with previous research, indicating that students in dual language immersion programs perform as well or better than their general education counterparts on state-mandated standardized tests after 5 or 6 years in the program, and expands on that research by investigating two-way dual language immersion programs with differing language allocation plans as the program variable of interest.

Although research indicates that participation in two-way dual language immersion programs has the potential to increase academic achievement for both language-minority and language-majority students, and that it has the greatest impact on academic achievement for English learners, this is often not the model chosen by districts to educate them. Researchers and proponents of dual language immersion programs have posited that this model of education also has the potential to be transformative and dynamic by impacting educational attainment and achievement for both minority-language learners and majority-language learners in an inclusive setting that prepares them for a constantly changing world (Thomas & Collier, 1997). The findings of this study indicated that students enrolled in the two-way dual language immersion programs included in the study had higher average scores on a state-mandated test than their general education peers. This supports the development of two-way dual language immersion programs by district administrators as an effective educational program model.

Researchers have indicated that an authentic transformation of the educational environment in a dual language immersion program requires sound decision-making on the part of educational leaders in order to design impactful programs that facilitate positive student outcomes (Calderón & Carreón, 2000; de Jong, 2002; Soltero, 2016; Torres-Guzmán et al., 2005). When considering factors such as staffing and scheduling, as well as available resources

for each language of instruction, administrators must make research-based decisions around programmatic design to ensure successful outcomes for all students (de Jong, 2002). Design and implementation issues must also be continually considered to evaluate and improve the model (Calderón & Carreón, 2000; de Jong, 2014; Howard et al., 2018). Educational leaders and policymakers implementing or expanding dual language immersion programs nationwide must look to research to inform their program-level design decisions. This study provides some evidence that a weekly language allocation plan in a two-way dual language immersion program may have a positive effect on student outcomes. Additional research is required to determine what, if any, causal effect the language allocation plan may have on academic achievement.

Dual language immersion programs emphasize bilingualism as an asset to be developed and employ a language-as-resource orientation toward such differences (Ruíz, 1984). Rather than segregating English learners from their native English-speaking peers, these programs integrate both student groups as language models for one another, encouraging acceptance and cultural pluralism (Lindholm-Leary, 2001). As school districts seek to design innovative programs that successfully educate English learners and close the opportunity gaps that have historically existed between ELs and general education students, they should focus on dual language immersion program models that offer the possibility to not only narrow those gaps, but also to provide an enriched and inclusive environment in which both language-minority and language-majority students can develop career-readiness skills that prepare them to contribute to an increasingly global society.

By contributing to the body of knowledge for dual language immersion programs, with a focus on the relationship between program models and student achievement, this study offers

practical guidance to local school districts for the design and of new dual language immersion programs, or the expansion of existing programs, that facilitate positive student outcomes.

REFERENCES

- Ansell, S. (2011, July 7). *Achievement gap*. Education Week.
<https://www.edweek.org/ew/issues/achievement-gap/index.html>
- Babino, A. (2017). Same Program, Distinctive Development: Exploring the Biliteracy Trajectories of Two Dual Language Schools. *Bilingual Research Journal*, 40(2), 169–186.
- Baker, C., & Wright, W. E. (2017). *Foundations of Bilingual Education and Bilingualism* (6th ed.). Multilingual Matters.
- Beeman, K., & Urow, C. (2013). *Teaching for biliteracy: Strengthening bridges between languages*. Caslon.
- The Bell Foundation (Ed.). (n.d.). *EAL Nexus. Research from the 1970s onwards: Jim Cummins*. The Bell Foundation. Retrieved June 20, 2020, from <https://ealresources.bell-foundation.org.uk/eal-specialists/research-1970s-onwards-jim-cummins>
- Bialystok, E., & Craik, F. I. M. (2010). Cognitive and linguistic processing in the bilingual mind. *Current Directions in Psychological Science*, 19(1), 19–23.
<https://doi.org/10.1177/0963721409358571>
- Bialystok, E. (2011). Reshaping the mind: the benefits of bilingualism. *Canadian Journal of Experimental Psychology*, (4), 229. Retrieved from
<http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edsggo&AN=edsgcl.274699531&site=eds-live>
- Boyle, A., August, D., Tabaku, L., Cole, S., Simpson-Baird, A., Office of English Language Acquisition (OELA) (ED), & American Institutes for Research (AIR). (2015). Dual Language Education Programs: Current State Policies and Practices. In *Office of English*

Language Acquisition, US Department of Education. Office of English Language Acquisition, US Department of Education.

Calderón, M., Carreón, A., & Center for Research on the Education of Students Placed at Risk,

B., MD. (2000). *A Two-Way Bilingual Program: Promise, Practice, and Precautions.*

Californians Together (Ed.). (n.d.). *State laws regarding the Seal of Biliteracy.* Seal of Biliteracy.

Retrieved September 29, 2019, from <https://sealofbiliteracy.org/>

Camarota, S. A., & Ziegler, K. (2014, October). *One in five U.S. residents speaks foreign*

language at home, record 61.8 million. [https://cis.org/sites/cis.org/files/camarota-](https://cis.org/sites/cis.org/files/camarota-language.pdf)

[language.pdf](https://cis.org/sites/cis.org/files/camarota-language.pdf)

Cervantes-Soon, C. G., Dorner, L., Palmer, D., Heiman, D., Schwerdtfeger, R., & Choi, J.

(2017). Combating Inequalities in Two-Way Language Immersion Programs: Toward

Critical Consciousness in Bilingual Education Spaces. *Review of Research in Education,*

41(1), 403–427.

Chestnut, C. E., Dimitrieska, V., & Indiana University, C. for E. and E. P. (2018). *Implementing*

Indiana's New Dual Language Immersion Programs: Educator Perspectives. Informing

Policy & Improving Practice Research Brief. Center for Evaluation and Education

Policy, Indiana University. Center for Evaluation and Education Policy, Indiana

University. Retrieved from

[http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=ED58](http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=ED586233&site=eds-live)

[6233&site=eds-live](http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=ED586233&site=eds-live)

Christian, D., Howard, E.R. & Loeb. M. (2000). Bilingualism for All: Two-Way Immersion

Education in the United States. *Theory Into Practice*, *39*(4), 258.

- Christian, D. (2016). Dual Language Education: Current Research Perspectives. *International Multilingual Research Journal*, 10(1), 1–5.
<https://doi.org/10.1080/19313152.2016.1118666>
- Chubb, J. E., & Loveless, T. (2002). *Bridging the achievement gap*.
<https://eds.b.ebscohost.com/ehost/ebookviewer/ebook/ZTAwMHhuYV9fOTE4OTBfX0FO0?sid=950d8f12-a550-44c1-9bf1-611361f20901@pdc-v-sessmgr04&vid=0&format=EB&rid=1>
- Collier, V. P., & Thomas, W. P. (2017). Validating the Power of Bilingual Schooling: Thirty-Two Years of Large-Scale, Longitudinal Research. *Annual Review of Applied Linguistics*, 37, 203. Retrieved from
<http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edb&AN=128281726&site=eds-live>
- Collier, V. P., & Thomas, W. P. (2004). The astounding effectiveness of dual language education for all. *NABE Journal of Research and Practice*, 2(1), 1-20.
http://www.thomasandcollier.com/assets/2004-winter_njrp_astounding-effectiveness-of-dl.pdf
- Cummins, J. (2000). *Language, power, and pedagogy: Bilingual children in the crossfire* [PDF].
<http://eds.b.ebscohost.com/eds/ebookviewer/ebook/ZTAwMHhuYV9fODA1NDdfX0FO0?sid=68b9e82f-fc73-4459-adcd-eb6127a83e8e@pdc-v-sessmgr05&vid=8&format=EB&rid=25>
- de Jong, E. J. (2002). Effective Bilingual Education: From Theory to Academic Achievement in a Two-Way Bilingual Program. *Bilingual Research Journal*, 26(1), 65–84.
<https://doi.org/10.1080/15235882.2002.10668699>

- de Jong, E., & Howard, E. (2009). Integration in Two-Way Immersion Education: Equalising Linguistic Benefits for All Students. *International Journal of Bilingual Education and Bilingualism*, 12(1), 81–99.
- de Jong, E. J. (2014). Program design and two-way immersion programs. *Journal of Immersion and Content-Based Language*, 2(2), 241.
- de Jong, E. J. (2016). Two-Way Immersion for the Next Generation: Models, Policies, and Principles. *International Multilingual Research Journal*, 10(1), 6–16.
<https://doi.org/10.1080/19313152.2016.1118667>
- Douglas, W. O. & Supreme Court of The United States. (1973) *U.S. Reports: Lau v. Nichols*, 414 U.S. 563. [Periodical] Retrieved from the Library of Congress,
<https://www.loc.gov/item/usrep414563/>.
- Faltis, C., & Arias, B. (2007). Coming out of the ESL ghetto: Promising practices for Latino immigrant students and English learners in hypersegregated secondary schools. *Journal of Border Educational Research*, 6(2), 19-35.
- Fitts, S. (2006). Reconstructing the Status Quo: Linguistic Interaction in a Dual-Language School. *Bilingual Research Journal*, 30(2), 337–365.
- Freeman, Y. S., Freeman, D. E., & Mercuri, S. (2018). *Dual language essentials for teachers and administrators* (2nd ed.). Heinemann.
- Gándara, P. (2013). Meeting the needs of language minorities. In P. L. Carter & K. G. Welner (Eds.), *Closing the opportunity gap: What America must do to give every child an even chance* (pp. 156-168). Oxford University Press.
- García, O. (2009). Emergent Bilinguals and TESOL: What's in a Name? *TESOL Quarterly*, 43(2), 322-326. Retrieved May 23, 2020, from www.jstor.org/stable/27785009

- García, O., & Kleifgen, J. A. (2018). *Educating emergent bilinguals: Policies, programs, and practices for English learners* (2nd ed.). Teachers College Press.
- Genesee, F., Lindholm-Leary, K., Saunders, W., & Christian, D. (2005). English Language Learners in U.S. Schools: An Overview of Research Findings. *Journal of Education for Students Placed at Risk*, 10(4), 363–385.
- Gómez, L., Freeman, D., & Freeman, Y. (2005). Dual Language Education: A Promising 50-50 Model. *Bilingual Research Journal*, 29(1), 145–164.
- Great Schools Partnership (Ed.). (n.d.). *The Glossary of Education Reform*. The Glossary of Education Reform. <https://www.edglossary.org/>
- Grosjean, F. (2012). *Bilingual: Life and reality*. Harvard University Press.
- Hanushek, E. A., Peterson, P. E., Taupley, L. M., & Woessmann, L. (2019). The achievement gap fails to close: Half century of testing shows persistent divide between haves and have-nots [PDF]. *Education Next*, 3(8).
<http://hanushek.stanford.edu/sites/default/files/publications/Hanushek%20et%20al.%202019%20EdNext%2019%283%29.pdf>
- Horn, C. (2003). High-Stakes Testing and Students: Stopping or Perpetuating a Cycle of Failure? *Theory Into Practice*, 42(1), 30.
- Howard, E. R., Christian, D., & Center for Research on Education, D. and E. S. C. C. (2002). *Two-Way Immersion 101: Designing and Implementing a Two-Way Immersion Education Program at the Elementary Level. Educational Practice Report*.
- Howard, E. R., Sugarman, J., & Christian, D. (2003). *Trends in Two-Way Immersion Education. A Review of the Research*. Educational Practice Report 63. Center for Research on Education, Diversity & Excellence and the Center for Applied Linguistics

- Howard, E. R., Lindholm-Leary, K. J., Rogers, D., Olague, N., Medina, J., Kennedy, B., Sugarman, J., & Christian, D. (2018). *Guiding Principles for Dual Language Education (3rd ed.)*. Washington, DC: Center for Applied Linguistics.
- Kibler, A., Valdés, G., & Walqui, A. (2014). What Does Standards-based Educational Reform Mean for English Language Learner Populations in Primary and Secondary Schools? *TESOL Quarterly*, 3, 433. <https://doi.org/10.1002/tesq.183>
- Krashen, S. D. (2004). *The Acquisition of Academic English by Children in Two-Way Programs: What does the Research Say?* Paper presented at the NABE Review of Research and Practice, Albuquerque, NM.
- Lindholm-Leary, K. (2012). Success and Challenges in Dual Language Education. *Theory into Practice*, 51(4), 256. <https://doi.org/10.1080/00405841.2012.726053>
- Lindholm-Leary, K., & Genesee, F. (2014). Student outcomes in one-way, two-way, and indigenous language immersion education. *Journal of Immersion & Content-Based Language Education*, 2(2), 165. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edb&AN=98259913&site=eds-live>
- Lindholm-Leary, K. J. (2001). *Dual Language Education*.
- Marian, V., Shook, A., & Schroeder, S. R. (2013). Bilingual Two-Way Immersion Programs Benefit Academic Achievement. *Bilingual Research Journal*, 36(2), 167–186. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=EJ1024207&site=eds-live>

- Menken, K. (2008). *English Learners Left Behind: Standardized Testing as Language Policy*. Multilingual Matters.
- National Commission on Excellence in Education. (1983). A Nation at Risk: The Imperative for Educational Reform. *The Elementary School Journal*, 84(2), 113-130. Retrieved May 22, 2020, from www.jstor.org/stable/1001303
- National Education Association (Ed.). (n.d.). *Research & tools*. National Education Association. Retrieved September 22, 2019, from <http://www.nea.org/home/32409.htm>
- Nieto, D. (2009). A brief history of bilingual education in the United States. *Penn GSE Perspectives on Urban Education*, 6(1), 61-72.
- PARCC score report interpretation guide (Spring 2018 ed.). (2018). Retrieved May 12, 2020, from <https://www.isbe.net/Documents/2018-Int-Guide.pdf>
- Partnership for 21st Century Skills. (2011, January). *21st century skills map* [PDF]. https://www.actfl.org/sites/default/files/pdfs/21stCenturySkillsMap/p21_worldlanguagesmap.pdf
- Partnership for Assessment of Readiness for College and Careers (PARCC), & Pearson. (2019). PARCC Final Technical Report for 2018 Administration. *Partnership for Assessment of Readiness for College and Careers*.
- Rubin, D., & Kazanjian, C. (2011, 11). "Just Another Brick in the Wall": Standardization and the Devaluing of Education. *Journal of Curriculum and Instruction*, 5(2). doi:10.3776/joci.2011.v5n2p94-108
- Ruíz, R. (1984). Orientations in Language Planning. *NABE: The Journal for the National Association for Bilingual Education*, 8(2), 15–34.

- Soltero, S. W. (2016). *Dual language education: program design and implementation*. Heinemann.
- Steele, J. L., Slater, R. O., Zamarro, G., Miller, T., Li, J., Burkhauser, S., & Bacon, M. (2017). Effects of Dual-Language Immersion Programs on Student Achievement: Evidence from Lottery Data. *American Educational Research Journal*, 54(1), 282. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=EJ1155308&site=eds-live>
- Sugarman, J., Geary, C., & Migration Policy Institute, M. N. C. on I. I. P. (2018). English Learners in Select States: Demographics, Outcomes, and State Accountability Policies. Fact Sheet. In *Migration Policy Institute*. Migration Policy Institute.
- Thomas, W. P., & Collier, V. National Clearinghouse for Bilingual Education. 1997. "School Effectiveness for Language Minority Students. NCBE Resource Collection Series, No. 9." <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=ED436087&site=eds-live>.
- Thomas, W. P., & Collier, V. P. (1997). Two languages are better than one. *Educational Leadership*, 4, 23.
- Thomas, W. P., Collier, V. P., & Center for Research on Education, D. and E. S. C. C. (2002). *A National Study of School Effectiveness for Language Minority Students' Long-Term Academic Achievement*.
- Tienken, C. (2017). *Defying standardization: creating curriculum for an uncertain future*. Rowman & Littlefield.

- Tienken, C. H., & Zhao, Y. (2013). How common standards and standardized testing widen the opportunity gap. In P. L. Carter & K. G. Welner (Eds.), *Closing the opportunity gap: What America must do to give every child an even chance* (pp. 111-122). Oxford University Press.
- Torres-Guzmán, M. E., Kleyn, T., Morales-Rodríguez, S., & Han, A. (2005). Self-Designated Dual-Language Programs: Is There a Gap between Labeling and Implementation? *Bilingual Research Journal*, 29(2), 453–474. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=EJ742567&site=eds-live>
- Tran, N. A., Martinez-Cruz, A., Behseta, S., Ellis, M., & Contreras, J. (2015). The effects of Spanish English dual language immersion on student achievement in science and mathematics. *JEP: EJournal of Education Policy*, 57.
- Umansky, I. M., & Reardon, S. F. (2014). Reclassification Patterns among Latino English Learner Students in Bilingual, Dual Immersion, and English Immersion Classrooms. *Grantee Submission*, 51, 879–912. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=ED566368&site=eds-live>
- Umansky, I. M., Valentino, R. A., & Reardon, S. F. (2016). The promise of two-language education. *Educational Leadership*, (5), 10. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edsgao&AN=edsgcl.443543612&site=eds-live>
- U.S. Department of Education Institute for Educational Sciences. (2019, February). *Status and trends in the education of racial and ethnic groups* (National Center for Education

Statistics, Comp.; Report No. NCES 2019-038). Government Publishing Office.

<https://nces.ed.gov/programs/raceindicators/index.asp>

U.S. Department of Education Institute of Education Sciences. (2020, May). *The condition of education: English language learners in public schools* (National Center for Education Statistics, Comp.; Report No. NCES2019144). Government Publishing Office.

https://nces.ed.gov/programs/coe/indicator_cgf.asp

U.S. Department of Education Office of English Language Acquisition (OELA). (2015, January). *English learner (EL) trends from the Nation's Report Card* (Fast Facts). Government Publishing Office. https://ncela.ed.gov/files/fast_facts/ELs-NAEP_Card.pdf

U.S. Department of Education Office of English Language Acquisition (OELA). (2018, September). *National and state-level high school graduation rates for English learners* (Fast Facts). Government Publishing Office.

https://ncela.ed.gov/files/fast_facts/GraduationRatesFactSheet.pdf

Valdés, G. (1997). Dual-language immersion programs: A cautionary note concerning the education of language-minority students. *Harvard Educational Review*, 67(3), 391-429. Retrieved from <https://search.proquest.com/docview/212252103?accountid=13793>

Valentino, R. A. Reardon, S. F. (2015). Effectiveness of Four Instructional Programs Designed to Serve English Learners: Variation by Ethnicity and Initial English Proficiency. *Educational Evaluation and Policy Analysis*, 37(4), 612.

Villegas, L., Pompa, D., & Migration Policy Institute, M. N. C. on I. I. P. (2020). The Patchy Landscape of State English Learner Policies under ESSA. In *Migration Policy Institute*. Migration Policy Institute.

- Warhol, L., & Mayer, A. (2012). Misinterpreting School Reform: The Dissolution of a Dual-Immersion Bilingual Program in an Urban New England Elementary School. *Bilingual Research Journal*, 35(2), 145–163.
- Watzinger-Tharp, J., Swenson, K., & Mayne, Z. (2018). Academic Achievement of Students in Dual Language Immersion. *International Journal of Bilingual Education and Bilingualism*, 21(8), 913–928.
- Welner, K. G., & Carter, P. L. (2013). Achievement gaps arise from opportunity gaps [Introduction]. In P. L. Carter & K. G. Welner (Eds.), *Closing the opportunity gap: What America must do to give every child an even chance* (pp. 1-10). Oxford University Press.
- Wiley, T. G., & Wright, W. E. (2004). Against the undertow: Language-minority education policy and politics in the "Age of Accountability." *Education Policy*, 18(1), 142-168.
- Wilson, D. M. (2011). Dual language programs on the rise. *Harvard Education Letter*, 27(2), 4-5.
- Wink, J. (n.d.). *The "dual iceberg" representation of bilingual proficiency*. JoanWink.com. Retrieved June 20, 2020, from <http://www.joanwink.com/scheditems/bw-iceberg.pdf>
- Zúñiga, C. E. (2016). Between Language as Problem and Resource: Examining Teachers' Language Orientations in Dual-Language Programs. *Bilingual Research Journal*, 39(3–4), 339–353.

APPENDIX A: Letters of Solicitation

December 12, 2019

Robert J. Kravitz, Superintendent
Englewood Public School District
274 Knickerbocker Road
Englewood, NJ 07631
RE: Letter of Solicitation to Conduct Research

Dear Mr. Kravitz:

My name is Bonnie Molina and I am a doctoral student at Seton Hall University in the Executive Ed.D program, in the Department of Education Leadership Management and Policy. I am writing this letter to request your consent to include the Englewood Public School District in the study for my dissertation.

The participation of your district in this study is completely voluntary.

The title of the dissertation is, "The Impact of the Language Allocation Plan on Student Outcomes in Two-Way Dual Language Immersion Programs." The study will focus on two districts implementing different language allocation plans in their two-way dual language programs, to determine if there is a difference between a 50/50 daily language allocation plan and a 50/50 weekly language allocation plan in terms of student outcomes. The purpose of this study is to offer practical guidance to administrators as they design and implement effective two-way dual language immersion programs.

The focus will be on student outcomes, as measured by the 2018 PARCC assessment for ELA and math, for all students enrolled in the two-way dual language immersion program in grades 4, 5, and 6 in the 2017-18 academic year. In order to analyze the student-level data, Multiple Regression Analysis will be used, which will control for a number of variables. These include: gender, race, sex, socio-economic background, and English Learner status. Therefore, individual student-level data that includes these variables will be needed from your data administrator.

All student data will remain anonymous; therefore, all identifying information such as names and student identification numbers must be redacted prior to sharing the data.

The data will be kept on an encrypted USB drive and it will be stored in a locked drawer. Data will not be kept electronically on any desktop or laptop computers. Upon completion of the study, the USB drive will remain in a locked drawer and will not be used for any further study without additional consent from the district.

In order to obtain the data, it would be necessary to work with your data administrator for one or two hours to create the Excel data file with the above information for the academic year 2017-18 included. Your written consent on district letterhead is also required. At your earliest convenience, can you email a signed letter of consent to complete the research in your district, indicating that you will provide me with student-level data specified above for my research? My email address is molinabo@shu.edu.

Thank you for your time and consideration in this matter. If you have any questions, you can reach me at [REDACTED]. My mentor is Dr. Monica Browne, Adjunct Professor, Seton Hall University, and she can be reached at [REDACTED].

Sincerely,



Bonnie Molina
Doctoral Candidate, Seton Hall University

December 12, 2019

Dr. Michael Moan, Superintendent
Woodstock Community Unit School District 200
2990 Raffel Road
Woodstock, IL 60098
RE: Letter of Solicitation to Conduct Research

Dear Dr. Moan:

My name is Bonnie Molina and I am a doctoral student at Seton Hall University in the Executive Ed.D program, in the Department of Education Leadership Management and Policy. I am writing this letter to request your consent to include the Woodstock Community Unit School District 200 in the study for my dissertation.

The participation of your district in this study is completely voluntary.

The title of the dissertation is, "The Impact of the Language Allocation Plan on Student Outcomes in Two-Way Dual Language Immersion Programs." The study will focus on two districts implementing different language allocation plans in their two-way dual language programs, to determine if there is a difference between a 50/50 daily language allocation plan and a 50/50 weekly language allocation plan in terms of student outcomes. The purpose of this study is to offer practical guidance to administrators as they design and implement effective two-way dual language immersion programs.

The focus will be on student outcomes, as measured by the 2018 PARCC assessment for ELA and math, for all students enrolled in the two-way dual language immersion program in grades 4, 5, and 6 in the 2017-18 academic year. In order to analyze the student-level data, Multiple Regression Analysis will be used, which will control for a number of variables. These include: gender, race, sex, socio-economic background, and English Learner status. Therefore, individual student-level data that includes these variables will be needed from your data administrator.

All student data will remain anonymous; therefore, all identifying information such as names and student identification numbers must be redacted prior to sharing the data.

The data will be kept on an encrypted USB drive and it will be stored in a locked drawer. Data will not be kept electronically on any desktop or laptop computers. Upon completion of the study, the USB drive will remain in a locked drawer and will not be used for any further study without additional consent from the district.

In order to obtain the data, it would be necessary to work with your data administrator for one or two hours to create the Excel data file with the above information for the academic year 2017-18 included. Your written consent on district letterhead is also required. At your earliest convenience, can you email a signed letter of consent to complete the research in your district, indicating that you will provide me with student-level data specified above for my research? My email address is molinabo@shu.edu.

Thank you for your time and consideration in this matter. If you have any questions, you can reach me at [REDACTED]. My mentor is Dr. Monica Browne, Adjunct Professor, Seton Hall University, and she can be reached at [REDACTED].

Sincerely,



Bonnie Molina
Doctoral Candidate, Seton Hall University

APPENDIX B: Permission Letters



ENGLEWOOD PUBLIC SCHOOL DISTRICT

ADMINISTRATIVE BUILDING, 274 KNICKERBOCKER ROAD, ENGLEWOOD, N.J. 07631

Phone (201) 862-6245

Fax (201) 862-6226

Office of the Superintendent

January 2, 2020

Dear Ms. Molina,

Thank you for your interest in conducting research in the Englewood Public School District. Your recent request to obtain anonymous data regarding students in our dual language program is approved, pending approval of Seton Hall's Institutional Review Board (IRB).

Whatever data you need is available for your disposal. Please let me know what and when you need the information.

If you have any further questions, please do not hesitate to ask.

Thank you

Robert Kravitz
Superintendent of Schools

Woodstock Community Unit School District 200

2990 Raffel Road
Woodstock, IL 60098-3126

Tel: 815.338.8200
Fax: 815.338.2005

www.woodstockschools.org



January 6, 2020

To Whom It May Concern:

Thank you for your interest in conducting research in Woodstock Community Unit School District 200. Your recent request to obtain anonymous data regarding students in our Dual Language program is approved, pending approval of Seton Hall's Institutional Review Board (IRB).

Whatever data you need is available for your disposal. Please let me know what information you need and when you need it.

If you have any further questions, please do not hesitate to ask.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Moan".

Michael Moan, Ed.D

APPENDIX C: IRB Exemption Letter



February 11, 2020

Bonnie Sue Molina



Re: Study ID# 2020-044

Dear Ms. Molina,

The Research Ethics Committee of the Seton Hall University Institutional Review Board reviewed and approved your research proposal entitled “The Impact of the Language Allocation Plan on Student Outcomes in Two-Way Dual Language Immersion Programs” as resubmitted. This memo serves as official notice of the aforementioned study’s approval as exempt. Enclosed for your records are the stamped original Consent Form and recruitment flyer. You can make copies of these forms for your use.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol, informed consent form or study team must be reviewed and approved by the IRB prior to their implementation.

You will receive a communication from the Institutional Review Board at least 1 month prior to your expiration date requesting that you submit an Annual Progress Report to keep the study active, or a Final Review of Human Subjects Research form to close the study. In all future correspondence with the Institutional Review Board, please reference the ID# listed above.

Thank you for your cooperation.

Sincerely,

A handwritten signature in black ink that reads 'Mara Podvey'.

Mara C. Podvey, PhD, OTR
Associate Professor
Co-Chair, Institutional Review Board

Office of the Institutional Review Board

Presidents Hall · 400 South Orange Avenue · South Orange, New Jersey 07079 · Tel: 973.275.4654 · Fax 973.275.2978 ·
www.shu.edu

WHAT GREAT MINDS CAN DO