A Comparison Study of the Efficacy of Self-contained Bilingual Education and Monolingual General Education for Bilingual Students

by

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Abstract

There are two program models under consideration in this study. The first model is self-contained bilingual, which includes students who are learning both English and Spanish and speak mostly Spanish at home. This group is receiving the majority of their academic instruction in Spanish at school. The second group is the monolingual general education group. The students studied in the monolingual general education program include students who speak Spanish and English at home and receive most, if not all, of their academic instruction in English. The purpose of this investigation was to determine if there is a difference in efficacy between the two programs and student groups. This information is needed in order to make coherent and understandable recommendations to parents who are deciding which program to place their bilingual child in. The results show that the self-contained bilingual students outperformed the bilingual students in the monolingual program on the Northwest Evaluation Association Measures of Academic Performance in the area of mathematics, but not in reading. It is also noted that the two groups of students, when grouped together, performed better in mathematics than in reading. The recommendation to parents of bilingual children, taking into account the results of this research, is to place students in the self-contained bilingual education program.

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Chapter One
Introduction

Overview

This research study was conducted at a time when questions about bilingual education are at the forefront of the minds of many educators, parents, and politicians. Although bilingual education has been in existence in the United States for more than half a century, during the past few years there has been movement toward more effective bilingual education programs in our country's classrooms.

The investigator has been involved with bilingual education for more than 9 years. She started her teaching career in Guatemala, where she taught English (to native Spanish speakers), as well as Physics and Chemistry (in Spanish to native Spanish speakers). From there, she returned to the United States and taught Spanish to native English-speaking high schoolers for a couple of years. The investigator then taught reading and mathematics to elementary students, many of whom were bilingual. She later moved to another district where she taught bilingual students how to read and comprehend mostly in English. Last year, she taught in a self-contained Spanish bilingual education program (a program in which all the students are English learners and speak Spanish at home) in a third grade classroom that consisted of simultaneous bilingual students, meaning students who mostly spoke Spanish at home but were receiving their coursework in Spanish and English. Their classroom was a language-rich environment in which students learned in both Spanish and English.

The district where the researcher taught for the last three years is located in a diverse community in the Midwest. About 71% of the families in the district are hispanic, and therefore the district has implemented a transitional bilingual education program whose goal is to move students from the English as a New

Language (ENL)/Bilingual program into all English classes as soon as possible. There have been many changes in this district to bilingual programming over the past years. When the investigator came into the district in 2014, the English as a New Language Coordinator was working on meeting state requirements in order to be in compliance with Illinois School Code ILSC 14C, but still had improvements to make to the early-exit Transitional Bilingual Education (TBE) program that only had bilingual (with all native Spanish speakers) classrooms through 2nd grade. In 2015, a new coordinator was hired, and more changes were made in order to ensure continued compliance with Illinois state standards.

These constant changes led to a bit of confusion among the different stakeholders--parents, teachers, school administrators, and state representatives. Teachers were doing their best teaching in the classrooms and striving to meet and surpass state requirements, therefore, students were growing and learning more than before. In 2016, the 3rd grade self-contained bilingual program was implemented across the district, and implementation of the 4th grade self-contained bilingual program is planned for this current 2017-18 school year. With the self-contained program lasting through the 4th grade, the district is continuing to work towards a late-exit TBE program and, in the future, has plans to operate a one-way dual language program (where simultaneous bilingual students receive instruction in Spanish and English with the language ratio being close to 50/50--with variances between programs).

Among the differences between early-exit TBE and late-exit TBE is that the goal of the early-exit TBE program is to get students to learn English as fast as possible at any cost even if this leads to some loss of native language proficiency. The goal of the late-exit program is to allow students to maintain their native language for longer, while also using what knowledge they've gained in that language to transfer content knowledge to English as they progress in English. The reason one-way dual language (a late-exit program) is superior to both early and late-exit TBE is because the goal of that program is for the

students to achieve biliteracy by maintaining and learning in both languages for as long as possible. Unfortunately, the plan to transition to a late-exit and eventual one-way dual program is still in the early stages, thus focus of this study will be in comparing the self-contained bilingual classrooms, to the monolingual general education classrooms. It is helpful to understand the complete format and process of the TBE program that currently exists. When kindergarteners enter the district, they are screened for their language skills, then a recommendation is made to put the student in one of the following programs: General Education (in English), part-time TBE, or full-time TBE. In order to be recommended for General Education, the student must be a native English speaker, or strong enough in English to find success in that environment. Part-time TBE means that the student has been exposed to Spanish and English, and would find success in the general education classroom, but may need support from an ENL/Bilingual Resource Teacher in either small group or as push-in support. (Push-in support involves a bilingual resource teacher who works with the mainstream teacher to implement strategies that help within the monolingual environment.)

The full-time TBE recommendation would put the child into a classroom in which academic content is taught in both English and Spanish. In first grade, the academic content is taught almost exclusively in Spanish and students receive English input with special subjects (music, art, etc.), which is a 30 minute class where they are integrated with their English-speaking peers. In second grade, the amount of Spanish instruction remains much the same as in the first grade, and in third grade, reading is still taught in Spanish the entire year and mathematics transitions to English about halfway through the school year.

Although these recommendations are based on the English language assessments that are given to the students, parents still have the opportunity to place their child in the program they believe is appropriate for their family's language needs. On occasion, parents do disagree with the teacher's

recommendation, especially when they do not want their child placed into a self-contained bilingual classroom. They base these decisions on a number of factors, including: a desire for their child to learn English as quickly as possible; a belief their child would be more successful in a monolingual classroom due to their special education needs; concern that the child doesn't speak much Spanish in the home (and may lose their native language); the fact that they didn't receive bilingual education and wish their child to have a bilingual education. Sometimes their reasons for refusing bilingual education for their child are based on misconceptions about the effects of bilingual education that have been refuted by findings which will be discussed in Chapter 2.

A fundamental principle of accepted education practice is that the goal is to do what is best for each individual child. In order to do this in the case of bilingual students, it is imperative to know which programs are the most beneficial, realizing that it may be different for each student. This is why this research study is relevant and important.

Problem Statement

In the school district studied there are two programs available to the bilingual population, with a few different levels of language support offered within those programs. Language screening is completed on students in Kindergarten (or once they enter the district) if parents note on the Home Language Survey (given to parents at registration) that more than one language is spoken in the home. If a student's language performance demonstrates that they speak and/or understand more than one language, the teacher or assessor makes a program recommendation. As mentioned above, there are two main program options, which include a mainstream education with varying levels of native language support for a bilingual student, and a self-contained bilingual education which offers a bilingual education in both Spanish and English. Once the recommendation is made, the student's parents decide whether or not to accept

the recommendation. If parents disagree with the school's recommendations, a conversation is had between the parent(s) and teacher/assessor and/or with the ENL (English as a New Language) Coordinator.

When making a decision about his/her child's education and language support, a parent must consider not only what is best for the child in the moment, but also their desired outcomes for their child in the future. Unfortunately, sometimes these two considerations can mean a parent is stuck between the two programs. There are some parents who are principally interested in their child's learning as much English as possible as fast as possible in order to reach success (whatever that looks like for that parent or family) in the United States. There are other parents who desire that their child does not only learn English, but also learn the language of their culture and family in order to maintain cultural ties and family communication connections. This turns out to be a false dichotomy since well-designed bilingual education programs produce rapid gains in English without sacrificing a student's native language skills. Well-designed bilingual programs lead to biliteracy.

Providing meaningful input to parents before they make decisions on which program best meets their child's needs is challenging because of the absence of school-specific measures of outcomes for students in different programs.

Purpose Statement

The purpose of this study was to determine the relative effectiveness of a self-contained bilingual education program and a monolingual general education program with respect to English language acquisition for students who speak primarily Spanish at home. The goal is to provide parents and educators with insight into the potential benefits or concerns with these two particular instructional program models.

This study investigated the success of students in grades 1-4 at an elementary school in the Midwest, based on their reading and mathematics scores from the Northwest Evaluation Association Measures of Academic Progress (NWEA MAP) test in the 2016-2017 school year.

Research Question

1) Is there an evidence-based way to determine which program is better: self-contained bilingual, or immersion in the monolingual English, mainstream classroom?

Hypotheses:

The following five sets of hypotheses were analyzed:

Null one: The average growth from first to third grade in reading on the NWEA MAP test of the self-contained bilingual students will be less than or equal to the average growth in reading from the monolingual general education bilingual students.

Research one: The average growth from first to third grade in reading on the NWEA MAP test of the self-contained bilingual students will be greater than the average growth in reading from the general education bilingual students.

Null two: The average growth from first grade to third grade in mathematics for the self-contained bilingual students will be less than or equal to the average growth from first grade to third grade in mathematics for the general education bilingual students.

Research two: The average growth from first grade to third grade in mathematics for the self-contained bilingual students will be greater than the

average growth from first grade to third grade in mathematics for the general education bilingual students.

Null three: The average of the reading scores from the self-contained bilingual students by the winter of 3rd grade, will be less than or equal to the average of the reading scores from the general education bilingual students by the winter of 3rd grade.

Research three: The average of the reading scores from the self-contained bilingual students by the winter of 3rd grade, will be greater than the average of the reading scores from the general education bilingual students by the winter of 3rd grade.

Null four: The average of the mathematics scores from the self-contained bilingual students by the winter of 3rd grade will be less than or equal to the average of the mathematics scores from the general education bilingual students by the winter of 3rd grade.

Research four: The average of the mathematics scores from the self-contained bilingual students by the winter of 3rd grade will be greater than the average of the mathematics scores from the general education bilingual students by the winter of 3rd grade.

Null five: The mathematics scores of each bilingual student are positively correlated to the reading scores of the same students.

Research five: The mathematics scores of each bilingual student are not correlated to the reading scores of the same students.

Definition of terms

- **Assessing Comprehension and Communication in English State to State for ELLs (ACCESS) test-**This is a language proficiency test administered to students in the transitional bilingual education program once a year. Students are scored in the areas of listening, speaking, reading, and writing.
- **Bilingual Student**-A student who speaks more than one language; often speaking a language other than English in the home. In this study, all bilingual students studied speak both Spanish and English.
- **Comprehensible input-**This type of input includes instruction that the student can understand and comprehend in whichever language necessary, but most often in the language of instruction.
- **General education, monolingual education program-**This program consists of students who receive instruction primarily, if not all, in English. Students who are bilingual, and have not exited the Transitional Bilingual Education program by passing the Assessing Comprehension and Communication in English State to State test, will receive resource support in Spanish, either in a pull-out group or push-in support in the classroom.
- **NWEA MAP test-**This is one of the standardized state tests administered in Illinois, and stands for “Northwest Evaluation Association Measures of Academic Performance.”
- **Monolingual paradigm-**The structure in the United States where individuals are more readily moving towards one, ethnically, pre-determined language

- **Multilingual paradigm-**The structure that allows for individuals to accept and speak more than one language. Even if they themselves are monolingual, people can still have a multilingual paradigm.
- **Pull-out resource support-**This support is provided by a bilingual resource teacher in a small group, outside of the classroom, and is offered in whatever language is necessary for comprehensible input and the success of the student.
- **Push-in resource support-**This support is provided by a bilingual resource teacher within the classroom, and is offered in whichever language is necessary for comprehensible input and the success of the student.
- **Self-contained bilingual education program-**This program consists of simultaneous bilingual students who receive instruction in both Spanish and English. In 1st grade, the instruction is 90% Spanish and 10% English. In 2nd grade, the instruction is 80% Spanish and 20% English. In 3rd grade, the instruction is 70% Spanish and 30% English.
- **Sheltered English Instruction-**An approach to teaching English learners that incorporates language and content instruction and takes into account that those students need comprehensible input.
- **Simultaneous bilingual**-A student who is acquiring two languages at the same time (simultaneously)
- **Sequential bilingual**-A students who acquires one language first, and then acquires a second or third language.
- **Transitional Bilingual Education (TBE) Program-**An education program that consists of bilingual students either in a self-contained bilingual classroom, or receiving bilingual resource support in a general education, monolingual classroom, who have the intent of exiting the program and entering the mainstream education program, and no longer receiving support.

Chapter Summary

In education today, there is a concern among some educators and parents that students are not finding value in maintaining their bilingualism. On the other hand, there are parents that are encouraging a monolingual English future for their child because they believe that is what is important to succeed in the United States. Due to these differing opinions, some parents choose to put their child in bilingual education and some choose to put them into the monolingual program. This study investigated the effectiveness of a TBE program compared to leaving bilingual students in a monolingual program, where their only instruction would be in English (with a possibility of occasional native language support). In order to do this, reading and mathematics data from students' NWEA MAP scores were compared between bilingual students in a self-contained bilingual classroom and bilingual students in a general education monolingual classroom. The data was evaluated longitudinally for the 2016-17 third graders, as well as cross-sectionally for grades 1-3.

Chapter Two
Review of Related Literature

The purpose of this study was to determine the relative effectiveness of a self-contained bilingual education program and a monolingual general education program with respect to English language acquisition for students who speak primarily Spanish at home. The goal was to provide parents and educators with insight into the potential benefits or concerns with these two particular instructional program models.

Bilingual Education Policy in the United States

Bilingual education has been a part of the education in the United States for most of the 20th century. The Bilingual Education Act was enacted in 1968, and created a legal climate that established specific mandates around the implementation of bilingual education for students that spoke a language other than English in the home. During that time, the morale of the citizens of the United States was dismal due to the turmoil of the civil rights movement, and the volatile environment created by prejudice and injustice. With civilians already feeling on edge about their neighbors, the unease was made more apparent when those neighbors didn't speak the same language. Many monolingual English speakers were not ready to face a future filled with bilingual Americans, and were quickly realizing that something needed to happen in order to ensure that students were learning English.

Although the societal anxiety was high at the time, school districts were still implementing bilingual programs. Many of these programs were happening in Arizona and California due to the high population of Mexican-Americans and Japanese-Americans. Bilingual education was under scrutiny and was being studied. For example, a study from 1985 by De la Garza and Medina looked at Tucson students in a bilingual program and compared them to English-dominant

students in an all-English program. The socio-economic class between the two groups was dramatically different, with 76% of the bilingual students on free-and-reduced lunch compared to only 37% of the English-dominant students receiving the same assistance. The results of the study were that the bilingual students slightly outperformed their English-speaking peers in grades 1-3 (the only grades evaluated in the study), although it was not significant (Krashen, 2000).

Another study conducted in 1985, as reported by Krashen and Park, compared bilingual students in Douglas, Arizona to monolingual students in the same city. The bilingual students were described as “low socioeconomic,” but the monolingual students socioeconomic status was not discussed. In this study by Saldate, Mishra, and Medina, the results were that the bilingual students performed slightly below their monolingual peers in 1st grade, but outperformed them significantly in 2nd grade. The academic results were taken from student performance on the Wide Range Achievement Test.

The two aforementioned studies are also discussed in an article by Krashen and Park from 2000. The article discussed Arizona’s intention to enact Proposition 203 which would eliminate bilingual education due to public education doing an “inadequate job” of educating immigrant children. Instead of bilingual education, Proposition 203 suggests implementing “heavy” English instruction. After discussing the two studies from 1985, the article goes on to discuss the positive results of graduates of bilingual programs and claims that “calls for the elimination of bilingual education are completely unjustified (Krashen and Park, 2000).”

In June of 1998, Proposition 227 in California was passed with a 61.28% to 38.72%, which eliminated bilingual education in the state. It required all English instruction, but many teachers reported that this meant a “mostly” English classroom. Teachers were spending a little over half of their day teaching in English, and the rest in Spanish (BallotPedia). Just three years later, Arizona

passed their own law against bilingual education with Proposition 203, which also required English-only instruction. As recently as 2001, anti-bilingual education reform was passed, this time in Colorado which followed the pattern of eliminating bilingual education in the state (MacDonald, 2017).

The story hasn't been as harsh in Illinois when it comes to bilingual education. The state has enacted Article 14C of the Illinois school code, which speaks specifically about the requirements for school districts that have at least 20 students that speak a language other than English in the home. Currently, Illinois is ensuring that there are minimum requirements met for bilingual students when it comes to education.

According to the Illinois State Board of Education's (also known as ISBE) Guidance Document 11-01, students identified as Low English Proficiency (LEP), should achieve success on the Assessing Comprehension and Communication in English State to State for ELLs test (ACCESS test) within three years of beginning a bilingual education program, including Transitional Bilingual Education (TBE) or Transitional Program of Instruction (TPI). If a student does not receive qualifying scores on the ACCESS test within three years, districts are required to continue services for that student with one of the following qualified programs: TBE, Developmental Bilingual, Dual Language/Two-way Immersion, English as a Second Language (ESL), Content-Based ESL, or Sheltered English Instruction. School districts continue to receive funds for these students under Section 228.27 of Illinois State Law as well as the federal mandate from the Equal Educational Opportunities Act (EEOA).

These state mandates have left school districts in a position of despair as they attempt to have students exit their language programs as early as possible. Although districts do receive funds for students receiving language services, the need to have high-performing children in schools outweighs the need for bilingualism. Therefore, students are often exited from language services earlier than they probably should be. The state has yet to figure out what students

should be scoring on ACCESS to reach success in the monolingual classroom. Even as recently as 2017, Illinois changed the exit criteria on ACCESS from 4.2 overall to 4.8 overall composite score.

Fortunately, many school districts in Illinois are advancing from only doing the required TBE or TPI program, and implementing one and two-way dual language programs. Although not required, these programs lead to higher levels of growth and achievement for English Learners (ELs).

Comparing Program Models

Currently in bilingual education, there are a variety of programs. A Transitional Bilingual Education (TBE) is a program with the goal of preparing students to be able to access the general education curriculum in English. Bilingual students are screened by the World-class Instructional Design and Assessment (WIDA) Academic Proficiency Test or W-APT, and then placed into self-contained bilingual, bilingual resource, or the general education, monolingual classroom.

Thomas and Collier (2010), two experienced researchers from the field of linguistics, conducted a 5-year research study from the years of 1996-2001 in order to answer policy questions that were posed by both the federal and state governments. These government agencies were facing a proposed increase to 40% of Language Minority students by the 2030's, and officials were interested in knowing how best to provide educational opportunities for these students. In an attempt to answer this question, this study compared 5 program models with results from 6 million students which were located in 5 different regions of the U.S. including: the northeast, northwest, south-central, and the southeast.

Long-term academic achievement of language minority students was measured by the use of standardized test scores. The study found that the program that garnered the most student success based on standardized test scores, was a two-way developmental bilingual education program That program

produced students that were outperforming their native-English speaking peers starting at 6th grade, and continuing through high school. The data was aggregated from a series of 3-7 year longitudinal studies from well-implemented, mature programs. The results of the traditional early-exit bilingual education and ESL programs found that students peaked around 6th or 7th grade (still well-below their native-English speaking peers), and then regressed in the following grades. The transitional bilingual program was found to be the least effective (which is the program model studied in this investigation).

The above mentioned study suggests that dual language (two-way developmental) is the best program model to see continuous growth. Students in traditional ESL pull-out programs performed the worst overall, after a quick burst of growth in the early years.

Assessment

In a 1991 study Royer and Carlo stated found that “current procedures for assessing the progress of students enrolled in bilingual education programs are inadequate because the procedures are insensitive to gains in second language competence. These tests are insensitive to the cultural experiences of students, and the content of tests rarely matches the curriculum employed in bilingual programs (Royer, p. 20).” The NWEA MAP test is not nationally normed for English Language Learners.

Language Acquisition

According to Cummins (2003), there is a difference between social and academic language. He noted that Basic Interpersonal Communication Skills (BICS) take much less time to develop (1-3 years) than Cognitive Academic Language Proficiency (CALP). CALP takes anywhere from 5-7 years depending on the student and the educational support that student receives. Without the understanding of this language development theory, teachers may have

unrealistic expectations or have the potential to remove language supports sooner than necessary.

Out of the four language domains, which are listening, speaking, reading, and writing, reading is the 3rd domain that children typically acquire. This means that in order to develop the skill of reading students first need to have a solid foundation in listening and speaking in a particular language (Reese, 2006, p. 363). Students who struggle with either listening or speaking, will most likely also struggle with reading and writing.

Chapter Summary

The related literature discusses different program models available to ELs, as well as the educational policy that has transformed in the last half century in the United States. In accordance with the Illinois State School Code, school districts are required to have at minimum, a Transitional Bilingual Education program when there are more than 20 students that speak a language other than English. The research from Thomas and Collier found that two-way developmental dual language garners the best results with English Learners when compared to other bilingual program models.

Chapter Three
Methodology

Overview

The purpose of this study was to determine the relative effectiveness of a self-contained bilingual education program and a monolingual general education program with respect to English language acquisition for students who speak primarily Spanish at home. The goal was to provide parents and educators with insight into the potential benefits or concerns with these two particular instructional program models.

Sample

The two groups of bilingual students in the population sample include students in a self-contained Transitional Bilingual Education (TBE) program and students in the mainstream, monolingual classrooms. Both groups of students include students who are simultaneous bilinguals (meaning they are learning English and Spanish at the same time), are spoken to mostly in Spanish in the home, and are receiving at least some of their academic instruction in English.

The TBE program has a language allocation plan which varies by grade level, but has also varied by year due to the evolving of the program model in the district. Currently in the district, the first grade students receive 80% Spanish instruction and 20% English instruction. In second grade, they receive 70% Spanish and 30% English, and in third grade, they receive 60% Spanish and 40% English. As fourth grade was added this year, students in self-contained bilingual as fourth graders (who do not exit via the ACCESS test), receive about 50% of their instruction in English and 50% in Spanish.

The students in the mainstream monolingual classroom receive all of their academic instruction in English, and may or may not receive native language support from a bilingual resource teacher, either in a small group outside of the classroom, or within the classroom. Although these students are doing the

majority of their school life in English, their home life is often still heavily saturated with their parents' native language, which is Spanish. On occasion, these students are also seen and heard communicating with their peers in Spanish, both in and out of the classroom.

The researcher gathered the scores from the public database in order to analyze the data. Data from the past years, used for the longitudinal study was gathered at the same time.

There were no identifiable student characteristics reported with the findings, therefore the study is completely confidential. All students in the district are required to take the test, and the data is collected at a school, district, and state level, and is available to the public.

The NWEA MAP test uses a Rasch Interval (RIT) unit which is an accurate, equal interval scale that has the same meaning regardless of age or grade level, and is useful for measuring growth over time and across grade levels. For use in this study, the RIT band scores for each student were recorded after the test was administered in both the fall and the winter of 2016.

Design

This study compared the effectiveness of each program (self-contained bilingual and monolingual general education) by analyzing data from the Northwest Evaluation Association Measures of Academic Progress Test (NWEA MAP) for each group of students, in both reading and mathematics. It not only compared students at the same grade level, but also compared both groups longitudinally from 1st grade through 3rd grade.

The investigator gathered reading and mathematics data from a teacher-accessed database for each student. The data was then aggregated into a spreadsheet containing reading and mathematics scores for Group 1, which consisted of self-contained bilingual students, and reading and mathematics scores for Group 2, which consisted of bilingual students in the monolingual

general education program. No identifying information was recorded for a student with the data.

The programs evaluated were the general education program which instructs students only in English, and the Transitional Bilingual Education (TBE) program which encourages students to learn as much English as they can in order to exit the program as soon as possible via the Assessing Comprehension and Communication in English State to State for ELLs (ACCESS) Test. The NWEA MAP test was taken three times a year in this district, this study analyzed the data from the fall testing window (September 2016) and the winter testing window (December 2016). The data was collected from a limited access database that is available to teachers within the district.

The purpose of conducting a number of t-tests was to determine if there is a statistically significant difference between the two groups in terms of reading and mathematics testing. In other words, did the self-contained bilingual students outperform their bilingual peers in the monolingual classroom? If the t-critical value is less than the t-stat value, the null hypothesis can be rejected, and then the alternative or research hypothesis can be accepted. The p-value tells the percentage amount of error that can be expected and a p-value of 10% was used in this study.

For the first 4 hypotheses, t-tests were used to determine if the bilingual students in the self-contained classroom (Group 1) outperformed the bilingual students in the monolingual, general education classroom (Group 2), statistically. The data was evaluated longitudinally from 1st-3rd grade as well as cross-sectionally in third grade. The fifth hypothesis referred to the question of whether or not there was a difference between reading and mathematics. Therefore, a linear regression test was used to determine if the mathematics and reading scores were positively correlated.

The students in the sample took the test three times in third grade (fall, winter, and spring). It was decided to investigate the data from the winter test and

not the fall or spring tests because at this point in the year, students had gained enough knowledge to assess what they had learned as third graders, and the spring data was collected after students had just finished two other important standardized tests. This could have led to test exhaustion or unmotivated students, and could have negatively impacted the data.

Data Analysis

The data for analysis was collected from the described student database that included scores from the NWEA MAP test taken during the 2016-2017 school year. Using this data, the goal was to test the question: Is there an evidence-based way to determine which program is better: self-contained bilingual, or immersion in the monolingual English, mainstream classroom? Two different types of t-tests were used to analyze the data. In order to compare the means of the reading and mathematics scores between the two groups, a t-test which assumed equal variances was used because both groups have similar characteristics, other than the differences being compared. Both groups consisted of third grade students that attend the same school, and the majority came from low socioeconomic status (measured by the eligibility for free and reduced lunch)homes. When analyzing the data for hypothesis 5, a linear regression test was used.

Chapter Summary

This chapter describes the data, analyzed assessment instruments, sample composition and data analysis strategy that was used to compare the reading and mathematics scores of students who received instruction only in English in a monolingual general education classroom to students who received self-contained bilingual education where more than 50% of the instruction was in Spanish.

Chapter Four
Results

Purpose Statement

The purpose of this study was to determine the relative effectiveness of a self-contained bilingual education program and a monolingual general education program with respect to English language acquisition for students who speak primarily Spanish at home. The goal was to provide parents and educators with insight into the potential benefits or concerns with these two particular instructional program models.

The aggregated data (from the 2016-2017 school year) was evaluated longitudinally (from 1st-3rd grade), as well as cross-sectionally in third grade using t-tests. The results from the t-tests conducted for each hypothesis are summarized in Table 1 below.

Table 1 Data Analysis Results

Hypothesis	t-critical	t-stat	p-value	Decision
Hypothesis 1	1.321	0.434	0.334	Accept the null
Hypothesis 2	1.321	0.759	0.228	Accept the null
Hypothesis 3	1.321	0.750	0.231	Accept the null
Hypothesis 4	1.321	2.01	0.011	Reject the null and accept the research

See Appendices A to E for Data Analysis Results.

Results

The students in the self-contained bilingual classroom are part of Group 1, and Group 2 indicates bilingual students in the monolingual general education classroom. These two groups of students were compared through the first four hypotheses. For the fifth hypothesis tested, the reading and mathematics scores of all students were compared to each other rather than comparing the groups. The student test results are shown in Appendix A.

The first null hypothesis stated that the average growth from first to third grade in reading on the NWEA MAP test of the self-contained bilingual students will be less than or equal to the average growth in reading from the general education bilingual students. A t-test assuming equal variances was conducted on the collected data at a 10% significance level due to the lack of current research on this similar topic.

The full results from the t-test assuming equal variances to analyze hypothesis one are shown in Appendix B.

The test statistics for hypothesis one are found in Table 1, and show a critical value of 1.321 and a statistical value of 0.434, meaning the null hypothesis is accepted and that the growth from first grade to third grade in reading for the self-contained bilingual students is less than or equal to the growth from first grade to third grade in reading for the general education bilingual students. In this case, the difference in the growth of the self-contained bilingual students and the growth of the general education bilingual students was not statistically different. The p-value of 33.3% shows that an error would be made 33.3% of the time if the null hypothesis were rejected, which is much higher than the 10% significance level used in this study.

The results from the t-test assuming equal variances for null hypothesis 2 are shown in Appendix C. The second null hypothesis stated that the average growth from first grade to third grade in mathematics for the self-contained bilingual students will be less than or equal to the average growth from first grade

to third grade in mathematics for the general education bilingual students. Results for the t-test for hypothesis 2 from Table 1 show a t-critical value of 1.321and a t-stat of 0.759, resulting in accepting the null hypothesis two, which states that the average growth from first grade to third grade in mathematics for the self-contained bilingual students will be less than or equal to the average growth from first grade to third grade in mathematics for the general education bilingual students.. The p-value is 0.228 meaning an error would be made almost 23% of the time if the null were rejected, which is more than double the 10% of the error willing to be accepted.

The results from the t-test assuming equal variances for null hypothesis 3 are shown in Appendix D. The test statistics for hypothesis 3 from Table 1 shows a t-critical of 1.321 was needed and a t-statistic of 0.750 was found. Even though the mean for Group 1 is higher, it is not significant enough to reject the null hypothesis, therefore the null hypothesis is accepted, meaning that the average of the reading scores from the self-contained bilingual students by the winter of 3rd grade, will be less than or equal to the average of the reading scores from the general education bilingual students by the winter of 3rd grade.

The results for hypothesis set 4, found in Table 1, show a t-critical of 1.321 and a t-stat of 2.01. This leads to the rejection of null hypothesis four and the accepting of research hypothesis four, which states that the average of the mathematics scores from the self-contained bilingual students by the winter of 3rd grade will be greater than the average of the mathematics scores from the general education bilingual students by the winter of 3rd grade. The self-contained bilingual students outperformed their bilingual peers in the monolingual, general education classrooms. The p-value was 0.011 or 1.1%, meaning an error would only be made about 1% of the time when the research hypothesis is accepted. The full results can be found in Appendix E, attached.

Table 2 Data Analysis for Hypothesis 5

Hypothesis	F-value	p-value	Decision
Hypothesis 5	.49	.4913	Accept the null

See Appendix F for data analysis results.

Null hypothesis 5 was evaluated using linear regression. This test analyzed the question of whether or not the mathematics scores of all students in the sample were positively correlated to the reading scores of those students. The results are shown in the attached Appendix F.

The results in Table 2 show an F-value of .49, meaning the null hypothesis was accepted, which states that the mathematics scores of each bilingual student are positively correlated to the reading scores of each bilingual student. The p-value of 49.13% signifies that an error would be made about half of the time if the null were rejected.

Chapter Summary

The data analysis results from this study show that the null hypothesis could not be rejected for the first 3 hypotheses sets, but that the null hypothesis can be rejected for the fourth hypothesis. The null hypothesis was also accepted for hypothesis 5. The bilingual students in the self-contained bilingual education classroom did outperform their bilingual peers from the monolingual education classroom on the mathematics growth. There was a positive correlation between the mathematics and reading scores of all bilingual students.

Chapter 5
Discussion, Conclusions, Recommendations

Purpose Statement

The purpose of this study was to determine the relative effectiveness of a self-contained bilingual education program and a monolingual general education program with respect to English language acquisition for students who speak primarily Spanish at home. The goal was to provide parents and educators with insight into the potential benefits or concerns with these two particular instructional program models.

Discussion

The results of this study suggest that bilingual students are likely to be more successful in a self-contained bilingual classroom, however it is the researcher's opinion that each student case needs to be assessed on an individual level. Unfortunately, if students are exposed to enough English at school, and are unwilling to apply themselves in a bilingual setting, then that particular student may find more success in a monolingual classroom.

In hypotheses 1, 2, and 3, it was evident that the mean scores for the self-contained bilingual students were higher, but not statistically higher, so it cannot be claimed that the self-contained bilingual education program is necessarily better for bilingual students. This is somewhat consistent with previous literature findings, which show that there will not be a significant difference between bilingual students and their monolingual peers until 5th or 6th grade due to the time it takes to accumulate academic vocabulary in another language. It differs from previous literature in that the means for the bilingual students in self-contained classrooms are not usually higher until much later in elementary school or even into middle school.

The rejection of null hypotheses 4 is consistent with previous literature findings, which explains that there is a difference in language demanded for participating in mathematics compared to participating in reading. Mathematics is often an easier subject to learn for bilingual students due to the use of numbers more than words. It is likely that bilingual students will struggle more with word problems than their monolingual peers, although this is an area of struggle for a large number of students, regardless of their language background. Bilingual students who have mastered mathematics in one language are able to transfer it much easier into a second language compared to transferring reading knowledge into a new language. Taking a closer look at the differences between reading and mathematics, one must remember that reading and mathematics are two very different subjects. For both of them, language is a key to unlocking the door to new worlds and understandings of the world around us. Out of the four language domains, reading is the 3rd domain that children typically acquire, meaning that, in order to develop the skill of reading, students need to have a solid foundation in listening and speaking in a particular language (Reese, 2006, p.363). As bilingual learners are developing across the language domains, reading and writing are two areas that may prove difficult or come at a later stage of development. On the NWEA MAP test, students are tested on their ability to read and write. If language learners have mastered these skills in their native language, teachers need to be confident that they are bridging those skills into the second language.

Mathematics is another area that is tested by the Measures of Academic Performance. Granted, reading is required often for the understanding of particular mathematics problems, but the language of mathematics is a much more universal language. In both Spanish and English, the number system is the same, so Spanish-speaking bilingual students rarely have difficulty with number sense in English if they have mastered the concepts and skills in Spanish first. Likewise, students are less likely to struggle with mathematics concepts and

computation in a second language if they learn to fully understand it in their native language. Another factor in the ease of transition from mathematics in Spanish to mathematics in English is the fact that much of the language of mathematics is latin based, and therefore there are several cognates that students learn to identify while learning and exploring mathematical practices and applications. For example, multiplication in English, is translated as multiplicación in Spanish.

Due to the differences between reading and mathematics, bilingual students often catch on in mathematics quicker than they do with reading in a second language. This is supported by the data compared between these two types of tests in this study.

Conclusions

After analyzing and reviewing the data analysis results in this study, it can be concluded that although the bilingual students performed better in the self-contained classroom by the winter testing for 3rd grade, it was not statistically significantly better. This conclusion is consistent with previous studies that found that it takes 5-7 years for students to develop academic vocabulary in a new language and therefore they will most likely not outperform their peers until 6th or 7th grade. Those predictions are contingent on a student consistently maintaining their bilingualism and biliteracy.

The Transitional Bilingual Education program currently being implemented in the district studied is acknowledged in the literature as the least effective, due to language loss, and delay in second language development, as well as biliteracy. Although it is not the best option, these research results will help parents understand why their child may benefit from self-contained bilingual education versus monolingual general education and to acknowledge that it is important to maintain their first language as well as develop English as a new language.

It can also be concluded that bilingual students, regardless of program model or language of instruction, performed better in mathematics than in reading. This should be no surprise due to the overwhelming amount of academic language required for the NWEA MAP reading test. When taking the mathematics test, students are able to focus less on the language, as the test can be read to them by a teacher, and more on the computation, and therefore are able to apply their conceptual thinking (whether in English or Spanish) to the problems on the test. In contrast, on the reading test, students are required to use their knowledge in English, and may have a hard time applying concepts they know and understand in Spanish to be able to successfully read and comprehend difficult English reading passages.

Limitations

The NWEA MAP test is a test that has been normed to students all over the country, but it is not specifically normed for language learners. There is also concern that it lacks cultural relevance for students who are not familiar with mainstream United States culture. There are often examples of questions on the test that use very unique names that most students (and staff) have never heard of before. This may seem to be a simple, inexcusable error, but even something as simple as an unfamiliar name has the ability to confuse a young elementary student, especially an English learner who may get distracted by the irregular term or may not even realize it is a name. This is one example why this test is culturally irrelevant.

Another reason that this test was not a great choice for use as a progress monitoring tool for bilingual students is the fact that the students in the self-contained program are doing the majority of their learning in Spanish, whereas the test is conducted in English. This discrepancy leads to further confusion for English Learners as they encounter more unfamiliar vocabulary although they may understand that vocabulary and concept in Spanish, but not in

English. In order to combat this and aid self-contained bilingual students in the acquisition of academic English and Spanish vocabulary, teachers lead students through what is called a “bridge.” This portion of a unit requires students to engage with both languages in a metacognitive (thinking about their own thinking and language) process. The goal is for students to transfer content and vocabulary knowledge from one language into another. Even if this goal is attained, students may still have difficulty with the content in a language they are still in the process of learning (although, they may have that content knowledge in the language of instruction).

One positive characteristic that is important to note is that the test is an adaptive assessment, which means that as the student provides answers, the test responds to the student by adjusting the level of difficulty based on the accuracy of the answer. This is a great way to provide a challenge for advanced students, and the test attempts to boost the confidence of less advanced students. As students make their way through the test, it is imperative that they understand this component of the test in order to prevent students from getting discouraged as the questions continue to appear harder (which is actually showing the student that they are progressing well through the test). With this type of test, the hope is that the data accurately reflects where students are, no matter what level, including below and above grade level. Although this information can be extremely beneficial when analyzing where students are academically, it is imperative to remember that the scores are a snapshot of a moment in time. Students are more than just that one test score, and educators must take more data points into consideration, including observations and anecdotal data as well. These can show how students are performing on a day-to-day basis rather than just a portion of one day spent taking a test.

Although the NWEA MAP test is nationally-normed, and is a test that adapts based on the student’s answers in real time, it lacks the validity and authenticity in order to garner accurate representations of the growth and

academic achievement of English Learners. As mentioned above, the test is not culturally relevant for bilingual students from culturally diverse backgrounds, and the test is administered in English when the majority of learning for the self-contained students is taking place in Spanish. For these reasons, the data used in this project was used out of necessity and due to lack of a more consistent and accurate measure since this is currently the test used by the district to monitor progress.

As mentioned earlier, the NWEA MAP test is culturally irrelevant to many bilingual students due to their cultural backgrounds. Often these students' previous experiences and background knowledge differ greatly from their monolingual peers. The fact that there is no culturally relevant, nationally-normed test for English Learners after almost half a century of bilingual education in this country calls for much needed advocacy: advocacy for these students, for adequate assessments to help them show what they know, and for funding that is going to enhance their learning environments and educational opportunities.

Implications for Parents

What parents don't always realize is that a bilingual education (from TBE to dual language) should meet the needs of advancing the student academically in both languages as well as maintaining the language spoken in the home. If the program is implemented correctly, and with fidelity, a student should learn both languages successfully, and grow to be an effective communicator and encouraged learner. In a TBE program (either early or late-exit), although the goal is not biliteracy, teachers work and support the student in both languages as they are learning. True bilingual education, in which the goal is biliteracy (as in dual language), should equip learners to maintain and enhance their family language as well as learn English in order to adequately participate in their environment. The program in question for this study is the Transitional Bilingual

Education Program (currently working towards a late-exit model, which would mean students exit around 5th grade).

The current climate in the United States and societal expectations leave some students in a bilingual self-contained program desiring to forget the language of their family and immerse themselves in the language of society: English. By default, once students in this program exit the TBE program, they tend to lose a lot of their Spanish due to lack of use and/or lack of desire to continue their Spanish learning. Overtime, the nuances and specifics of the language are forgotten. This is a problem in the hispanic community because their children are no longer finding value in the Spanish language, and therefore are lacking the skills and knowledge to successfully communicate with friends and family as well as continue to be bilingual. As a bilingual educator, the investigator has heard several students over the past 5 years say they would rather speak English. Even in the bilingual classroom, students are anxious to use their English, and often prefer to use it in the classroom, preferring it over Spanish.

This study was approached through a theoretical framework consisting of values of equality and a post monolingual paradigm. This paradigm relies on the understanding that the world we live in today is not a monolingual world, and that more often than not, it is beneficial to speak more than one language. It acknowledges that, in the United States, English is the language of power, and those fighting for bilingualism are continual advocates for the teaching and learning of more than one language. That type of education has historically been faced with much opposition, and continues to need the advocacy of those who believe in its purpose. The theoretical framework laid out above guides data collection, analyses, and interpretation of the relationships and disparities that exist between the intent of the legal statute and its actual practice.

Recommendations

The Transitional Bilingual Education (TBE) Program that was studied currently ends at fourth grade (which was implemented for the first time during the 2017-18 school year. Further study in this area should include following these same students into 4th grade to determine how they perform on the NWEA MAP test and how much growth they make to help determine the effectiveness of the model.

This study used a small sample size and was limited to one school. Future research should include a much larger sample size and possibly comparisons at different grade levels. Another variable to explore in the future would be the consideration of whether or not a student receives special education services on top of being bilingual. This additional help may or may not affect test scores, depending on the disability or reason for the services.

A future study should also investigate the differences of bilingual program models to try to determine which is the best and most efficient way for bilingual students to learn. Although the actual program model may be significant in the education of bilinguals, it is important to remember that strict and correct implementation of that model is important. Other factors may impact learning and growth as well, including: teacher motivation, student motivation, and poverty level. A study looking at these factors and how they affect bilingual student learning would be an interesting area of research.

It is also important to note that there could be valuable qualitative data related to this matter that could be collected and analyzed. This could be especially relevant considering the supposed unreliability of the NWEA MAP data for language learners. Further research could include data that is more qualitative in nature, possibly taking the viewpoints of teachers, parents, and program coordinators into consideration along with student viewpoints.

Chapter Summary

This chapter discussed the results of this study and what impact these results may have on the decision parents make about which program to place their child in. The conclusions drawn in this study are fairly consistent with what is found in the literature. Recommendations for future research were made to include a larger sample size, and to take into account other variables, including special education services. This study gives insight into the implications for not including bilingual children in self-contained bilingual education. There are many different bilingual program models, and based on the results of this study, it seems that bilingual students perform better when receiving instruction in both languages, and not just English.

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Appendices

Appendix A

Student	Group	3rd Grade Winter Mathematics	3rd Grade Winter Reading
1	1	193	153
2	1	196	175
3	1	196	175
4	1	199	177
5	1	191	186
6	1	205	196
7	1	198	198
8	1	191	198
9	1	198	200
10	1	192	206
11	1	194	206
12	2	188	169
13	2	191	184
14	2	193	192
15	2	201	190
16	2	191	156
17	2	193	177
18	2	192	179
19	2	198	190
20	2	179	190
21	2	190	193
22	2	194	190
23	2	192	187
24	2	192	194

Appendix B

	Group 1	Group 2
Mean	24.63636364	22.38462
Variance	271.6545455	66.58974
Observations	11	13
df	22	
t Stat	0.43480293	
P(T<=t) one-tail	0.333970379	
t Critical one-tail	1.321236742	

Appendix C

	Group 1	Group 2
Mean	29.45454545	26.38461538
Variance	113.4727273	84.25641026
Observations	11	13
df	22	
t Stat	0.758764801	
P(T<=t) one-tail	0.22802307	
t Critical one-tail	1.321236742	

Appendix D

	Group 1	Group 2
Mean	**29.45454545**	**26.38461538**
Variance	**113.4727273**	**84.25641026**
Observations	**11**	**13**
df	**22**	
t Stat	**0.758764801**	
P(T<=t) one-tail	**0.22802307**	
t Critical one-tail	**1.321236742**	

Appendix E

	Group 1	Group 2
Mean	188.1818182	183.9230769
Variance	274.3636364	123.4102564
Observations	11	13
df	22	
t Stat	2.01	
P(T<=t) one-tail	0.230547889	
t Critical one-tail	1.321236742	

Appendix F

Regression Statistics	
Multiple R	0.147582443
R Square	0.021780578
Adjusted R Square	-0.022683942
Standard Error	5.076686611
Observations	24

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	12.62456724	12.62457	0.489842	0.491333134
Residual	22	567.0004328	25.77275		
Total	23	579.625			

	Coefficients	Standard Error	t Stat	P-value
Intercept	183.591471	14.37333197	12.77306	1.19E-11
X Variable 1	0.05397997	0.07712671	0.699887	0.491333