

The Academic Outcomes of Dual Language Programs
in Mathematics and English Language Arts

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Deficit Perspectives to Asset Based Perspectives in U.S Schools

Historically and to this day, students who speak multiple languages have been viewed from deficit perspectives in public education systems. Oftentimes these students are categorized as “English Learners” or “English Language Learners”. These students are labeled and viewed as knowing a limited amount of English that will impede their academic growth and achievement. Students who are categorized as “English Learners” are put in remedial programs that are detrimental for their learning “In the remedial program, English learners receive less access to the standard grade level curriculum, the achievement and equity gap increases as native English speakers forge ahead while English learners make less progress”(Thomas & Collier, 1998). From a different perspective, a term to encompass the immense language abilities that our students have is *Multilingual Learners* (MLLs). MLLs are diverse students from their languages, cultures, personalities, and learning styles.

Throughout this paper I will refer to “English Language Learners” as MLLs in order to encompass their immense language abilities, “Embracing the term MLL is one small step towards acknowledging the multiple linguistic and cultural assets that many children bring with them as they enter through the schoolhouse gate”(Werblow et al., 2019). Although MLLs haven't always been supported in the schools that are meant to allow them to flourish, there has been a growing change of hope. This growing change includes schools taking actionable steps to allow MLLs to grow in a home language (partner language) and the English language in the same classroom. This is known as *Dual Language Education* (DLE) or *Dual Language Programs* (DLPs). DLE has important implications for education policy in the U.S, these programs suggest providing all students with the opportunity to become bilingual and biliterate (Bibler, 2020).

Bilingualism is an asset and it is not detrimental to student academic achievement, bilingualism has also been shown to somehow correlate with executive functions needed in this academic achievement, this is seen in a study Esposito (2021) “The bilingual advantage refers to a higher performance by bilingual compared to monolingual individuals in executive functions... executive functions are the top-down processes that are required for effortful cognition such as reasoning, problem solving, and planning”(Esposito, 2021). The reasons as to why students may perform better when using multiple languages are not fully understood and is a complex process. However, children and individuals who are multilingual are constantly engaging in multiple languages and are using various modes of expression throughout a lifetime.

In the United States MLLs are constantly on the rise in our public schools. In total, students in U.S public schools speak over 400 languages. The most common languages spoken by students across the U.S are Spanish, Arabic, Chinese, and Vietnamese (U.S Department of Education, n.d.). There are two main models of DLE (a) 50:50 where 50% the curriculum is provided in English and the other 50% is provided in the partner language and (b) 90:10 where kindergartners receive 90% of their curriculum in the partner language while they receive 10% of the curriculum in the English language. In this model each year the percentage increases 10% for the English language until it is a balanced linguistic curriculum (Kotok & DeMathews, 2018). In some parts of the United States students have the opportunity to be part of a DLP and grow in their multilingual language skills and literacies.

Context: Local Connection

As a 6th grade science teacher in the Tacoma area of Washington State I teach many students that are MLLs. The languages that my students speak are Spanish, Somoan, Arabic, and Russian along with more. Many of these students are categorized as “English Language

Learners". These students are placed in classes where their academic content is learned in English and they have little to no interactions with teachers who speak the same language as their home languages. The school district that I teach at is currently making the transition to bring a DLP into our middle school. Next year I will be teaching 6th grade science in Spanish for two designated classes. In the classroom we will grow in our language skills in the content area of science (ciencia) in both Spanish and English.

Context: Regional Connection

In the state of Washington DLPs are growing in our communities. Superintendent Reykdal has proposed a vision where all students will have the opportunity to become proficient in two languages through DLE by the year 2030 (OSPI, n.d.). This vision is expanding DLE and DLPs across the state within our communities. In Washington the language most spoken by multilingual learners is Spanish (U.S Department of Education, n.d.). For the school year 2020-21 there were a total of 102 schools in Washington offering DLPs (OSPI, n.d.). These schools range from elementary schools to high schools, and some are in the same school districts. Overtime in Washington, the number of DLPs being offered and the number of schools offering these programs has consistently increased from the school year 2016-2017 to 2020-21 (OSPI, n.d.). With more DLPs becoming accessible to the students in our communities the more opportunities this will provide for students to become multiliterate.

Context: National Connection

Across the United States DLPs are more prevalent in some areas compared to others. Data from the American Councils for International Education shows states with the most DLPs for the year 2021, this includes California, Texas, Utah, New York, and North Carolina. In some parts of the United States these programs are practically nonexistent. For example, states with

DLPs ranging from one to fifteen programs include Kentucky, Maine, Wyoming, Montana, and Nevada (American Councils for I.E). Multiple states don't have state mandates for DLE making it difficult to implement a DLP, "Having no state mandate for bilingual education meant each locality had a few state-level resources specific to their programs, in turn they had to develop their own professional and material contexts to enhance and sustain DLBE programing within their racialized histories"(Dorner et al., 2023). Nationally DLPs are growing in popularity in some states rather than others which hinders the accessibility of these programs for *all* students. Accessibility to DLPs has been a challenge that we need to address and be cautious of, "While equity is part of DLE, we still need to exercise caution in terms of access to, and the expansion of these programs"(Marcus, 2022).

Importance to Me

The importance of understanding the benefits of DLPs for students is essential for me as a person who is bilingual and an educator. I am someone who grew up speaking two languages, Spanish inside my home and English at school. My language is not mutually exclusive for some aspects of my life and not in others. I carry my languages with me everyday no matter where I go. Our multilingual realities are to be carried with us, "The multilingualism-as-a-resource orientation contends that it is neither ethical, effective nor possible or desirable to ask students or teachers to leave their multilingual realities at the school door"(De Jong et al., 2019). If I would have had the opportunity to be in a DLP where I learned in my mother tongue Spanish, my language skills, confidence, and academics would have thrived throughout my schooling. Now that I have a daughter of my own it is essential for me to pass down my knowledge of our language. As a mother of a growing multilingual child, finding an educational program for my child that will support and carry our languages will be one of my top priorities.

Importance to My Students

The importance of understanding the benefits of DLPs for my students will motivate their educational and personal growth. Majority of my students who are multilingual are also multicultural. I want my students who are Black, Brown, and Indigenous to know that their languages are valued beyond the spaces of their homes. For my students, understanding and knowing the benefits of DLE will provide opportunities to learn beyond our classroom content. DLPs will enhance student achievement, “Dual language education most effectively enhances student achievement and closes the achievement gap compared to other language instruction models”(De la Garza et al., 2015).

Growing in biliteracy and multilingualism will open professional opportunities beyond k-12 schooling. Our communities need more Black, Brown, and Indigenous people in STEM careers, “Throughout the united States, the number of jobs in Science, Technology, Engineering, and Math (STEM) is on the rise however, hispanic people are disproportionately underrepresented in STEM careers" (Rumper et al., 2021). This is similar for Black and Indigenous people in these career fields in the United States. Success in mathematics is essential for our future generations, “Success in mathematics contributes to children's future career and lifelong financial security”(S. Park et al., 2023). Students need to be in educational spaces where they can grow and flourish to be able to choose careers where they will strive and represent confidently.

Importance to My Community

The importance of understanding the benefits of DLE for my community will help pave the path for DLPs in our communities to be created where our children can become biliterate and multiliterate. In our communities we need to hold space for our diverse languages, “In English

dominant spaces without restrictionist policies of some kind, there is a risk of not holding space for the minoritized language”(Pratt & Ernst-Salvit, 2019). Community members need to understand *why* speaking multiple languages is a beautiful form of life and communication. Globally it is not uncommon for people to speak multiple languages. Languages are like lenses where we can see the world through multiple perspectives.

Purpose

The purpose of this project is to understand the student benefits of DLPs across the United States. DLE continues to grow across the country as the students in our communities speak many and multiple different languages. We owe it to our growing communities and children to understand the benefits of DLE in order for our students to grow and flourish academically, personally, and emotionally. We need to continue to grow and move away from the deficit perspectives of being multilingual. As it has been found that teachers are more likely to underestimate the abilities of students that face societal and educational discrimination (Umansky & Dumont, 2021). The purpose of this project will include moving towards the change of believing in our students because of their different abilities, experiences, and languages.

Focal Question

What are the academic outcomes for secondary students in Dual Language Programs for the academic content areas of Mathematics and English Language Arts?

Literature Review

The purpose of this project is to understand the academic outcomes of DLPs across the United States for secondary students in the content areas of mathematics and English language

arts (ELA). This project will serve as a piece to inform educators, community members, and families about DLE and how this directly impacts secondary school students. The goal of this is to understand the direct impacts of learning in multiple languages for students in order to best serve our multilingual communities and children. DLE is grounded on the wide range of abilities students bring into the classroom with various languages being at the center of learning.

Historically, in our k-12 public education system there has been a deficit perspective around students who speak multiple languages because of the perceived lack of English proficiency. In recent years there has been an intentional shift to change this perspective in k-12 education to an asset based perspective where students are seen for their wide range of language abilities. The reality is that speaking multiple languages is an extraordinary way of life, living, and learning. As we grow in understanding how to best serve our multilingual children and communities the future of our diverse population will flourish.

Throughout this project it was essential for me to investigate and provide an overview of the academic benefits of these programs especially in areas that have been underrepresented for students who are MLLs. In the subsections that follow, positive benefits are highlighted for students in both mathematics and English language arts in elementary schools and secondary schools. My research question focuses specifically on secondary students although, throughout the process of this project I have found that this is a growing body of research. In order to have extensive and reliable data I provided more studies looking at DLPs throughout all k-12 schools.

Mathematics Benefits in Elementary Schools

In elementary schools students who are MLLs enrolled in DLPs score higher in mathematics state exams compared to MLLs that are not enrolled in DLPs. This is shown in the study Trevino Mendez et al. (2017) where students who are labeled as English language learners

(MLLs) in exit programs and DLPs are compared by looking at their TAKS mathematics scores. This study takes place in Texas public schools for the years 2008-2009, 2009-2010, and 2010-2011 for third, fourth, fifth, and sixth grade students. During this study it was found that for all school years in each grade level, students who were enrolled in DLPs had higher TAKS mathematics scores compared to students in exit programs (Trevino Mendez et al., 2017). During this investigation, for all analyses conducted students who were in DLPs outperformed students who were not enrolled in DLPs.

The mathematics benefits for elementary school students enrolled in DLPs is seen in a different study in the Chicago-land area for Marian et al. (2022). In this study the research looks at third, fourth, and fifth grade students and their mathematics standardized exam scores. In this study it was found that for *minority-language* students in the DLPs, standardized mathematics scores increased throughout the grade levels third through fifth. It was also found that the *majority-language* students in the DLPs outperformed students in the mainstream classrooms (non-DLP) in mathematics for the grades third, fourth, and fifth.

Students who are categorized as MLLs and are enrolled in DLPs have a higher percentage of students meeting the standardized mathematics exam compared to their peers who are not in these programs. This is seen in a 2014 Dual Language Evaluation Report from the Houston Independent School District (HISD, 2014). In this report data is shared from twelve elementary schools, two K-8, and three secondary schools. The data that is presented is not categorized by grade level but the majority of this data is coming from elementary schools. MLLs were tested in mathematics twice since the assessment was once in each language (Spanish and English). The students are assessed on the STAAR mathematics exam. For the Spanish mathematics assessment 80% of MLLs in DLPs met the mathematics standard while

67% of MLLs in other bilingual programs met the standard. For the English mathematics assessment 76% of MLLs in DLPs met the standard and 70% of MLLs in other bilingual programs met the standard. This data shows the increase of standardized mathematics scores for students who are categorized as MLLs and enrolled in DLPs, for both the English and Spanish exams.

In the study Watzinger-Tharp et al. (2018) academic achievement in mathematics for DLP students was investigated in Utah for third and fourth graders across the state. The Utah legislature was able to establish public school DLPs in the languages Chinese, French, and Spanish with the Senate Bill 41 (2008). Within the years more programs in Utah were established in the languages of Portuguese and German. In this study the effects of DLPs were investigated in the content areas of mathematics in three target languages (Spanish, Chinese, and French) including both one-way and two-way program models. The results of this study show that in the third grade sample, students who were enrolled in DLPs performed the same in mathematics compared to students not enrolled in DLPs across all languages and program types. For the fourth grade group the results showed that students enrolled in the DLPs grew more in mathematics compared to students who were not enrolled in DLPs.

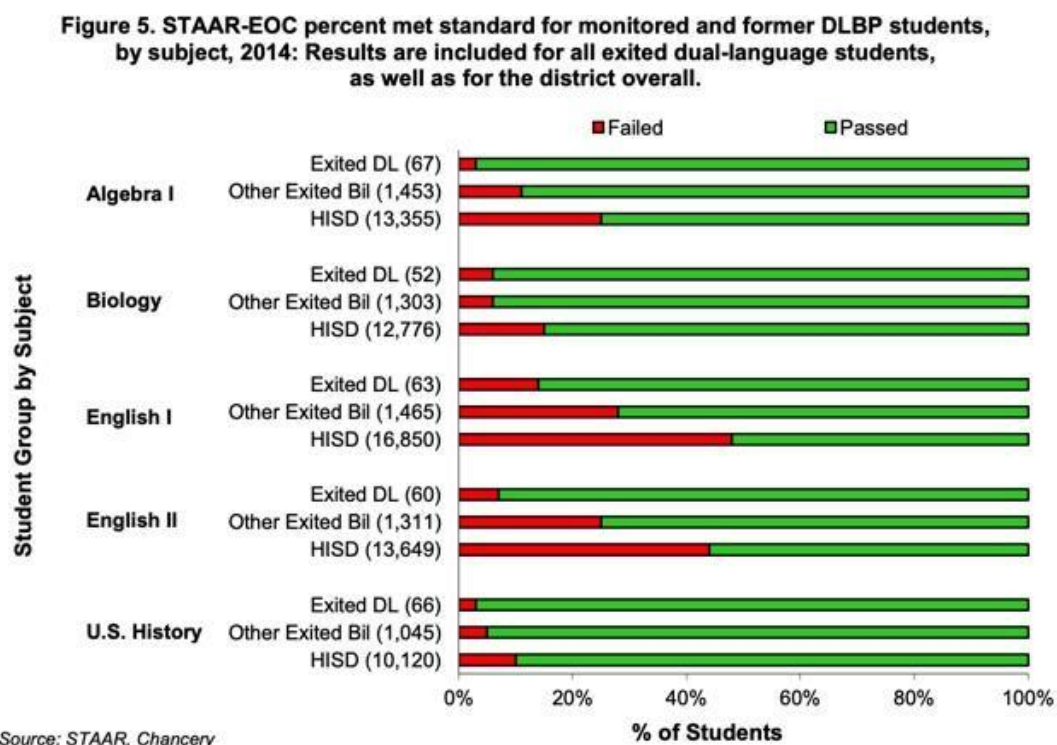
The benefits of DLE in the area of mathematics are also shown in an additional study Morita-Mullaney et al. (2020). This study took place in the state of Indiana, and specifically looked at mathematics outcomes for students in DLPs versus students in English as a second language (ESL) models. The sample of this study includes 162 students from 11 different elementary schools over the course of four academic years. The results of this study demonstrated that students in DLPs outperform students in ESL models in standardized

mathematics exams. This is important because multilingual students in ESL models have shown consistent trends of below passing levels in the mathematics area (Morita-Mullaney et al., 2020).

Mathematics Benefits in Secondary Schools

In secondary schools students who are enrolled in DLPs and exit the programs have shown to perform better on mathematics standardized tests compared to students who are not enrolled in DLPs. For the year 2014 from the Houston Independent School District quantitative data was presented in a report for their district wide DLPs. At the time of this report this district was offering DLPs in seventeen campuses. Three of these campuses were secondary schools. In this report looking at the data for secondary schools the data presented are scores from the STAAR-EOC assessment. Specifically looking at the mathematics scores the subject is Algebra I. Students were placed in one of three categories such as *exited Dual Language*, *other exited Bilingual Program*, or the *overall Houston Independent School District*. From there the percentage of students is shown by who passed the assessment and who didn't pass the assessment. From this data it is clear that students who had exited the DLP performed better in the mathematics assessment of Algebra I compared to the overall district and students who had exited a different bilingual program. Out of the exited DL students over 90% of students had

passed the Algebra I mathematics assessment.



In a different study secondary students enrolled in DLPs performed higher on mathematics standardized exams compared to students in exit programs. This is seen in the study Trevino Mendez et al. (2017) for sixth grade students in Texas Public Schools. For the school years 2008-2009, 2009-2010, and 2010-2011 mathematics TAKS scores are analyzed for sixth graders in DLPs and 6th graders that are non-DL in exit programs. It was found that for the school year 2008-2009 sixth grade students enrolled in DLPs scored higher average mathematics TAKS scores than their sixth grade peers in exit programs (i.e., 3.38 points higher). For the school year 2009-2010 DLP sixth graders also obtained higher average scores compared to students in exit programs (i.e., 3.26 points higher). Concerning the school year 2010-2011 sixth graders in DLPs once again obtained higher average mathematics scores compared to students in exit programs (i.e., 3.82 points higher).

In the state of Oregon a study was conducted where the effect of DLPs on student achievement in the content areas of mathematics, science, and English language arts were analyzed. This study, Steele et al. (2013) looks at seven cohorts in the Portland Public School district from the academic years 2004-05 through 2010-11. The students included in this study were in the grades third through eighth, and student achievement is measured with the standardized assessment of Oregon (*Oregon Assessment of knowledge and Skills*). The results of this study showed that students in DLPs had higher mathematics achievement compared to students that were not enrolled in DLPs.

DLPs have also shown to be beneficial for students in secondary schools by preparing them for higher education beyond highschool. This is seen in a study conducted by Garza-Reyna (2017) where the college readiness of Latina/o/x multilingual students was analyzed. Multilingual students were being educated in two different bilingual program models such as *Dual Language* and *Transitional Bilingual (TB)*. Mathematics scores on the nationally recognized college exam known as the ACT were collected and the scores were compared. In this study it was found that MLLs enrolled in DLPs outperformed MLLs enrolled in TB programs. It was also found that MLLs in DLPs had a 15.2% higher probability than the MLLs in TB programs of being college ready. This academic performance showed the benefits of DLPs over TB programs for students that are MLLs, “It was concluded that students educated through the DL education program are academically better prepared with a higher probability of sustaining themselves academically once enrolled in a university setting”(Garza-Reyna, 2017).

While looking at the various studies for the academic outcomes of DL students in the area of mathematics it is clear that this is a positive academic benefit across various grade levels and schools. Specifically it has been found that in secondary schools students who are enrolled in

DLPs will perform better on mathematics standardized exams, compared to students who were never enrolled in DLPs (Houston Independent School District 2014; Steele et al. 2017; Trevino Mendez et al. 2017).

English Language Arts Benefits in Elementary Schools

In elementary schools students who are enrolled in DLPs perform higher on standardized reading tests compared to students who are in mainstream classrooms and in TB programs. This is shown in a cross-sectional study, Marian et al. (2013) which was conducted in the Chicago-land area for third, fourth, and fifth grade students. The students of this school district were in a DLP or in a mainstream classroom and various standardized test scores were analyzed specifically in reading. Within this DLP there were students who spoke the minority language as their native language (Spanish) and there were students who were more familiar with the majority language (English). For this reason the test scores that are analyzed are compared to DL minority Spanish speakers, DL majority English speakers, and students in a mainstream classroom (no DLP). The DLP in this study is referred to as a *Bilingual Two Way Immersion Program*. Limitations of this study included that students were not randomized into groups, and they were not tested before the start of the DL program which could show the differential outcomes as selection bias. Another limitation of this study was that students who spoke the partner language Spanish in the DLP completed standardized tests in the English language. It is likely that for some students and their varying familiarity with the English language, this was not a test of conceptual understanding and instead a language ability test.

In this study it was found that third, fourth and fifth graders who spoke the majority language (English) who were in the DLP scored higher in the standardized reading test for all three grade levels compared to students in mainstream classrooms. For third graders the

difference was significant, although for fourth and fifth graders the test scores were higher but not significant. For students who were in the DLP who spoke the minority language (Spanish) they were compared to students who were not in the DLP and instead were in TB programs. Fourth and fifth grade students in the DLP who spoke the minority language (Spanish) scored higher on the standardized reading test compared to students who were only in TB programs. Throughout all three grade levels for the students in the DLP with the minority language (Spanish) there was a clear progression of growth observed in the reading test scores. The results of this study show the academic advantages of being in a DLP in the early grades of elementary school.

Students performing higher on standardized reading exams are also shown in the study Trevino Mendez et al. (2017). In this study DLP students are compared to students in exit programs for third, fourth, fifth, and sixth grade. Looking at the content area of ELA for elementary students the TAKS reading scores were shared and analyzed for the school years 2008-2009, 2009-2010, and 2010-2011. During the 2008-2009 school year third grade students enrolled in DLPs had higher average TAKS reading scores compared to students in exit programs (i.e., 0.78 points higher). Concerning the 2009-2010 school year, third grade students enrolled in DLPs also had higher average TAKS reading scores compared to students in exit programs (0.60 points higher). With respect to the 2010-2011 school year the results showed a similar trend than the two previous years where third grade students in DLPs had higher average TAKS reading scores than students in exit programs (i.e., 0.89 points higher). Overall this higher average reading TAKS score was congruent with fourth and fifth grade students as well for all three school years. Students enrolled in DLPs showed higher average TAKS reading scores compared to students who instead were enrolled in exit programs.

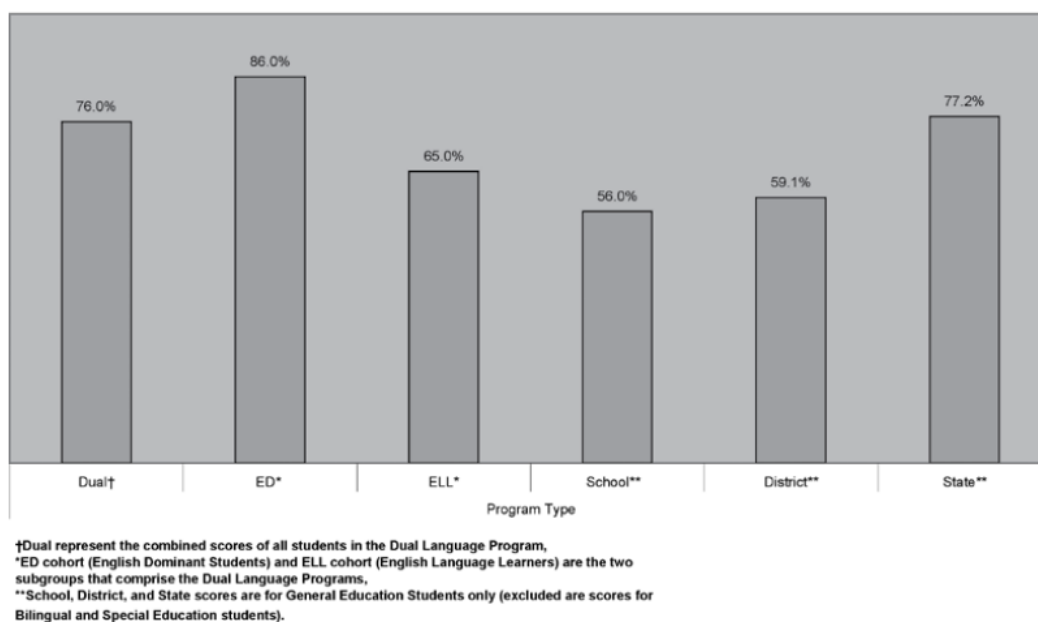
Students in DLPs who perform higher on standardized reading exams compared to their peers who are not in the DLPs are also shown in the 2014 Dual Language Evaluation Report from the Houston Independent School District. It was found that the academic performance for MLLs in DLPs was higher than the academic performance of MLLs who were not in DLPs. Specifically looking at the STAAR assessment of Reading in *Spanish* 79% of MLLs in DLPs met the standard, while 70% of MLLs in other bilingual programs met the standard. Similarly for the STAAR assessment of Reading in *English* 64% of MLLs in DLPs met the standard, while 55% of MLLs in other bilingual programs met the standard (HISD, 2014).

In a different study DeJesús (2008), high levels of student achievement in ELA for students enrolled in DLPs is shown. This study took place in an *Empowerment Zone* located in Puerto Rico over the course of seven years. An Empowerment Zone means being in a distressed area and/or community, “meaning that the community it served had large number of unemployed adults, families on welfare, a high incidence of crime, and a low incidence of business, social services, and infrastructural supports”(DeJesús, 2008). The school included in this study consisted of multilingual students from kindergarten to fourth grade. The findings of this study showed student success for the DLP overall and the sub groups of students within these programs (English-dominant and ELL), “By 2004-05, English-dominant students in the dual-language program were the highest performing cohort in the school and the district... after seven years of program implementation, the assessment data showed a constant and impressive pattern for student success”(DeJesús, 2008).

In the figure below from DeJesús (2008) the *Dual* category is composed of all students enrolled in the DLP including *English-dominant* (ED) and students categorized as *English Language Learners* (ELL). The ED and the ELL groups in the graph are the subgroups that

comprise the Dual group. Overall, the data shows that all students including students who are English dominant and multilingual do benefit academically from being enrolled in DLPs, surpassing the school, district, and the state percentages of students attaining Language Arts proficiency.

FIGURE 6. 4TH GRADE LANGUAGE ARTS, SPRING 2004-2005: PERCENTAGE OF STUDENTS WHO ACHIEVED PROFICIENCY BY PROGRAM.



English Language Arts Benefits in Secondary Schools

Secondary students benefit from DLPs with higher letter grades in ELA classes and higher standardized test scores in ELA exams. For example, Padilla et al. (2022) is a longitudinal study that takes place in California in an Urban School district, and is one of the few studies that examines the academic achievement of students from elementary until high school completion. The implications of this study include that it takes place in one area of California in one school district where the findings will not be generalizable to other parts of the United States. The language of this DLP is Spanish and the findings of this study are in this single partner language.

The results of this study showed the academic outcomes for DL students in ELA classes. In this specific middle school the English language arts (Spanish language arts) class was being taught in Spanish along with Social Studies (Spanish social studies). Throughout all sixth, seventh, and eighth grade levels at least 80% of students in the DLP earned an A or B in the two Spanish immersion classes (Padilla et al., 2022).

In terms of standardized test scores this same study analyzed the California Assessment of Student Performance and Progress (CAASPP) for students in the eleventh grade. The scores of this standardized test (CAASPP) were compared looking at DL students and non-DL students. It was found that students who were in the DLP in this district, had significantly higher ELA scores compared to students who were not in the DLP. The results of this study showed academic strengths and progress for students who were in the DLP. What is interesting about this study is that the high academic outcomes for students enrolled in DLPs were shown through both letter grades and standardized exams.

A different study that took place at an urban school district in Indiana, shows the outcomes of being enrolled in a DLP throughout the grades K-12. At this school district there are over 16,000 students and 20 DLPs. However, only 10 of these DLPs are two-way program models. In this study it was found that DLPs can be beneficial “Dual language bilingual education has the potential to preserve and develop...foster high levels of bilingualism, and address academic disparities, thereby changing emergent bilinguals’ educational conditions and learning outcomes”(Morita-Mullaney et al., 2020). The findings of this study also showed that emergent bilinguals that enrolled in DLPs were achieving higher scores on standardized ELA exams compared to their peers who were not in DLPs and instead were in ESL programs.

English as a second language (ESL) programs are remedial programs that are focused on enhancing English language skills.

In the study Steele et al. (2015) that took place in Portland Public Schools something that was analyzed included what is the causal effect of dual-language immersion education on student achievement in mathematics and reading throughout the grade levels third through eighth. This is an urban school district serving approximately 47,000 students. This study focuses specifically on the district's 19 DL schools which consists of 14 schools with Spanish programs, 3 schools with Japanese programs, 3 schools with Russian programs, and 2 schools with Mandarin programs. Through this study it was found that students who were in DLPs substantially outperformed non-DLP students on all outcomes. These outcomes included student achievement in reading in English and student achievement in bilingualism.

Multilingual students who are enrolled in DLPs have shown to outperform multilingual students in general education, this is seen in a different study, Torff & Murphy (2021) with 6th grade students through their 9th grade academic year. Throughout the academic years this study compared students' ELA scores and mathematics scores. The results of this study showed that there were no dependent variables where multilingual students in general education outperformed DLP students. Instead the DLP group outperformed the general education group in 5 out of the 10 dependent variables including two years of ELA exams and ELA exams overall. The results of this study are shared below where the descriptive statistics for the dependent variables are reflected by group.

Table 1. Descriptive statistics for dependent variables, by group.

Variable	General Education			Dual Language		
	Mean	SD	SE	Mean	SD	SE
ELA 2012	3.06	.42	.06	3.21*	.32	.06
ELA 2013	2.49	.62	.09	2.73*	.60	.08
ELA 2014	2.52	.57	.08	2.72	.53	.074
ELA 2015	2.74	.57	.09	2.89	.62	.087
ELA Overall	2.70	.48	.07	2.88*	.45	.049
Math 2012	3.71	.50	.07	3.64	.46	.06
Math 2013	2.59	.51	.08	2.99*	.58	.08
Math 2014	2.55	.55	.08	2.93*	.70	.09
Math 2015	3.08	.68	.09	3.13	.63	.09
Math Overall	3.00	.49	.07	3.17	.49	.07

Notes: ELA = English Language Arts exam; Math = mathematics exam; ELA Overall = average of four years of ELA exams, 2012–2015; Math Overall = average of four years of math exams, 2012–2015.

*Means for dual-language classes that were significantly higher than means for general-education classes ($p < .05$).

The various studies analyzed for the content area of ELA in both elementary schools and secondary schools, have shown that DLPs also have positive academic outcomes similar to the academic outcomes of mathematics. In secondary schools students enrolled in DLPs outperform their non-DL peers on standardized ELA exams and perform better in a DLP as a MLL versus a remedial program (Morita-Mullaney et al., 2020; Padilla et al., 2022; Steele et al., 2015; Torff & Murphy, 2021). This increase in standardized exams is also shown in the findings for the content area of mathematics. The reasoning behind why this increase of standardized scores takes place was not further investigated in the research studies that have been analyzed and remains unclear.

Language Proficiency and Acquisition in Elementary Schools

Elementary students who are enrolled in DLPs have a higher possibility of being reclassified as English proficient than students who are not enrolled in DLPs. When a student is reclassified their label from “English Language Learner” is changed to “English Proficient”. In a research study Umansky & Reardon (2014) DL students in four different program types were investigated in terms of their *speed* of being “reclassified”. The four program types that were analyzed in this study included English immersion, transitional bilingual, maintenance bilingual,

and dual immersion. This study uses hazard analysis and twelve years of data to understand the differences of reclassification among these four program types. It was found that students who were enrolled in two-language programs also known as DLPs were reclassified at a slower pace in elementary schools compared to other bilingual programs. However, it was also found that by the end of highschool overall, students in two-language programs (DLPs) had a higher overall reclassification and English proficiency. This shows the long term and extensive benefits of being in a DLP compared to other bilingual programs for students who are multilingual learners.

DLPs that support the home language and culture while integrating minority-language and majority-language multilingual learners have been associated with faster English proficiency acquisition. This is specifically seen in the study Serafini et al. (2022) in Miami-Dade County, Florida. In this study it was found that within the DLPs elementary students reached the district wide definition of being fully English proficient faster than students in other language programs that were not DL. Another finding of this study included that when looking at multiple regression analysis, the speed of English acquisition mediates higher grade point averages in fifth grade.

DLPs allow students to grow in their language skills in more than one language including students who are categorized as “English language learners”. For example, in the study Thomas & Collier (2002) two rural school districts in Maine were analyzed. Over 90% of the students in these school districts were of Franco-American/Acadian heritage descent. These two districts developed French bilingual programs for students’ whose grandparents spoke French, but many of their languages had been lost because their parents were reprimanded for using the language during this time. When these DLPs were created approximately half of the parents decided they wanted their children to be enrolled in DLPs. The students that were enrolled in the DLPs benefited tremendously, “After four years of the dual language program, former English learners

who were achieving at the 40th percentile NCE (31st percentile) before the program started had reached the 62nd NCE (72nd percentile) in English reading on the Terra Nova” (Thomas & Collier, 2002). This study clearly highlights the reading and language benefits that happen for multilingual learners even within rural school districts that have DLPs.

In a different study He et al. (2022) fourth and fifth grade students in Northern California, enrolled in a DLP in Cantonese, had proven positive results with language proficiency and academic competence. There were a total of 60 students chosen for this study, students were chosen based on being in the Cantonese-English DLP, being at the school for 5-6 years and having some level of proficiency in both languages. The results of this study showed that Cantonese reading, writing, and speaking proficiency was positively associated with DL students’ academic competence, “This bilingualism was associated with higher academic competence, suggesting a potential benefit of bilingualism”(He et al., 2022). As students grew in their proficiency for each language they also grew in their academics because of this ongoing learning of both languages with academic content.

Language Proficiency and Acquisition in Secondary Schools

Secondary students enrolled in DLPs show self awareness and advancement in more than one language throughout their content learning. In a mixed methods research study Brutt-Griffler & Jang (2022) examined how sixth graders' emotional (school identification) and behavioral engagement (language learning commitment) relate to bilingual language proficiencies in both English and Spanish. This study includes both qualitative and quantitative data. A limitation of this study is that students self assessed their own language proficiencies in both languages by rating themselves which could present some issues of validity and reliability. The results of this study show that students’ Spanish proficiency had a positive correlation with a students’

commitment to language learning. The results of this study also show that English proficiency was correlated with standardized test scores.

Students who are enrolled in DLPs show growth within the language domains of speaking, listening, reading, and writing for the partner language they are learning. This is shown in a longitudinal analysis study Watzinger-Tharp et al. (2021) where statewide data from 224 schools is analyzed. The longitudinal analysis of assessment data shows that middle school students reached the Intermediate mid and Intermediate high levels for the exam, *American Council for the Teaching of Foreign Languages (ACTFL)*. In the ACTFL exam this includes all language domains of speaking, reading, listening, and writing. In this analysis it was found that secondary students reached Intermediate mid and intermediate high for all of the language domains included. In this study it was also found that a significant amount of students in French and Spanish DLPs reached the Advanced level score in the ACTFL by ninth grade.

Students who are in DLPs and are classified as “English language learner”, over time their chance of being reclassified as English proficient increases compared to students who are classified as “English language learner” but are not in DLPs. This is seen in a study of seven cohorts of students in an Urban school district Steele et al. (2017). In this study it was found that among students who enter kindergarten classified as “English language learner” and begin DLPs are about 2 percent points more likely to remain classified “English language learner” throughout first through fourth grade compared to peers who are non-DLP. However, It was also found that once students were at the sixth and seventh grade level the probability of being classified as “English language learner” when in DLPs were 3 and 4 percentage points lower than their peers who were non-DL.

In a longitudinal research study Collier & Thomas (2004), there are astounding language benefits that are shown for secondary students. This research study looks at data over two decades in 23 districts over 15 different states. These districts range from small and big and the areas range from urban, suburban, and rural. The results of this study show DLPs in either one-way or a two-way program models have led to grade-level and above-grade level achievement in the second language. It was also found that students who are categorized as “English language learners” usually reach grade level achievement in the second language by 7th or 8th grade.

Beyond the high levels of academic achievement that are seen for students enrolled in DLPs in the content areas of mathematics and ELA, the other outcomes for DL students are language proficiency and acquisition. For secondary students research has shown that students who are enrolled in DLPs show significant growth in the partner language being learned and in the English language (Collier & Thomas 2004; Steele et al. 2017; Watzinger-Tharp 2021). As students grow in their language proficiency, skills, and acquisition they are showing higher levels of academic performance which is an area of research that should be further explored.

Action Plan

Mathematics Benefits

Throughout the research it has been found that there are positive benefits in mathematics for students who are in DLPs. These benefits are seen throughout elementary and secondary schools. It has been found that being in a DLP increases students' scores on standardized mathematics exams. This academic benefit empowers students who speak multiple languages by providing them with a strong mathematics background that will follow them throughout their education and beyond.

Mathematics Benefits

What the research says...	What my school plans to do...	What I recommend...
<p>Research has shown that in secondary schools students who are enrolled in DLPs will perform better on mathematics standardized exams, compared to students who were never enrolled in DLPs (Houston Independent School District 2014; Steele et al. 2017; Trevino Mendez et al. 2017).</p>	<p>My school plans to implement a DLP during the school year 2023-2024. For this upcoming school year the DLP will include Spanish Language Arts, Social Studies in Spanish, and Science in Spanish. The DLP will not include mathematics being taught in Spanish for the first year.</p>	<p>I recommend implementing a mathematics course that will be offered in the partner language after the first year of the program. Before the implementation of this Spanish mathematics course I recommend partnering and communicating with other school districts in the area with successful DLPs that have the mathematics course such as Kent School District and Bellevue School District.</p>
<p>In elementary schools research has shown that</p>	<p>At my school we do not have current data on the</p>	<p>After the first year of the program I recommend</p>

<p>students who are multilingual learners will have a higher academic benefit from being in DLPs compared to other students who are also multilingual learners but are not enrolled in DLPs (Houston Independent School District 2014; Marian et al. 2013; Trevino Mendez et al. 2017).</p>	<p>standardized mathematics scores for students who are enrolled in the DLPs. For the school year 2023-2024 my school will be transitioning incoming 6th graders into the new middle school DLP. After the school year 2023-2024 we will have scores on the standardized mathematics exam available.</p>	<p>administrators, DL teachers, and DL mentors looking closely at the mathematics scores of students in the DLP. I also recommend analyzing their mathematics scores from previous years at the elementary school, and comparing this data to students that are not enrolled in the DLP.</p>
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English Language Arts Benefits

It has been found through research that students who are in DLPs benefit from these programs in the areas of English language arts and reading. Students who are in DLPs have been shown to perform higher on standardized reading exams in elementary schools. DL students have also shown to perform higher on ELA exams compared to students who are not in DLPs. Being in a DLP would provide multilingual students with the opportunity to excel in their reading skills and in the English language arts content.

English Language Arts Benefits

What the research says...	What my school plans to do...	What I recommend...
<p>Research studies have shown that students in secondary schools enrolled in DLPs outperform their non-DLP peers on standardized ELA exams and perform better in a DLP as a MLL versus a remedial program (Morita-Mullaney et al. 2020; Padilla et al. 2022; Steele et al. 2015; Torff & Murphy, 2021).</p>	<p>The middle school that I am at plans to closely collaborate with the neighboring elementary school who has a successful DLP. This planning is taking place through school visits, classroom visits, and communication between DL teachers from both schools.</p>	<p>I recommend literacy summer programs for young DLLs in elementary education to facilitate continuous growth in reading. I also recommend recruiting and enrolling diverse students into the DLP from different cultural backgrounds such as Black students who have been excluded in the past from DLPs. I recommend that reading strategies that are implemented in the DLP at the neighboring elementary school are also used at the middle school DLP in the different subject classes. This can be done with</p>

		communication between the elementary DL teachers and the middle school DL teachers.
Research has shown that in elementary schools students who are in DLPs perform higher on standardized reading exams compared to their peers that are non-DL (Houston Independent School District 2014; Marian 2013; Trevino Mendez 2017).	At my school we do not have data from English language arts or Spanish language arts because the DLP has not been officially implemented. Currently DL teachers for the school year 2023-2024 including myself, will be meeting with DL teachers and students at the neighboring elementary school to observe their rigor and how the students are as learners.	I recommend recruiting and enrolling diverse students into the DLP from different cultural backgrounds such as Black students who have been excluded in the past from DLPs. I recommend that admin and district personnel make a continuous effort to recruit and hire DL teachers that will support the language and content learning of all students with an asset based mindset grounded on antiracist practices.

Through various research across the United States in both elementary and secondary schools it has been found that language growth is clearly seen across various grade levels in both the partner language that students are learning and in the English language. As students learn in the partner language, they are learning more than classroom content. Students are developing social skills, communication skills, self advocacy, and agency. Speaking a language is more than communicating, it is a form of expression and living. As students learn multiple languages they see the world through different perspectives as well. Being in a DLP would provide multilingual students with the opportunity to excel in their language learning in the partner language and in the English language.

Language Acquisition and Proficiency Benefits

What the research says...	What my school plans to do...	What I recommend...
Through research it has been found that students who are in DLPs in secondary schools show significant growth in the partner language being learned and in the English language (Collier & Thomas 2004; Steele et al. 2017; Watzinger-Tharp et	My school plans to implement a DLP for incoming 6th graders and expand this program each year. During the first year of the DLP there will be two DL teachers with one of them being myself. My school plans to create a DLP where students are	I recommend that all teachers at the middle school are part of paid mandatory professional development days that are centered around Dual Language Education, equity, multilingualism, and multiliteracy before the implementation of the DLP

al. 2021)	able to grow in their multilingualism and multiliteracy. School district leaders and administration have planned and guided DL teachers through professional development conferences of multilingualism, one of them being La Cosecha 2022 where we traveled out of state to New Mexico.	and throughout the growth of the program.
Research has shown that students who are in DLPs in elementary schools have been associated with faster English proficiency acquisition compared to other multilingual students who are not in DLPs (He et al. 2022; Serafini et al.	Majority of the students that will be in the DLP at my school will be students who have been in a DLP since kindergarten. Some students are native speakers of the partner language and other students have learned the partner language as a	I recommend that the DLP includes a variety of students of different cultures with different language backgrounds including native speakers of the partner language, students who are classified as “multilingual learners”,

2022; Umansky & Reardon 2014).	second language.	native speakers of the English language, and newcomers. I recommend that it is essential to have students who are classified as “English language learners” (MLLs) to be in the DLP with students of different and similar language backgrounds.
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Discussion

Multilingualism and multiliteracy is an asset that needs to be cared for and expanded at the heart of our educational system. Our languages shape how we observe the world and how we leave our mark on it as well. The purpose of this study is to inform educators, policy makers, parents, and community members about the academic outcomes for secondary students that are enrolled in DLPs. By looking at various research across the United States there have been consistent trends and outcomes from being enrolled in a DLP in the content areas of mathematics and ELA. This research question focuses on DLPs at the secondary level, although in order to have a substantial amount of research I include research studies at the elementary level as well.

Focal Research Question

What are the academic outcomes for secondary students in Dual Language Programs for the academic content areas of Mathematics and English Language Arts?

Mathematics Benefits

The mathematics benefits for students who are enrolled in DLPs at the secondary level are positive, beneficial, and extensive. Students who are enrolled in DLPs are likely to excel in the area of mathematics. Research has shown that students who are in DLPs outperform students who are not enrolled in DLPs during mathematics state exams (Houston Independent School District 2014; Marian et al. 2013; Morita-Mullaney et al. 2020; Steele et al. 2013; Trevino Mendez et al. 2017).

I find it life changing that a student who speaks more than one language is able to excel and grow throughout their education in a program that is designed to support their content learning and language growth. Black, Brown, and Indigenous people are already underrepresented in the areas of mathematics and science. When it comes to students who are learning and building on knowledge in the education system, students need to be supported in ways they will excel. DLPs have proven to provide students with a space where they can learn and excel in the content area of mathematics while building on their multiliteracies and multilingualism. For these children this could pave a path to finding a career in the area of mathematics and science where they can find success. Essentially this could make these career areas more inclusive and diverse for future generations.

The students in my science classroom right now speak a variety of different languages. As they learn and engage with one another they sometimes speak to each other in their home languages. My students that are Spanish speakers feel comfortable speaking to me in Spanish and we often engage with each other in both languages. Although the DLP at my school will not be officially implemented until the school year 2023-2024, we are often translanguaging in the classroom. My students know that once they are 7th graders I will be teaching incoming 6th

graders in both Spanish and English and they are often upset about not being able to be part of the DLP themselves as 7th graders. Oftentimes when we create this space of freely speaking to one another using our different languages, students are not just learning content, and languages. Students are also learning how to communicate with their peers, practicing manners, and building on their social and emotional skills.

In the area of mathematics an issue that may arise is including Spanish mathematics courses in the DLP. During the first year of our DLP there will only be three content classes in Spanish (Science, Spanish Language Arts, and Social Studies). It would be important to include a variety of classes in Spanish throughout the program especially in the content area of mathematics. This can be done by changing the courses offered in Spanish each year or hiring additional DL teachers for additional content areas. This would allow students to pick what classes they would like in Spanish and provide them with a sense of agency. During the first year of the DLP, mathematics won't be offered in Spanish and it is currently undecided what year this content area will be offered in Spanish.

English Language Arts Benefits

Students who are enrolled in DLPs will see positive and valuable outcomes in the content area of ELA throughout the elementary school years and the secondary school years. Research has shown that students who are in DLPs have outperformed their non-DL peers in standardized exams of reading and ELA (Houston Independent School District 2014; Marian et al. 2013; Morita-Mullaney et al. 2020; Padilla et al. 2022; Torff & Murphy 2021; Trevino Mendez et al. 2017).

While looking at a variety of different research from various grade levels I agree that DLPs are valuable and beneficial for students in the areas of reading and ELA. As students learn

content in the English language and in the partner language they are practicing and developing complex skills of a learner. These skills include but are not limited to, collaborating, communicating, critical thinking, and being reflective. English language development will happen throughout the DLP and sometimes this can also take place before the start of a DLP. For example, in a research study a language development program for small children was given before the start of their kindergarten DLP, this showed how valuable this is for early reading skills “children demonstrated increases in the use of English vocabulary, story comprehension, and oral fluency” (Kim et al., 2022). All of these skills that are enhanced in DLPs would overall provide a student with the skills needed to excel in other content areas and as a lifelong learner.

The students in my current science classroom are multilingual learners and although there is no current DLP at our school they often speak their various languages in the classroom. I have had three students this year who are newcomers from countries of Latin America and the majority of their language use is in Spanish. Throughout this year I have translated and adapted certain tasks and assignments to develop their science knowledge and language skills. I have seen each of these students grow tremendously in their science knowledge, English language, and in Spanish. If these students had the opportunity to be in a DL setting where they interacted with more students who spoke both Spanish and English, they would thrive in what we do in the classroom.

Issues that may arise at my school could stem from finding collaborating teachers that will teach ELA to DL students while still closely working with the DL teacher of Spanish language arts (SLA). The DLP at my school will require 6th grade students to take three courses in Spanish (Science, SLA, and Social Studies). Additionally, DL students will take their English classes in the content areas of mathematics, English language arts, and one elective. This will

require having an English teacher who will closely plan with the DL teacher of Spanish language arts who believes and supports the DLP. My school is currently deciding who that could be although they do plan to pick a partner teacher with an English Language Learner Endorsement and be committed to the process of the DLP.

Language Proficiency and Acquisition Benefits

Various research studies have shown that DLPs in both elementary and secondary schools have resulted in consistent language acquisition and language proficiency growth that is not found outside of the DLP (Collier & Thomas 2004; Steele et al. 2017; Thomas & Collier 2002; Umansky & Reardon 2014). Students who are categorized as “English Language Learners” or “English Learners” have shown positive and life changing outcomes from being enrolled and successfully completing a DLP. Collier & Thomas (2004) define DLPs as being an astounding effective program to closing the academic achievement gap for MLLs.

I am now an educator who was once categorized as an “English Language Learner” . I often think about the various ways I would have benefited from being enrolled in a DLP. Although I was reclassified as “English proficient” in elementary school, I still faced the various struggles of learning classroom content in a language that I did not speak at home. I feel certain that I would have excelled in a DLP that supported my language growth in two languages and in classroom content. Growing up I did fairly well in ELA which allowed me to take AP classes and advanced classes in this area. For excelling in this area I got to attend my local community college while still attending highschool. However, mathematics was a struggle and it wasn’t until I had a teacher in highschool that supported me by differentiating that I understood and began to grow a love for geometry. I do believe that being enrolled in a DLP would have helped me excel

in all areas of academic content including in mathematics while allowing me to grow in my language learning.

I have observed students grow in their language learning and skills in my classroom. At the beginning of the year I had a student who spoke very minimal English and the majority of his language use was in Samoan. Some days it was difficult for us to communicate with each other but we did our best. Now he is able to communicate with me by asking questions, making comments and engaging with his peers daily. I have clearly seen this students' language growth over these last few months in our classroom. In a classroom setting that supports his learning in both Somaon and English simultaneously would only increase his language growth and proficiency.

In the age that we are in today in the United States there will be issues as DLPs are implemented and throughout their growth. One of these issues is the misunderstanding of language learning and language development. People in the general public and within our school district and school have misconceptions around how language is developed when speaking multiple languages. In the beginning of this program and throughout the program it will be crucial in providing educators, families, and community members with accurate information and research surrounding multilingualism and multiliteracy.

Professional Development

Schools that are implementing DLPs must have professional development opportunities for all staff that are grounded around DLE, equity, multilingualism, and multiliteracy. These professional development days should be paid and mandatory in order to ensure everyone has the opportunity to attend and be compensated for their time. In a society that has consistently shown that monolingualism is valued and upheld over multilingualism it will take more than a few

professional development sessions to educate staff and community members around the reality of multilingualism. The task of professional development opportunities will vary by the needs of the community and school personnel, “In an area with a strong English-only ideology, a program would have a harder task to conserve bilingualism than in a community that values bilingualism to a greater degree”(Block, 2023).

Professional development opportunities for DLE is essential, “To support effective instruction for ELLs, high-quality teacher training and professional development (PD) for pre-service and in-service DLBE teachers are essential”(Choi et al., 2023). These sessions should happen throughout the year and be consistent with research and anti-racist practices. Throughout the growth of a DLP at a school microaggressions, racism, and inequities will occur. However, it is about what we do in the process of this continuous change that will support the lifelong learning of our students and our communities.

DL teachers specifically should be committed to continuing in their growth and learning with their students and the implementation of the program. As we prepare for this shift in our school for the school year 2023-2024 I have met wonderful educators, community members, community leaders, and administrators from across the country. I have attended La Cosecha 2023, WABE (Washington Association for Bilingual Education) 2023, a DL school in Mt. Vernon Washington, and our partner DL elementary school in our district. I will also be attending the XITO conference 2023 this summer. In all of the spaces, classrooms, and conferences I have attended and have yet to attend, I have found one thing in common. I am always learning, I am always seeing new things that inspire me to do this work. There are people and organizations out there who want to help by allowing you to look at their program. This

requires collaboration and a continuous movement through growth and change. DL teachers should be committed to this growth and they should be supported to make this growth possible.

Administrative Support

Administrators are important; they are the head of the school, “As the head of the school, the administrator serves as a model for children, teachers, and parents preparing to engage in the new forum of language learning offered in dual language programs” (Montague, 1997). DLE is complex and can oftentimes be challenging to expand throughout the years because of the teachers involved or not involved in the programs. In a study conducted by Rodriguez-Valls et al. (2017) it is highlighted that a DLP needs holistic teachers “The teacher must combine linguistic proficiency, academic language knowledge, content mastery, and language and content teaching expertise”. In the study Rodriguez-Valls et al. (2017) it is emphasized that it is a challenge to find all of these features of a holistic teacher in one singular teacher. This calls for collaboration among multiple teachers, administrators, and school district officials.

Administrators will need to assess students’ learning and growth in both languages, “In order to measure the success of DLBE programs, it is critical that researchers and program administrators assess students’ academic development in the two program languages”(Arteagoitia & Yen, 2020). Assessing students’ learning and growth could be done by coming together and comparing assessment scores in different content areas along with assessment scores of previous years. Reflecting on assessment scores can provide teachers and administrators with data and insight on what is going well and what are some areas of growth.

Similar to DL teachers, administrators of DL schools must be committed to their own growth and development of learning about multilingualism, and additionally be committed to supporting their teachers throughout this continuous growth. Administrators will need to support

the professional culture for DLE “The professional culture of an educational space, which includes educators’ values, commitments, and experiences, can likewise shape the enactment of bilingual education”(Dorner et al., 2023). Supporting teachers can come in many forms and in different ways. Depending on the school and the specific needs of the community this will vary. Paid professional development days that are centered around DLE, equity, multilingualism, and multiliteracy before the implementation of the DLP and throughout the growth of the program will be essential for all teachers. Teachers need to be aware of linguistic tools that are beneficial for their students such as translanguaging, “A fluid linguistic tool that is identified as important for identity investment and for supporting emergent bilingual students in communicating and making meaning is *translanguaging*”(Fránquiz et al., 2019). Translanguaging is a tool that can be used in all classrooms and teachers should be provided with learning opportunities with support from administrators to learn about tools that support all of our students.

During my attendance at the WABE 2023 conference I met a Latina district leader who was once an administrator at a DL school, who gave me some insight on how administrative support could look like. In this DL school the partner language of the program was Spanish. Majority of the students in the DLP were hispanic and the hispanic community was very involved in the education of their children. However, this administrator started noticing that there were other students in this school that would benefit from this program and community involvement. They then intentionally started to bring Black children and families into the program by having parent involvement nights for Black and Brown families. Administrators need to be reflective of how and who is the DLP benefiting as we need to include all of our students in language learning, “As the popularity of DLBE programs continues on the rise, we must ask ourselves how dichotomous framings of language that *appear* to be race-neutral

dehumanize Black students' linguistic and cultural identities”(Frieson, 2022). Once this administrator noticed the exclusion of Black children in their DLP she made actionable steps in order for Black students to join the DLP and learn Spanish. Families were coming together and discussing what their children needed and what their community needed.

This Latina administrator looked closely at what their school needed and created intentional and actionable steps to fix an issue that had to be addressed. We need more diverse administrators and policy makers to be included in dual language planning, “Policymakers, particularly administrators, should be aware of these dynamics and look for alternative ways to engage stakeholders from diverse backgrounds so that more voices from underrepresented households can be validated in the process of dual language planning”(Zheng, 2022). DLE can and should include all students, as programs grow the spaces for our students in these programs will also expand.

Community Involvement

In a DLP it is essential that there is community involvement with parents, community members, teachers, and administrators, “Dual language learning is most effective when the support for learning two languages continues at home”(Grote et al., 2021). From what I have observed from other schools in the area who have DLPs, this involvement includes consistent communication among families and schools. Family language and family input should be included in the DLPs, “despite intentions to promote academic achievement among Latina/o/x student populations, many districts provide exclusionary and subtractive educational programs that do not value family language as an asset” (DeMatthews et al., 2017). In a DLP, seeing language as an asset has to be a key component of the program for our students. For our students

their language is not a marketable skill, their languages are who they are that is inextricably connected to their identities.

Valuing the family language throughout the DLP will be essential in the growth and success of this program, a North Carolina school board member expressed their ideas “If we truly believe that community support is essential to the success of our schools it is important that we not overlook half of our community”(Cervantes-Soon et al., 2021). An opportunity for family and community involvement is after school nights used for planning, discussion, implementation, and even celebration. Building relationships and community within the DL school would foster trust and growth throughout the program for our families and our students.

Gaps in the Research

While exploring the various research available I noticed that there are some areas of research that are missing. As a science teacher I would like to explore the benefits around DLPs in the content area of science and STEM. However, throughout my research it was difficult to find extensive research in these content areas. We need more research studies in the content areas of science and STEM to take place at the secondary level. I then broadened my research focus by deciding on both content areas of mathematics and English language arts.

Teacher Needs

As I prepare to teach Science in Spanish next year I have thought of some essential components that teachers will need in DLPs. We need a high quality curriculum in the partner language regardless of what academic content is being taught. It is not feasible to teach DL classes and create your own curriculum as you teach. DLPs risk being ineffective and inconsistent when there is lack of capacity, “Spanish language materials were often not readily available or accessible to teachers, which left teachers with little to no choice but to create their

own Spanish materials... stress led to high teacher turnover”(Flores & McAuliffe, 2022). There will be school districts that claim that they give the DL teacher the freedom of creativity to create, plan, and implement their own units and activities. For the sake of our DL teachers this should not be upheld.

Teachers need the time to teach and reflect without creating a DL program from scratch. DL teachers must be provided with a curriculum, content, and resources that they will use and supplement parts as needed. As DL teachers we are expected to navigate many complex systems and processes, “DLBE teachers cannot be expected to transform and advocate for DLBE programs without having access to crucial metalinguistic, content, and cognitive resources/support...if DLBE teachers are expected to navigate restrictive linguistic classroom policies at the school and district levels, they should be equipped with the resources needed to create innovative teaching and learning spaces designed to disrupt monolingual orientations”(Barko-Alva, 2022).

There is a shortage on DL teachers and little preparation for a DL setting, “Despite the amount of intellectual and physical effort the teachers in this study put into translating and creating curriculum materials, none reports ever having had the opportunity to enroll in a course or attend a workshop that provided them with guidelines for creating curriculum materials for the DLBE classroom”(Amanti, 2019). In order for the growth of DLPs, DL teachers need to be provided with learning opportunities that will result in having the skills and knowledge to create high quality materials and resources for our students.

Another component we as DL teachers need is DL mentors that will guide us throughout the academic year with practices to help students throughout their language growth. It is important that DL teachers integrate content and language instruction in lessons, “we encourage

DLBE teachers to plan their lessons including multiple opportunities to integrate language and content instruction”(Otten et al., 2019). However, as a new teacher like myself this can be difficult to do with limited materials in the partner language. Teachers need guidance from experienced mentors on how to best navigate these challenges. Lastly, but not least we need time. We need our time to be valued and protected in order to provide our students with the best instruction possible.

Student Needs

While attending the WABE 2023 conference in Bellevue, Washington I was fortunate enough to listen to a panel of four DL high school students that expressed their needs and wants in a DLP. All four of these students expressed needing a teacher that was experienced and qualified to teach in the partner language, a teacher with patience, and a teacher that respected and valued their identities and language. The students specifically described needing a relationship with their teacher built on trust and mutual respect, “Strong relationships especially with families of dual language learners, require that professionals have an authentic interest in the families they serve” (Harvey & Wennerstrom, 2023). A teacher with care and interest for the students they serve is what DL students need from us. The students spoke in a room with teachers, administrators, district leaders, and parents. The students also talked about wanting to expand DLPs across the country and making them accessible to more students by having a variety of partner languages. These students valued their language and their language growth and wanted a teacher as well as a school that supported them in doing the same.

Research Available

My research question focuses specifically on the benefits of DLPs at the secondary level in the content areas of mathematics and ELA. Throughout my research I found it difficult finding

sufficient research studies at the secondary level for the specific content areas of my focal question. For this reason I include research studies from both elementary and secondary schools while focusing on both content areas. This focus of research is currently growing and within the coming years it will be essential to analyze studies around the academic outcomes for students in DLPs in all content areas.

Implications of Findings

Implications to consider when looking at the various research findings is that although DLPs do consist of the same core idea of value within multiliteracy and multilingualism, there are various specific factors of that school that make their DLP unique. For example, DLPs will look differently in a rural school compared to an urban school. The program models used within the DLP will also vary from 90-10 models and 50-50 models. Student recruitment is also another factor that will vary across schools, school districts, and even states. This is why it is important to include various schools with varying program models and locations in order to look at DLPs as a whole.

The Value of the Culminating Project

The value of this project will bring light to what DLPs can do for our children and communities. It is time that as a society we start to value multilingualism. We are a very diverse country with hundreds of languages spoken within this one country. Being multilingual is an asset, “The cognitive rationale for Dual language immersion is grounded in laboratory evidence that bilinguals outperform multilinguals on numerous verbal and nonverbal tasks, including working memory and executive function tasks, where the latter include attention control and task switching”(Steele et al., 2018). It is time that our schools reflect the various languages that students speak in their homes. With this project I will communicate the academic outcomes that

students have presented from being enrolled in a DLP to community members, colleagues, families, and administrators.

References

Amanti, C. (2019). The (invisible) work of dual language bilingual education teachers. *Bilingual Research Journal*, 42(4), 455-470.

<https://www.tandfonline.com/doi/full/10.1080/15235882.2019.1687111>

American Council for International Education (2021, October 5). ARC completes national canvass of dual language Immersion programs in U.S public schools. American Councils. Retrieved March 15, 2023, from

<https://www.americancouncils.org/news/announcements-featured-content/arc-completes-national-canvass-dual-language-immersion-programs>

Arteagoitia, I., & Yen, S.J. (2020) Equity in representing literacy growth in dual language bilingual education for emerging bilingual students. *TESOL Quarterly*, 54(3), 719-742.

Back, M. (2020). "It is a village": Translanguaging pedagogies and collective responsibility in a rural school district. *TESOL quarterly: a journal for teachers of english to speakers of other languages and of standard English as a second dialect*, 54(4), 900-924. <https://doi.org/10.1002/tesq.562>

Barko-Alva, K. (2022). Enseñando en español: The need to support dual language bilingual education teachers' pedagogical language knowledge. *Annual Review of Applied Linguistics*, 42, 18-24. <https://doi.org/10.1017/S0267190521000106>

Bibler, A. (2020). Dual language education and student achievement. *Association for Education Finance and Policy*, 16(4), 634-658. https://doi.org/10.1162/edfp_a_00320

Block, N.C. (2023). Students' attitudinal development in a dual language bilingual education program from grade 1 to grade 5. *Bilingual Research Journal*, 45(3-4), 337-357. DOI:[10.1080/15235882.2023.2174204](https://doi.org/10.1080/15235882.2023.2174204)

Brutt-Griffler, J., & Jang, E. (2022). Dual language programs: an exploration of bilingual students' academic achievement, language proficiencies and engagement using a mixed methods approach. *International Journal of Bilingual Education and Bilingualism*, 1-22. <https://doi.org/10.1080/13670050.2019.1616670>

- Cervantes-Soon, C., Gambrell, J., Kasun, G.S., Sun, W., Freire, J.A., & Dorner, L.M. (2021). "Everybody wants a choice" in dual language education of el sur: whiteness as the gloss for everybody in media discourses of multilingual education. *Journal of Language, Identity & Education*, (20)6, 394-410. DOI: [10.1080/15348458.2020.1753201](https://doi.org/10.1080/15348458.2020.1753201)
- Chávez-Moreno, L. C. (2019). Dual language as white property: examining a secondary bilingual-education program and latinx equity. *American Educational Research Journal*, 58(6), 1107-1141. <https://journals.sagepub.com/home/aer>
- Choi, W., Kim, W.H., Wright, W.E., & Morita-Mullaney, T. (2023). Improving english language arts instruction in indiana dual language bilingual education classrooms. *Language and Education*, 37(2), 151-170. DOI: [10.1080/09500782.2022.2032731](https://doi.org/10.1080/09500782.2022.2032731)
- 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. https://www.berkeleyschools.net/wp-content/uploads/2011/10/TWIAstounding_Effectiveness_Dual_Language_Ed.pdf?864d7e
- Cortina, R., Makar, C., & Mount-Cors, M. (2015). Dual language as a social movement: putting languages on a level playing field. *Current Issues in Comparative Education*, 17(1), 5-16.
- DeJesús, S. C., (2008). An astounding treasure: dual language education in a public school setting. *Centro Journal*, (20)2, 193-217.
- De Jong, E.J., Yilmaz, T., & Marichal, N. (2019). A multilingualism-as-a-resource orientation in dual language education. *Theory Into Practice*, 58(2), 107-120. DOI:[10.1080/00405841.2019.1569375](https://doi.org/10.1080/00405841.2019.1569375)

De La Garza, T.O., Mackinney, E., Lavigne, A.L., & University, R. (2015). Dual language instruction and achievement: a need and a void in the midwest. *Mid-Western Educational Researcher*, 27(4), 363-382.

<https://www.mwera.org/MWER/volumes/v27/issue4/v27n4-Oberg-FEATURE-ARTICLE.pdf>

DeMatthews, D., Izquierdo, E., & Knight, D.S. (2017). Righting past wrongs: A superintendent's social justice leadership for dual language education along the U.S.-Mexico border. *Education Policy and Analysis Archives*, 25(1).

<https://doi.org/10.14507/epaa.25.2436>

Dominguez-Fret, N., & Oberto, E.E. (2022). Untapped potential: the current state of dual language education in Chicago public schools. *Bilingual Research Journal*, 45(1), 61-81.

DOI: [10.1080/15235882.2022.2095541](https://doi.org/10.1080/15235882.2022.2095541)

Dorner, L.M., Moon, J.M., Freire, J., Gambrell, J., Kasun, G.S., & Cervantes-Soon, C. (2023). Dual language bilingual education as a pathway to racial integration? A place-based analysis of policy enactment. *Peabody Journal of Education*, 98(2), 185-204. DOI:

[10.1080/0161956X.2023.2191566](https://doi.org/10.1080/0161956X.2023.2191566)

Esposito, A. G. (2021). Executive functions in two-way dual-language education: a mechanism for academic performance. *Bilingual Research Journal*,

DOI:[10.1080/15235882.2021.1874570](https://doi.org/10.1080/15235882.2021.1874570)

Flores, N., & McAuliffe, L. (2022). 'In other schools you can plan it that way': a raciolinguistic perspective on dual language education. *International Journal of Bilingual Education and Bilingualism*, 25(4), 1349-1362. DOI:

[10.1080/13670050.2020.1760200](https://doi.org/10.1080/13670050.2020.1760200)

- Fránquiz, M.E., Leija, M.G., & Salinas, C.S. (2019). Challenging damaging ideologies: are dual language education practices addressing learners' linguistic rights? *Theory Into Practice*, 58(2), 134-144. DOI: [10.1080/00405841.2019.1569379](https://doi.org/10.1080/00405841.2019.1569379)
- Frieson, B.L. (2022). "It's like they don't see us at all": a critical race theory critique of dual language bilingual education for black children. *Annual Review of Applied Linguistics*, 42, 47-54. <https://doi.org/10.1017/S0267190522000022>
- Garza-Reyna, G.L. (2017). The academic preparedness of Latino students in dual language and transitional bilingual education programs. *Journal of Latinos and Education*, 18(4), 1-9. <https://doi.org/10.1080/15348431.2017.1394858>
- Gorte, K.S., Russell, E.E., Bates, O., & Gonzalez, R. (2021). Bilingual cognition and growth mindset: a review of cognitive flexibility and its implications for dual-language education. *Current Issues in Education*, 22(2).
<http://cie.asu.edu/ojs/index.php/cieatasu/article/view/1958>
- Harvey, H., & Wennerstrom, E.K. (2023) Hearing their voices: parents' perceptions of preschool special education evaluations with dual-language learners. *Topics in Early Childhood Special Education*, 43(1), 46-59. <https://doi.org/10.1177/02711214211005853>
- Heineke, A. J., & Davin, K. J. (2020). Prioritizing Multilingualism in U.S. Schools: States' Policy Journeys to Enact the Seal of Biliteracy. *Educational Policy*, 34(4), 619–643. <https://doi-org.offcampus.lib.washington.edu/10.1177/0895904818802099>
- He, S., Yang, L., Leung, G., Zhou, Q., Tong, R., & Uchikoshi, Y. (2022). Language proficiency and competence: upper elementary students in a dual-language bilingual education program. *Journal of Multilingual and Multicultural Development*, 43(6), 502-517. DOI: [10.1080/01434632.2021.1987443](https://doi.org/10.1080/01434632.2021.1987443)

Houston Independent School District (HISD) 2014 Dual Language Program Report

<https://files.eric.ed.gov/fulltext/ED597868.pdf>

Kim, S., Kang, V., Kim, H., Wang, J., & Gregori, E. (2022). Online literacy instruction for young korean dual language learners in general education. *Journal of Behavioral Education*. <https://doi.org/10.1007/s10864-022-09470-9>

Kotok, S., & DeMatthews, D. (2018). Challenging school segregation in the twenty-first century: how districts can leverage dual language education to increase school and classroom diversity. *The Clearing House*, 91(1), 1-6.

DOI:[10.1080/00098655.2017.1336405](https://doi.org/10.1080/00098655.2017.1336405)

Krause, G., & Barko-Alva, K. (2019). Language and mathematics: questioning strategies in a dual language bilingual education classroom. *William & Mary ScholarWorks*.

<https://scholarworks.wm.edu/cgi/viewcontent.cgi?article=1173&context=educationpubs>

Marcus, M.S. (2022). Perceptions of access to dual language education programs: the complexities of equity. *International Multilingual Research Journal*, 16(1), 78-92.

DOI:[10.1080/19313152.2021.1963510](https://doi.org/10.1080/19313152.2021.1963510)

Marian V., Shook, A., & Schroeder, S.R. (2013). Bilingual two-way immersion programs benefit academic achievement. *Bilingual Research Journal*, 36(2), 1-24.

<https://doi.org/10.1080/15235882.2013.818075>

Montague, N.S. (1997). Critical components for dual language programs. *Bilingual Research Journal*, 21(4), 409-417. DOI:[10.1080/15235882.1997.10162713](https://doi.org/10.1080/15235882.1997.10162713)

Morita-Mullaney, T., Renn, J., & Chiu, M. M. (2020). Obscuring equity in dual language bilingual education: a longitudinal study of emergent bilingual achievement, course placements and grades. *TESOL Quarterly*, 54(3), 685-718.

Morita-Mullaney, T., Renn, J., & Chiu, M.M. (2021). Contesting math as the universal language: a longitudinal study of dual language bilingual education language education.

International Multilingual Research Journal, 15(1), 43-60.

DOI:[10.1080/19313152.2020.1753930](https://doi.org/10.1080/19313152.2020.1753930)

OSPI (n.d.). *Dual Language Education: What Families Should Know*. Washington Office of Superintendent of Public Instruction. Retrieved March 15, 2023, from

<https://www.k12.wa.us/student-success/access-opportunity-education/migrant-and-multilingual-education/multilingual-education-program/dual-language-education-and-resources/dual-language-education-what-families-should-know#:~:text=Programs%20begin%20in%20preschool%20or,or%20more%20languages%20by%202030.>

Otten,S., Candela, A.G., de Arujo, Z., Haines, C., & Munter, C. (2019). *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St Louis, MO: University of Missouri.

Padilla, A.M., Chen, X., Swanson, E., Peterson, M., & Peruzzaro, A. (2022).

Longitudinal study of Dual Language Immersion graduates: Secondary school academic and language achievement. *Foreign Language Annals*, 55, 408-434.

<https://doi.org/10.1111/flan.12615>

Pratt, K.L., & Ernst-Salvit, G. (2019). Equity perspectives and restrictionist policies: tensions in dual language bilingual education. *Bilingual Research Journal*, 42(3), 356-

374. DOI:[10.1080/15235882.2019.1647900](https://doi.org/10.1080/15235882.2019.1647900)

Rodríguez-Valls, F., Solsona-Puig, J., & Capdevila-Gutiérrez, M. (2017). Teaching social studies in Spanish in dual immersion middle schools: A biliterate approach to history.

Cogent Education. <https://doi.org/10.1080/2331186X.2017.1326202>

Rumper, B., Frechette, E., Greenfield, D.B., & Hirsh-Pasek, K. (2021). Impacts on head start

dual language learning children's early science outcomes. *Education Sciences*.

<https://www.proquest.com/scholarly-journals/impacts-on-head-start-dual-language-learn>

[ng/docview/2560414892/se-2](https://www.proquest.com/scholarly-journals/impacts-on-head-start-dual-language-learn/docview/2560414892/se-2)

Serafini, E.J., Rozell, N., & Winsler, A. (2022). Academic and English language outcomes for DLLs as a function of school bilingual education model: the role of two-way immersion and home language support. *International Journal of Bilingual Education and Bilingualism*, 25(2), 552-570. <https://doi.org/10.1080/13670050.2019.1707477>

S. Park, P., Dotan, L., & Esposito, A.G. (2023). Do executive functions gained through two-way dual-language education translate into math achievement? *International Journal of Bilingual Education and Bilingualism*, 26(4), 457-471.

DOI:[10.1080/13670050.2022.2116973](https://doi.org/10.1080/13670050.2022.2116973)

Steele, J.L., Slater, R., Li, J., Zamarro, G., & Miller, T. (2013). The effect of dual-language immersion on student achievement in math, science, and English language arts.

Society for Research on Educational Effectiveness. Retrieved from ERIC

<https://www.proquest.com/reports/effect-dual-language-immersion-on-student/docview/1826516699/se-2>

Steele, J.L., Slater, R., Li, J., Zamarro, G., & Miller, T. (2015). Costs and effects of dual-language immersion in the Portland public schools. *SREE Conference Abstract Template*.

<https://eric.ed.gov/?id=ED562111>

Steele, J.L., Slater, R.O., Li, J., Zamarro, G., Miller, T., & Bacon, M. (2018). Dual language immersion education at a scale: An analysis of program costs, mechanisms, and moderators. *Educational Evaluation and Policy Analysis*, 40(3), 420-445.

<https://doi.org/10.3102/0162373718779457>

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), 282-306.

Thomas, W.P., & Collier, V.P. (1998). Two languages are better than one. *Reaching for Equity*, 55(4), 23-26. <https://eric.ed.gov/?id=EJ556857>

Thomas, W.P., & Collier, V.P. (2002). A national study of school effectiveness for language minority students' long-term academic achievement.

Torff, B., & Figueroa, A. (2021) Placement of former English language learners in middle schools: general education or dual language? *International Journal of Bilingual Education and Bilingualism*, 24(4), 569-576. DOI: [10.1080/13670050.2018.1494697](https://doi.org/10.1080/13670050.2018.1494697)

Trevino Mendez, J.D., Slate, J.R., Martinez-Garcia, C. (2017). Reading and Mathematics Differences for English Language Learners Enrolled in Dual Language or Exit Programs. *Athens Journal of Education*. 4(2), 105-122. <https://doi.org/10.30958/aje.4-2-1>

Umansky, I.M., & Dumont, H. (2021) English learner labeling: how English learner classification in kindergarten shapes teacher perceptions of student skills and the moderating role of bilingual instructional settings. *American Educational Research*

Journal, 58(5), 993-1031. <https://doi->

[org.offcampus.lib.washington.edu/10.3102/0002831221997571](https://doi.org/offcampus.lib.washington.edu/10.3102/0002831221997571)

Umansky, I.M., Reardon, S.M. (2014). Reclassification patterns among latino english learner students in bilingual, dual Immersion, and english immersion classrooms.

American Educational Research Journal. 51(5), 879-912. DOI:

10.3102/0002831214545110

Umansky, I. M., Valentino , R. A., & Reardon , S. F. (2015). The promise of bilingual and dual immersion education. *Stanford Center for Education Policy Analysis*, 15(11), 1-19. <http://cepa.stanford.edu/wp15-11>

U. S Department of Education (n.d.). Our Nation's English Learners. Retrieved March 15, 2023, from <https://www2.ed.gov/datastory/el-characteristics/index.html#four>

Valdez, V. E., Freire, J. E., & Delavan , M. G. (2016). The Gentrification of Dual Language Education. *Springer Science+Business Media New York*, 601-627.

<https://doi.org/10.1007/s11256-016-0370-0>

Wallstrum, K. (2009). *Benefits of dual language education*. Retrieved from ERIC

<https://www.proquest.com/reports/benefits-dual-language-education/docview/61844598/se-2>

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. DOI: [10.1080/13670050.2016.1214675](https://doi.org/10.1080/13670050.2016.1214675)

Watzinger-Tharp, J., Tharp, D.S., & Rubio, F. (2021). Sustaining dual language immersion: partner language outcomes in a statewide program. *The Modern Language Journal*. 105(1), 194-217. <https://doi.org/10.1111%2Fmodl.12694>

Werblow, J., Duesbery, L., & Koulidobrova, H. (2019). The case for dual language programs as the future of public education. *Journal of Educational Leadership and Policy Studies, Special Issue #3 on Educational Leadership and Social Justice*, 3(3).

Zheng, B. (2022). Scaling bi/multilingualism through dual language education: a multi-sited study of diverse learners' views. *Journal of Multilingual and Multicultural Development*, 43(6), 554-568. DOI: [10.1080/01434632.2021.1975722](https://doi.org/10.1080/01434632.2021.1975722)