Dual Language in WA's K-12 Schools

Lizbeth Rodriguez

University of Washington - Bothell

Masters in Policy Studies

Dr. Joseph Ferrare

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Abstract

The state of Washington has a potential inequity in the implementation of Dual Language (DL) programs in its Kinder-12 schools. While these programs are being promoted as a key strategy to close educational gaps between multilingual and monolingual students, there is a concern that they may disproportionately benefit White, affluent communities, thereby undermining equity and perpetuating existing disparities. This study examines this trend by answering two central questions: (1) Are there indicators of White appropriation in the state's promotional language, specifically in its messaging and framing of Dual Language programs? And (2) how do school demographics, including racial and socioeconomic factors, differ across the various types and instructional models of Dual Language programs implemented in Washington State?

Employing a multi-level investigation that included a critical analysis of state policy, geospatial mapping, and quantitative analyses at the district and school levels, this research yields a cohesive conclusion that a fundamental tension exists between the foundational, equity-driven purpose of DL programs and a pervasive discourse that reorients them to serve the interests of native English speakers. The data demonstrates that this discursive shift is not benign; it actively contributes to a two-tiered system of DLE that reinforces existing racial and socioeconomic divides. Definitive indicators were found of *whitestreaming* and *policy expropriation* in state documents, which frame bilingualism as globalized human capital for the benefit of "all students." The implementation of DL programs is not universally accessible; rather, their distribution is a function of a community's wealth, diversity, and political capital. This is evidenced by a strong positive correlation between program implementation and the

percentage of Hispanic and Native American students, yet also a stratification of program models, as the Two-Way 50/50 model is heavily concentrated in affluent counties like King County, while highly diverse but low-income counties like Adams County have almost no programs at all. This system's failure to prioritize its foundational equity mission presents a profound challenge to Washington's legislative goals and leaves it ill-equipped for a future marked by increasing linguistic diversity and climate-driven migration.

Keywords: Dual Language Education (DLE), bilingual education, educational equity, linguistic justice, policy analysis, program implementation, whitestreaming, English hegemony, globalized human capital, policy expropriation, opportunity hoarding.

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Introduction

The potential for unequal implementation of Dual Language (DL) programs in Washington's K-12 schools represents a significant concern. When a program promoted as a key strategy for closing educational opportunity gaps between multilingual and monolingual students is instead disproportionately implemented in a way that benefits White–and particularly affluent–communities, it risks further polarizing these two groups. This is not a baseless assumption, as a growing body of research has documented similar trends in other states. For example, studies in states such as Utah, Georgia, Delaware, and Wyoming have found that DL programs have been implicitly and explicitly promoted towards White English-monolingual populations. Some of these initiatives have even gone as far as to "deny the bilingual needs and rights of language-minoritized students" to redirect resources toward White affluent families (Freire et al., 2021).

If this trend were to be found in Washington, it could significantly undermine the goal of educational equity and instead perpetuate existing disparities among students. The Washington Office of Superintendent of Public Instruction (OSPI) clearly articulates an equity-driven intention by prioritizing "multilingual/English learners and American Indian/Alaska Native students… for at least half of the seats in two-way dual language programs to prevent opportunity gaps and encourage students to fully develop their first or heritage language" (n.d.-a). However, the central problem this study seeks to address is the potential disconnect between this stated policy intent and the practical implementation realities within the state.

Understanding the demographics of DL program implementation is crucial for ensuring equitable access to educational opportunities, especially for communities that have historically been marginalized within the schooling system, and who have been the ones to make programs

like these possible. When DL programs primarily serve White, affluent populations, it raises critical questions about resource allocation (Valdés, 2018) and program accessibility for language-minority students (Blanton et al., 2021). This phenomenon has been critically examined through the lens of "White appropriation" of bilingual education initiatives (Cervantes-Soon, 2014; Cervantes-Soon et al., 2021; Flores, 2016; Morales & Maravilla, 2019).

Across the U.S., there have been documented cases where DL programs have been systemically deprived of language-minority students and instead filled with English-monolingual students. This trend is often linked to gentrification, which increases the enrollment of children from White, middle-class, English-monolingual families. These parents have been found to exert significant influence to ensure their high expectations for their children's education are met, often reshaping program instructors' attention priorities toward the children of those who are already more privileged (Morales & Maravilla, 2019). An illustrative example of this trend was found in a study of a long-standing dual immersion program at Carver Language School in Los Angeles. At the time of the study in 2010, over 70% of the student population was Latino, 20% White, and almost 50% were classified as English Learners (ELs) (Morales & Maravilla). The school's favorable geographical location, which was "accessible to middle- and upper-class communities nearby," was initially seen as a positive factor for creating a diverse, mixed environment. However, the study found that highly educated parents were exerting pressure on the school and its staff. As noted by the researchers, "parents with more cultural capital draw attention to their own children, who are already more privileged in many ways, and away from students who could benefit from more teacher attention" (Morales & Maravilla, 2019).

These dynamics have led to concerns that DL programs are being disproportionately allocated for White students (Valdés, 2018) and that school leaders and media may sell DL

programs through a White framing of academic success for the global workforce (Cervantes-Soon et al., 2020; Valdez et al., 2014). Furthermore, while promotional materials in other states often declare a focus on assisting both language-majority and -minority students, they may simultaneously exhibit an implicit emphasis on White students through the use of specific vocabulary when describing DL programs, such as "target" instead of "partner" language, and by explicitly mentioning English natives meeting program goals, rather than both student groups (Cervantes-Soon, 2014; Delvan et al., 2016).

Even in schools that attempt to maintain demographic balance through enrollment caps on English-monolingual students, White students have been shown to be the focal point of attention in two-way DL programs. This is often due to their parents' demand for attention and the children's role in encouraging the usage of English during partnered-language time (Palmer, 2009). The pressure from White parents can also manifest in other ways, with one study finding that they would "work sneakily around families of color…toward creating greater access to DL and education more broadly," even while constituting only 18% of the parent body (Blanton et al., 2021). This research also documented cases where Parents of Color were told that there was no more space in a DL program, while those spots were being given to White students (Blanton et al., 2021).

Objectives of the Study

This case study will attempt to answer the following questions:

1. Are there indicators of White appropriation in the state's promotional language, specifically in its messaging and framing of Dual Language programs?

2. How do school demographics, including racial and socioeconomic factors, differ across the various types and instructional models of Dual Language programs implemented in Washington State?

To address these questions, this study will consist of the analysis of online legal documents and publicly accessible state promotional websites to assess the language utilized to promote DL programs. This will be conducted through the analytical framework identified by Juan A. Freire, James Gambrell, G. Sue Kasun, Lisa M. Dorner, and Claudia Cervantes-Soon in their research article *The expropriation of dual language bilingual education: Deconstructing neoliberalism, whitestreaming, and English-hegemony* (2021), as this model provides a basis for the initial step in determining whether state promotional material of DL programs are being tailored towards the White population, and consequently flooding the programs with this dominant community. Consequently, there will be an analysis of the distribution of DL programs throughout the schools mentioned within publicly accessible data sets to identify whether there are concentrations or pockets of schools that have DL programs implemented, and determine whether certain DL program types are also concentrated in certain areas of the state. Ultimately, the study will also include the comparative analysis of the demographics of schools with different DL program models (e.g., 90-10 vs. 50-50), as well as correlation analysis between school demographics (e.g., percentage of White students, percentage of low-income students) and the presence and type of DL programs.

Significance of the Study

This case study focuses on evaluating the equity of DL program implementation within Washington State's Kinder through 12th grade schools. The significance of this research lies in the potential inequity in the implementation of DL programs, specifically concerning the school

demographics and how these programs may disproportionately benefit White, affluent schools, which could impair the goal of equity and further aggravate existing disparities. This study aims to contribute to the scholarly conversation on DL programs by examining the extent to which these programs in Washington are serving as vehicles for social justice, or inadvertently perpetuating existing patterns of marginalization, especially as more diverse populations continue to settle in Washington due to economic, political, and social factors, as well as the increasing impact of climate change on southern regions of America that may drive migration north.

Researcher's Positionality

This research is deeply informed by my personal experience as a multilingual student within the U.S. education system. Born in the United States and raised in México, I became fluent in Spanish, with limited proficiency in English from my early years. From second to seventh grade, I attended a private Catholic school in México where English instruction was mandatory, as they considered it the language of the future. Despite being placed in the highest proficiency level among students from affluent Mexican families who frequently traveled to the U.S., my progress was limited. The pace of the class was dictated by the students with the least English knowledge, effectively holding me back and preventing me from progressing beyond the basics I had acquired in Kindergarten and first grade.

This pattern of my learning being constrained by the pace of monolingual peers was a recurring theme upon my family's return to the U.S. in the fall of 2014. As an eight grader, I was placed in English Language Learner (ELL) classes without a formal assessment of my English skills. I found myself in a class of predominantly sixth and seventh graders, all of whom were Hispanic with varying levels of limited English proficiency. Our instructor, a White

English-monolingual. While I possessed a solid grasp of basic grammar and tenses, I witnessed my peers struggle to understand her instructions. My attempts to participate were often met with discouragement; when I raised my hand to answer a question that no one else could, the instructor would bypass me, choosing instead to call on a student who would often answer incorrectly or not at all. This experience solidified my understanding that my language-learning trajectory was once again being slowed down to accommodate a class with a lower average proficiency.

The challenges extended beyond the ELL classroom. While I excelled in classes like math, my experience with my instructor was a vivid example of the linguistic and cultural gaps that exist even in seemingly universal subjects. My instructor, who learned a bit of Spanish in college, tried to explain an equation to me by using the word "sustracción." When I told him I did not understand, he was confused, having said the word in Spanish. It was only when he drew the equation on a piece of paper that I understood he was referring to a "resta," the term used in México. This incident highlighted a critical flaw in my education, where instructors who, while well-intentioned, may lack the cultural and linguistic knowledge to effectively communicate with diverse students. This problem mirrors a broader issue in DL programs, where many instructors are English monolinguals who have acquired a formal, academic understanding of Spanish that is often detached from the cultural and linguistic diversity of its speakers. I was forced to independently research vocabulary to understand lessons and complete assignments, a process that required significantly more effort than what was required of my monolingual peers. This extra labor, however, did not prevent me from excelling academically, as I consistently achieved high grades and received numerous awards for my performance. My high school experience brought a similar encounter with an administration that made assumptions about its Hispanic

student population. I was called to a meeting with other Hispanic students, only to learn that the school was offering support because it assumed its entire Hispanic student population was struggling academically. I was dismayed to find that my individual academic success and the diversity of experiences within the group had not even been taken into account. One of the students was not even Hispanic.

My journey through undergraduate and graduate studies has continued to be defined by this linguistic challenge, yet my experiences have also provided me with unique insights. This research is therefore motivated by a deep understanding of the inequities multilingual students face, even when they demonstrate academic excellence in comparison to their monolingual peers. My firsthand experience of being held back by a class with a lower language proficiency, being miscategorized by somewhat well-intentioned administrators, and having to work twice as hard to meet expectations, provides the impetus for this study. The findings of this capstone–that DL programs, despite their state goals, may be disproportionately serving English-monolingual populations–are not just a statistical finding, but a reflection of a personal reality that has shaped my academic journey and drives my commitment to educational equity.

Overview of the Study

This capstone project is structured to present a comprehensive analysis of DL programs in Washington State across four distinct levels. The paper begins with its introduction, which outlines the problem of concern, the study's objectives, and the researcher's positionality. The following section, Background and Literature Review, provides a deeper dive into the existing scholarly conversation and establishes the theoretical framework for the study. The Methodology section details the multi-level analytical framework used. The Findings section then presents the findings from the four levels of analysis: a critical examination of state promotional materials, a

geospatial analysis, and a detailed statistical analysis of district and school-level data. This is followed by a Conclusion, which sums up all that was found in the findings. The Implications and Discussion section then applies the Freire analytical lens to the results, interpreting what may seem like harmless findings as evidence of deeper systemic issues. Finally, the paper concludes with a Recommendations section, which offers a look at future research and policy opportunities.

Background & Literature

The seemingly straightforward concept of DL programs belies a complex history and a profound future impact on the United States, and within Washington State. To fully grasp their potential–not only in fostering bilingualism, but also in addressing contemporary challenges like climate-induced migration and future workforce needs–it is essential to delve into the intricate historical and socio-political landscape that has shaped language education in America. This background section unpacks centuries of linguistic evolution, colonial legacies, and ongoing debates, revealing why understanding the past is critical to ensuring DL programs truly serve as equitable and strategic assets for a diverse and evolving nation and state.

Historical and Colonial Context of Language in the U.S.

The American continent possesses a rich and extensive history of cultural and linguistic evolution, profoundly shaped by successive waves of migration. As Professor Jason Ripper (2020) meticulously detailed in his book, *American Stories: Living American History*, this transformative journey began over 30,000 years ago with the arrival of the ancestors of the Mayan, Mexica, Navajo, and Eskimo into America (p. 234). Subsequently, around 1,000 C.E., Viking ships from Greenland touched the northeastern coast of Canada, maintaining contact that bridged Europe and America for over five centuries (p. 238), long before Cristopher Columbus's arrival in the Bahamas (p. 240). Across this sprawling landmass, a vibrant symphony of over 2,000 distinct languages resonated. Nahuatl chimed in the Aztec heartlands, while various Iroquoian dialects, like that of the Onondaga, echoed through northern forests. So profoundly intricate and unique were the languages and cultures of these Indigenous people that European newcomers such as the Spaniards might find a Frenchman's tongue more familiar than any of the continent's native voices (p. 270).

With the arrival of Europeans came the swift undermining of the profound differences that distinguished Native societies. The European use of the term *Indios* for the natives not only homogenized diverse societies into a single, inaccurate category, but also initiated the destruction of their distinct ways of living and understanding the world (Ripper, p. 272). Driven by a burgeoning demand for beaver pelts and timber, colonists aggressively sought to amass vast tracts of land, dispossessing Native people of their ancestral territories and resources (p. 6). This rapid expansion spurred an even greater influx of people to America, all eager to participate in its burgeoning economic opportunities.

The established Puritan settlements soon saw the arrival of other diverse groups, including Quakers, Roman Catholics, African Muslims, various Protestants, and Jews from Europe (Ripper, p. 19). Such migration gave rise to new linguistic forms, notably the African-American slave dialect of Gullah, a vibrant fusion of West African, Caribbean, and English influences. Concurrently, Arabic, Germanic, Irish Gaelic, and Hebraic dialects were heard along the coast, alongside enduring Algonquian and Iroquoian derivatives (p. 19). Over time, however, forced assimilation became a pervasive force. Native women, who had historically cultivated land and wielded significant political power, found themselves increasingly confined to the domestic sphere, adopting roles traditionally assigned to White women (p. 60). Colonial men, uncomfortable by the autonomy and public roles of Indigenous women, sought for generations to mold Native American societies into conformity with colonial norms concerning religion, gender roles, language, dress, and mannerisms (p. 60).

The burgeoning United States, insatiably hungry for land and power, soon turned its gaze southward to México. As Gloria Anzaldúa (1987) powerfully explains in her seminal work, *Borderlands/La Frontera: The New Mestiza*, the illegal Anglo settlement in Texas during the

1800s enabled the U.S. to forcibly displace the Tejanos from their ancestral lands, instantly transforming them into foreigners within their own homes (p. 6). Just a decade later, México was compelled to cede nearly half of its national territory. With the signing of the Treaty of Guadalupe Hidalgo on February 2, 1848, a new border was formalized, one that profoundly fractured the Mexican people. This act of annexation left an estimated 100,000 Mexican citizens on the newly American side, absorbed along with their land (p. 7). Tragically, the promises of this treaty were never honored, and restitution remains unfulfilled.

For those who remained, their culture was systematically torn apart. In schools, Mexican students were often subjected to harsh assimilationist practices, where they were required to take multiple speech classes to eliminate their accents, and even physically punished by teachers for daring to speak their native tongue. This suppression of Spanish, rather than eradicating the language, catalyzed a profound linguistic evolution among Chicanos, resulting in a rich tapestry of dialects and languages, which encompassed standard English, working-class and slang English, standard Spanish, standard Mexican Spanish, regional variations of Chicano Spanish (in TX, NM, AZ, and CA), Tex-Mex, and Pachuco (also known as caló) (Anzaldúa, pp. 76-77). A parallel struggle unfolded for speakers of African American Vernacular English, who faced similarly harsh criticism and punishment for speaking what was deemed as "broken" English.

Within the mid-nineteenth century, the Puget Sound region teemed with Salishan-speaking people. From the Skagit language in the north to Wenatchee in the east, more than twenty-six distinct languages, all rooted in the broader Salish language base, flourished (Ripper, p. 215). Yet, it was not until 1818 that the U.S. and Britain agreed to a joint legal claim over these lands, utterly disregarding the thousands of Native American tribes who had long resided there. Captain James Cook's arrival in the Northwest during the 1770s, marked by his

acquisition of lucrative sea otter pelts, and their subsequent sale in China, ignited visions of exploitation. Soon after, waves of ships and adventurers began to ply the waters of the Pacific Northwest coast (p. 216).

Within just two decades, arriving travelers inadvertently carried diseases like smallpox and measles, unleashing epidemics that tragically decimated an astonishing 95% of the Indigenous population. This catastrophic demographic collapse cleared a path for unhindered settlement by traders, missionaries, and other opportunistic seekers (Ripper, p. 254). Royal explorers further asserted their dominion by scattering their names across the Puget Sound region–as exemplified by the city of Vancouver, Washington, and Mount Rainier. For these colonizers, language became a potent tool of conquest, as the systemic replacement of Indigenous place names with European ones was perceived as the very act that initiated and solidified colonization (p. 216).

Today, the United States is intricately woven from the fabric of myriad cultures, each having migrated here in pursuit of a better life. Yet, tragically, many of these paths to prosperity were paved upon the dispossession, and at times, the very lives, of those who inhabited the land previously. Nonetheless, this immense influx of cultures has profoundly transformed the nation's linguistic landscape, with new languages emerging–some by force and others out of necessity–interweaving fresh strands into the immense American blanket. Despite this rich linguistic tapestry, English remains the undeniable predominant language. This dominance is explicitly, yet often unstated, demonstrated through its *de facto* status, wherein nearly all official and public affairs are conducted in English, a practice that powerfully reinforces its enduring colonial roots.

The modern era multilingual education in the United States is greatly owed to the power of parental and community advocacy. This advocacy can be traced back to the substantial influx of Cuban migrants into Dade County, Florida, in the early 1960s, which placed immense pressure on local schools to accommodate Spanish-speaking students. This influx was a direct result of the complex history of U.S. involvement in Cuba. As Lisa Garcia Bedolla (2005) recounts in *Latino Politics*, during Cuba's fight for independence from Spain in 1868, the U.S. quickly signaled its interest in the island's lucrative sugar cane production, eventually acquiring large tracts of Cuban land. The U.S. cultivated increasingly close economic ties with Cuba, and by 1895, American investments exceeded $50 million, cultivating an annual trade nearing $100 million (p. 134).

These mushrooming economic investments directly precipitated U.S. military intervention in Cuba. Following the unsubstantiated claim of a Spanish mine sinking the U.S. battleship Maine, and fueled by the *New York Journal's* fervent calls for Cuban independence and immediate U.S. entry into war with Spain, Congress adopted the Joint Resolution, which explicitly stated that the U.S. had no intention of exercising jurisdiction or control over Cuba and would withdraw as soon as the war concluded (Garcia Bedolla, p. 135). Spain was swiftly defeated, culminating in a peace treaty signed in Paris between the U.S. and Spain that formally established Cuba's independence—a negotiation notably conducted without a single Cuban representative.

The very next month, the U.S. installed a provisional military government in Cuba. Even after Cuba drafted its own constitution, the U.S. pressed forward, passing the Platt Amendment. This amendment severely curtailed Cuba's rights to conduct its own foreign and debt policy, effectively granting the U.S. an open door to intervene in Cuban affairs. It also compelled Cuba

to agree to sell or lease lands for U.S. naval stations at specified strategic points. The U.S. swiftly rebuffed Cuban resistance, declaring that American troops would not withdraw until the Platt Amendment was adopted verbatim. Faced with this ultimatum, the convention delegates reluctantly agreed in June by a vote of 16 to 11 (Garcia Bedolla, pp. 137-139). With the Platt Amendment's passage, the economic and political destinies of the U.S. and Cuba became inextricably intertwined. By 1913, American investments in Cuba had soared to approximately $220 million, and by 1928, the U.S. controlled a staggering three-quarters of the Cuban sugar crop (p. 139). U.S. military intervention in Cuban governmental affairs became a constant presence, with American troops remaining on the island until 1922.

The U.S. proved a staunch supporter of army leader, and later president, Sergeant Fulgencio Batista's dictatorship, even providing $1,000,000 in military aid (Garcia Bedolla, pp. 139-140). Despite this backing, opposition to Batista's government swelled, notably led by Fidel Castro. The new Cuban government swiftly nationalized the telephone system and passed a sweeping agrarian reform bill, moves that immediately raised alarm in the U.S. government. The enactment of this reform distributed all farmlands exceeding 1,000 acres to Cuban peasants and crucially prohibited foreign ownership of Cuban land, an impactful measure given that 75% of the land had been in foreign hands (pp. 141-142).

When U.S. companies refused to comply, Cuba began expropriating their holdings, starting with 70,000 acres of land held by sugar companies. This decisive action prompted the U.S. to devise strategies for removing Fidel Castro from power. The U.S. publicly branded Castro as a communist after his meeting with Soviet Premier Nikita Khrushchev (Garcia Bedolla, p. 144). Amidst this drastic political upheaval in Cuba, the growing Cuban exile community also sought Castro's overthrow. This intensifying political turmoil spurred many Cubans to flee their

country in 1958, a migration that only escalated in subsequent years, particularly as exiles perceived the U.S. as being "on their side."

The Eisenhower administration actively sought to portray Fidel Castro's regime as repressive and anti-democratic, leveraging the Cuban exile community's desire to flee their homeland and support U.S. efforts to overthrow Castro. The U.S. poured vast resources into dislodging Fidel Castro; in just one of several programs designed to unite exiles and prepare them for military action, the U.S. invested between $100,000 and $200,000 monthly (Garcia Bedolla, p. 145). The U.S. government invested heavily in this community, creating a program that provided Cuban migrants with financial assistance if they relocated from Miami. The federal government paid for their transportation, helped them find housing and employment in their new locations, and provided financial support until each migrant secured employment" (pp. 147-148). The substantial influx of Spanish-speaking students into predominantly English-speaking schools in Florida created significant pressure from Cuban parents for educational accommodations, highlighting the pronounced educational gap these students faced. This resulted in the experimental program at Coral Way Elementary School, which opened in 1963 as an experimental institution and was designed to benefit both English- and Spanish-speaking students through DL instruction.

The Institutionalization of Bilingual Education

As seen with the Coral Way program, the Civil Rights movement of the 1960s began championing the idea of large-scale bilingual programs, arguing that if students could learn in their first language, home-school relationships would improve, and greater community self-determination would be fostered. In 1966, the National Education Association (NEA) began discussing the numerous benefits bilingual education could offer. These included "better

community-home-school relationships," the ability for "language minority students could keep up academically with their monolingual peers," and the benefit to "English-dominant students... in that they could become bilingual" (Sinclair, 2016, p. 5).

These discussions led to the conceptualization of the Bilingual American Education Act, a bill initially "which sought linguistic and cultural reparation for Mexican-Americans" (Sinclair, p. 5) who, by its proponents, were described as living in "economic slavery." Introduced to the Special Subcommittee on Bilingual Education in 1967, the congressional committee broadened its scope to include additional regions and speakers of other languages, thereby attracting wider congressional attention. This ultimately led to the passage of the Bilingual Education Act (BEA) of 1968. At its core, the BEA prioritized English acquisition, with primary language instruction permitted only "to the extent necessary to progress" (pp. 1-2). Implemented as Title VII of the ESEA, the BEA was a voluntary program that allocated $15 million for experimental bilingual initiatives. It stipulated "evaluate standards that had not been tailored to the program's need" and required local education agencies to submit annual reports to ensure effective use of funds. However, Sinclair notes that the "repeated misapplication of this clause" significantly contributed to the BEA's eventual "discourse of failure" (pp. 5-6).

The expansion of bilingual education in the U.S. can be primarily attributed to the interest convergence theory. Laura Beth Kelly (2018) explains this phenomenon, noting that "minority interests are upheld by courts and supported in other arenas when minority interests converge with the interests of the majority," rather than stemming from a "moral breakthrough" by these institutions (pp. 2–3). Kelly further describes how governmental institutions' advocacy for DL programs is significantly influenced by a concern for students' future employability and its

perceived impact on the global economy, rather than an inherent desire to support students from linguistic minorities (p. 4).

Moreover, Kelly notes that bilingualism can function as either an advantage or a disadvantage "depending on a student's position in the hierarchy of power." Kelly expresses concern that these DL programs are often designed primarily for the benefit of "mainstream English-speaking children, with Spanish-speaking children defined only by their linguistic status and included because their language and cultural practices 'serve as commodities that can be consumed by White, English-speaking students' " (Valdés as cited in Kelly, p. 5). Concerns have also been raised regarding the academic rigor of these programs, particularly because "bilingual proficiency of the teachers... [is] not measured and the subjects taught in Spanish may be 'dumbed down' to accommodate English speakers" (p. 5). Ultimately, DL programs have been seen to become increasingly associated with the increasing number of charter schools, where public schools utilize DL programs to compete for student enrollment (Darriet & Santibañez, 2024), further demonstrating the profit motives for DL program implementation. Nonetheless, despite these systemic concerns, minority groups continue to demand such programs, recognizing their significant potential for positive outcomes.

Dual Language Programs: Models, Benefits, and Disparities

DL programs are one of the significant and increasingly prevalent modern forms of multilingual education in the United States (Alvear, 2019; Collier & Thomas, 2017; Lindholm-Leary & Block, 2008; Steele et al., 2017). This is because DL education is a way of instruction in which the students "learn literacy and content in English and another language" (Washington Office of Superintendent of Public Instruction, n.d.a). DL programs encompass a

diverse range of models, and therefore, Table 1 will provide Washington State's typical DL program types and models:

Table 1

DL Program Types and Models

DL Program Types	DL Program Models
This category of DL programs refers to who the program is designed to serve based on the students' native language.	This category of DL programs refers to how instructional time/form is divided between English and the partnered language.
Two-Way DL Program Designed for both native speakers of the partner language & native English speakers together in the same classroom, where the focus is to develop bilingualism and biliteracy in both languages.	**90-10 Program Model** Designed for early immersion models, which prioritize the partner language by allocating 90% of instruction in this language, and 10% of instruction in English, and they are typically implemented in Pre-Kinder, Kindergarten, and sometimes in 1st grade.
One-Way DL Program Designed for Multilingual Learners (MLs), including those whose native language is another other than English, where the focus is to develop bilingualism and biliteracy in English and the partnered/native language.	**80-20 Program Model** Designed for early immersion models, which prioritize the partner language by allocating 80% of instruction in this language, and 20% of instruction in English, and they are typically implemented in 1st grade, sometimes in Pre-Kinder and Kindergarten.
Heritage Language Program Designed for Multilingual Learners (MLs) that speak a language other than English at home, where the focus is to develop, maintain, and strengthen the language and cultural heritage of students who have a family/community connection to a language other than English.	**70-30 Program Model** Designed for early immersion models, which prioritize the partner language by allocating 70% of instruction in this language, and 30% of instruction in English, and they are typically implemented in 1st grade, sometimes in Kindergarten.
Tribal Language Program Designed for students of the specific tribe whose language is being taught (typically determined by the Tribe(s) on whose land the school district resides), where the focus is to revitalize, preserve, and teach the indigenous languages of the federally recognized tribes.	**50-50 Program Model** Designed for any grade level (typically in Elementary), in which a consistent and equal exposure to both languages is provided, in which the desire is to develop both languages simultaneously.
World Language Immersion Program Designed for native English speakers, in which the focus is to teach languages other than English in order to develop proficiency in listening, speaking, reading, and writing in the target language.	**Extended Day Program Model** Designed for instruction outside of the traditional school day for any grade level, in which the goal is to provide time outside the typical school day for dual language learning.
	Multiliteracy Program Model Designed for instruction beyond traditional literacy

(i.e., reading and writing), by encompassing a broader understanding through various modes of communication (i.e., visual, audio, spatial, and gestural).

Efficacy of Dual Language Programs

DL programs have been shown to be the leading educational program model for language-minority students since it maintains a goal of full bilingualism, in comparison to English immersion–which offers little-to-no reinforcement of the partnered language in the classrooms–and transitional programs–which offer limited partnered language maintenance, and where the goal is English proficiency (Alvear, 2019). However, only a few studies have provided longitudinal data, as well as sufficient program availability, to provide a comparative analysis of ELLs achievement across many different predominant language acquisition programs (Collier & Thomas, 2017; Linholm-Leary & Block; 2008; Steele et al., 2017).

Nonetheless, these studies have demonstrated that, in the long run, only Two- and One-Way DL programs (among other English Learner programs that are non-DL programs) eventually close the achievement gap, where low-income African-American students in DL programs outperformed by two grade level advancement than their African-American peers that were not in a DL program (Collier & Thomas, 2017); that ELLs in DL programs were fairly similar in their scores on English Language Development (ELD) than those in mainstream programs, yet the ELL DL program students were found to begin school with significantly less English development than their peers in other educational programs, meaning that they have quicker advances in English-Language development (Linholm-Leary & Block; 2008); and that students in DL programs provide up to 31% standard deviation improvement in reading, math, and science, in comparison to peers who who were also ELs but were not enrolled in a DL

program (Steele et al., 2017). DL programs have even shown potential for closing the educational gaps between multilingual students and White-monolingual students, where DL students appear to make greater gains than non-DL White-monolingual students throughout several grades (i.e., second to seventh grade), and where at the gap between DL students and non-DL White-monlingual students is of 0.5 standard deviations, and in 7th grade the gap is of 0.4 standard deviations (Johnson, 2024).

Socioeconomic and Racial Disparities in Dual Language Programs

However, DL programs have been systematically deprived of language-minority students, and instead have been overflowing with English-monolingual students, where gentrification has increased the enrollment of children from White middle-class English-monolingual families into DL programs, and where the parents often exerted significant influence towards the schools to ensure their high expectations for their children's education were being met, which in turn reshaped the program instructors' student-attention priorities towards the children of those who were already more privileged in many ways (Morales & Maravilla, 2019). This has raised concerns about the programs being specifically allocated for White students (Valdés, 2018), as it has also been seen that school leaders and media would sell DL programs through a "White framing: of academic success for the global workforce (Cervantes-Soon et al., 2021; Valdez et al., 2014). White framing is when a discussion or narrative is centered or legitimized through a particular lens, which is that of the dominant White perspective, values, and experiences, even though the subject is concerning a community that is not White. White framing can prioritize White interests and benefits, normalize Whiteness, minimize or exclude diverse perspectives, and/or framing diversity as a "commodity." With respect to White framing and academic success, this phenomenon is used to highlight how DL programs, which are often designed to

support bilingual and bicultural communities, are being marketed to favor and appeal to the dominant White audience.

Even though some schools will try their best at maintaining a balance between multilingual and English-monolingual students, for example, placing caps on English-monolingual student enrollment in DL programs of up to 50% (García & Lang, 2023), White students have been shown to be the focal attention in Two-Way DL programs in comparison to their partnered language-minority classmates due to their demand for attention, and their role in the encouragement of English usage during partnered-language time (Palmer, 2009). White parents have also been found to be the focal attention in parent-teacher associations within DL programs, where White parents were found to "work sneakily around families of color at the school and DL programming levels toward creating greater access to DL and education more broadly," even though White parents constituted only 18% of the whole parent-body, and where parents of Color were continuously told there was no more space in the DL program, even though there was, and it was being hoarded for White students (Blanton et al., 2021).

The way in which states promote the program have effects on where the programs become implemented, an example being Utah, where findings show that "the material effects of Utah's state model of DL education [is] largely being used to privilege the already privileged by often housing these programs in school with high-value-capital demographics" (Valdez et al., 2016), creating a commodification for English-monolinguals of the DL programs (García & Sung, 2018).

Framing and Promotion of DL Programs

In some cases, the implementation of DL programs intentionally prioritized the immersion of English speakers, framing the programs as an extension of Foreign Language

Education (FLE), where minority-language students' involvement primarily served as a way to fulfill this goal, and were "perceived by the media as having linguistic resources but not as capable or valuable enough to participate in this [public radio] discussion" (Cervantes-Soon, 2014).

Additionally, bilingualism has become widely disseminated throughout the media as an academic advantage towards English-monolinguals, framing DL programs as something capitalistic, in lieu of assisting the already disadvantaged multilingual students, and where "the voices of teachers, language-minoritized families, and members of the academic community tend to be largely excluded from media" (Cervantes-Soon et al., 2020), where "lower-income, Mexican immigrant families' voices were rarely recorded in the public debate," and where the voices that had been amplified, which were of White middle-income class, where about 45% of the meetings in a lapse of 2 years consisted of determining which schools should have permanent Two-Way Immersion DL programs, and where only 1.42% of the meetings discussed how to engage the community and balance races in Two-Way Immersion DL programs (Dorner, 2010).

Although state promotional materials for DL programs state that the focus is to assist both language-majority and -minority, there is a wide emphasis in White students through its usage of vocabulary, such as utilizing "target" instead of "partner" language, and where the goals explicitly mention the English natives meeting the goals, instead of both student groups or language-minority students (Cervantes-Soon, 2014; Delvan et al., 2016). Furthermore, the way in which states determine DL program enrollment, designation, and delivery, has shown to affect the equity in college preparedness among White and Colored students, where students' self-efficacy and their college expectations are positively related, and where students of Color tend to report lower levels of self-efficacy and college expectations in the context of

dual-enrollment courses as inequalities in rates of student participation in dual-enrollment persist (Giani et al., 2023). Therefore, demonstrating that "as bilingual education became institutionalized, it became *reincorporated* into hegemonic Whiteness" (Flores, 2016, emphasis added).

The Washington State Context

Early efforts to establish education programs in languages other than English in Washington State were primarily driven by parent demand, laying the groundwork for future initiatives. Among the pioneering institutions was Eckstein Middle School, which, at the start of the 1971-72 school year, launched a Deaf and Hard-of-Hearing program for 31 profoundly deaf students. Six teachers and three assistants provided instruction in American Sign Language (ASL). Just two years later, the program expanded to serve double its original enrollment—representing 18% of students in regular schools at the time—and by the 1976-77 school year, it further diversified to include a class for deaf-blind students (Seattle Public Schools, 2012).

Facing a sharp decline in student enrollment, Casper W. Sharples Junior High School began implementing several special programs. In 1981, it established the Sharples Alternative Secondary School specifically to boost numbers by serving diverse student populations, including those behind on credits, dropouts or suspended students, youth with disabilities, teenage parents, and students whose primary language was not English (Seattle Public Schools, 2012). Continuing this trend, John Rogers Elementary School in the late 1980s introduced Portuguese language instruction for students in grades 2-5. In the 1990s, North Beach Elementary School, with the help of an exchange teacher from Japan, established a Japanese language and culture program. This initiative not only brought native Japanese speakers into the

classrooms but also enabled students to "converse in Japanese with students at their sister school in Kagoshima, Japan, via a video conferencing system and the Japanese students responded in English" (Seattle Public Schools, 2012).

The passage of Washington Senate Bill 2149 in 1979 enabled the funding of the Transitional Bilingual Instruction Program (TBIP), codified under Chapter 28A.180 RCW. This legislation was enacted in response to federal mandates requiring public schools to provide ELL students with specialized instruction to access the educational curriculum, also mandating annual reports to the legislature assessing program effectiveness (Wash. Rev. Code § 28A.180.020). Subsequently, a range of ELL and English as a Second Language (ESL) teaching models were implemented, their application determined by student English proficiency levels (Pennuncci & Kavanaugh, 2018, p. 14). These models included the Dual Language Program of Enrichment (DLE) Model, where both ELL and native English speakers learn together for five to six years of elementary school, aiming for full bilingualism and biliteracy.

The Transitional Bilingual Education (TBE) Late Exit model taught ELL students in their native language as they transitioned to English proficiency over a five-year period, gradually phasing out native language instruction as students advanced. A more rapid approach was the TBE Early Exit model, which completed this transition over three years. The Content-Based ESL Model involved teaching ELL students entirely in English, utilizing standard schoolwide curricula but adapting materials and teaching techniques to individual proficiency levels. Lastly, the ESL model focused on developing basic English vocabulary and oral language skills entirely in English, often through pull-out instruction, without direct reference to the academic curriculum of regular classrooms (Pennuncci & Kavanaugh, 2018, p. 14). Nonetheless, these

programs did little to close the educational gap between Anglo-Americans and the diverse students.

Citizens in various major Washington cities actively advocated for the provision of free bilingual education programs. On April 29, 2009, the City of Seattle hosted a workshop at El Centro de la Raza to discuss a neighborhood plan update. Key needs identified by the Latino community included free dual-language ESL classes, multilingual bookstores, and increased cultural representation in local shops and businesses (Neighborhood Plan Update Workshop with members of the Latino Community, 2009).

In 2012, the City of Federal Way, in its Analysis of Impediments to Fair Housing, similarly acknowledged the critical need for bilingual education. The report identified that "30% of the population age[s] five and older spoke a language other than English in the home," explaining how these children "face real hardships in school" due to their inability to comprehend English. Despite approximately "12% of students [being] enrolled in a transitional bilingual program at the end of the 2010-2011 school year," the program did not adequately reflect the area's linguistic diversity. The Federal Way School District reported "112 languages are spoken in the district. In addition to English, the most common languages are Spanish, Korean, Russian and Ukrainian." The report further elaborated that language barriers prevented many Latinos from understanding "important life transactions," thereby diminishing the quality of life for these communities (City of Federal Way, 2012).

In 2012, Beacon Hill International School also began offering diverse language learning opportunities, including English-only, 50/50 Mandarin immersion, and 50/50 Spanish immersion programs. This initiative followed abysmal testing outcomes the previous year, where over fifty percent of Latino students failed to pass reading, writing, and math assessments (Families and

Education Levy Oversight Committee, 2013). Following implementation, the school reported significant improvements the next year, with the vast majority of students achieving passing scores.

Washington State's DL program was formally implemented in 2019 under Chapter 43.216 RCW. This legislation mandates that the newly established Department of Children, Youth, and Families (DCYF) collaborate with "community partners to support outreach and education for parents and families around the benefits of native language development and retention, as well as the benefits of dual language learning" (DCYF, 2019, p. 42). Under this program, students receive instruction in English and a partner language prevalent in their local community—such as Spanish, Somali, Vietnamese, Russian, Arabic, or various native and Indigenous languages—with the goal of achieving full bilingualism. The program mirrors the data collection, reporting, and program monitoring requirements of previously discussed federal initiatives (DCYF, p. 103). Despite these stated goals, programs are often implemented in ways that serve different interests, a point that has been long-standing in scholarly literature.

Limitations of Previous Studies

Many critics have suggested the complete removal of bilingual programs, arguing that they are not serving their intended purpose. Alexander and Baker (1994) claim that "bilingual education programs have not been proven to be the only or most effective way for educating LEP students," and that they consequently constitute an "unproven and ineffective educational program [that] wastes tax dollars" (p. 6). Understanding the underlying reasons for perceived shortcomings is crucial for effective problem-solving.

In their dissertation, Jose Martinez (2020) from the University of Illinois explores why many Hispanic parents withdraw their children from transitional bilingual education programs.

They found that parental concerns included children's desire for bilingualism, doubts about program success, fears that the program would impede English language progress, and barriers such as limited availability or transportation difficulties. Martinez also noted that some parents questioned the influence of a child's teacher on their enrollment decisions (pp. 44–45).

To address these challenges and improve DL program implementation, various solutions have been proposed, emphasizing the need for additional funding to expand programs and increase student access; prioritizing ELLs in DL programs; reforming teacher training, credentialing, and hiring policies to remove obstacles for bilingual teacher candidates; and investing in new pathways for bilingual teacher development (Williams, Meek, Marcus, & Zabala, 2023).

The existing literature paints a complex picture of DL education within the nation. While the program has been shown to provide benefits like enhanced cognitive development, cross-cultural understanding, and academic achievement (Alvear, 2019; Collier & Thomas, 2017; Garcia & Sung, 2018), there is a persistent undertone of concern regarding its equitable access and implementation strategies. Researchers have demonstrated how historical inequities, alongside contemporary social forces like gentrification and neoliberal educational policies, can threaten the goals of inclusion and empowerment within DL settings (Flores, 2016; Freire et al., 2022; Valdés, 2018).

The prioritization of language-majority speakers within these programs further complicates the narrative (Cervantes-Soon, 2014; Dorner, 2010; García & Sung, 2018), suggesting that DL education, while potentially transformative (Alvear, 2019; Collier & Thomas, 2017; Steele et al., 2017), is susceptible to reproducing and enlarging existing power structures (Flores, 2016; McCloskey et al., 2008). Despite extensive research into DL programs in other

states, a significant limitation in the current scholarly literature is the absence of a study examining the implementation of these programs within Washington State. This is particularly critical given the state's unique position as a possible destination for climate-induced migration from the south. With all countries below the United States speaking Spanish–as well as many major states with high percentages of Hispanics like California–the need for robust and equitable bilingual education is becoming increasingly urgent. Studying how DL programs are implemented in Washington and whether they are susceptible to appropriation, as seen in other states, would provide crucial insights into how a state with a specific and growing demographic profile addresses the social justice challenges of language education. The need for such a study in Washington is, therefore, a major limitation in the existing literature that this capstone proposal seeks to address.

Methodology

This study utilizes a convergent parallel mixed-methods case study design to examine DL program implementation in Washington State's Kinder-12 schools. In this approach, both qualitative and quantitative data are accessed concurrently and integrated during the interpretation to provide a comprehensive understanding of the phenomenon The case study design also facilitates the integration of multiple data sources, such as state promotional materials, the dispersion of school implementation, and school enrollment data, to provide a holistic understanding of the complex issues surrounding equity and access in DL education.

Qualitative Analysis and Framework Application

To analyze the state promotional material, the analytical framework developed by Freire et al. (2022) for their study of Utah's Dual Language Bilingual Education (DLBE) Model was utilized. This framework offers a nuanced perspective for identifying structural and ideological concerns within DLBE program design and practice. Freire et al.'s framework emphasizes how educational initiatives, despite stated goals, can be influenced by forces that subvert linguistic and cultural equity, terming this process "expropriation." The framework specifically assesses DLBE models through the lens of three critical concepts: whitestreaming, English hegemony, and globalized human capital discourse, applied to four key characteristics of such programs: (1) language allocation, (2) teacher model, (3) program type, and (4) language separation. This framework was applied to publicly available Washington State promotional materials, including statutory law (Revised Code of Washington, RCWs), administrative law regulations (Washington Administrative Code, WAC), and policy guidance from the Office of the Superintendent of Public Instruction (OSPI documents). A total of ten documents and websites were analyzed to determine if expropriation was present (for the full list, visit Appendix B).

Whitestreaming

Whitestreaming is defined as the "normalization and promotion of white supremacy in educational institutions by whites as well as by any individual engaged in undergrading white standards" (Denis, 1997, as cited in Freire et al., 2022). Within promotional material, this can be identified through the omission of race in policy documents, the adoption of a colorblind perspective, or the proclamation that educational policies serve "all students," thereby presenting perceived race-neutral policies that, in reality, embody whitestreaming (Freire et al., 2022).

English Hegemony

English hegemony refers to the prevalence of power among English-privileged speakers within discourse, establishing them as "main discourse controllers, even when multiple languages are promoted" (Freire et al., 2022). In promotional material, this was identifiable through the use of the term "target language" to refer to *partner languages,* such as Spanish. This phrasing can center English-privileged speakers as the main beneficiaries in program discourse, given that Spanish is already spoken by language-minority students with their families and communities (Freire et al., 2022).

Globalized Human Capital Discourse

Globalized human capital discourse is described as "those that value language skills in individuals and nations with a focus on competition and the global marketplace, rooted in imperialist ideologies" (Valdez et al., 2016, as cited in Freire et al., 2022). Its presence in promotional material was identified by examining the stated "why" for program implementation. Instead of emphasizing benefits for language-minority students, a focus on the program's economic purpose for "all" students can signal expropriation, as the unique needs of

language-minority students in DBLE are thereby "erased in comparison to the origins of bilingual education in the United States" (Ovando, 2003, as cited in Freire et al., 2022).

Data Sources and Preparation

Map Creation

The maps for this study were generated using data from the U.S. Census Bureau via the Census Reporter (2023a; 2023b). For the Diversity Index map, the diversity percentage for each county was calculated by subtracting the "White alone" population from the "Total Population," and then dividing the result by the total population. All of the maps for the geospatial analysis were created using an interactive Google My Maps to visually represent the distribution of the various datasets. This allowed for the clear plotting of program locations, the identification of regional trends, and the visual comparison of different demographic and educational factors across Washington State.

State Promotional Material

This will include the direct analysis of the Washington Office of Superintendent of Public Instruction under the section of Dual Language Education and Resources, as well as any subpages linked from there, official OSPI publications and publicly-available documents (i.e., DL program framework/guides, strategic plans, and program evaluation tools through internal documents), and archived OSPI webinars and presentations.

Report Card Enrollment 2023-24

One of the data sets included is the "Report Card Enrollment 2023-24," which has data of schools throughout the state of Washington that utilize state and federal funding (i.e., traditional public schools, charter schools, magnet ELLschools, and virtual or online schools/programs). This data set provides aggregated information at the State, ESD, School District, School, and

Grade level of student demographics (e.g., gender, race, ethnicity, ELL status, low-income status, migrant status, etc). It does this by providing the total number of students that fit within that category according to the aggregated level. For example, at the State level, there were a total of 25,137 Pre-Kinder students enrolled during the 2023-24 school year, and of them, 10,298 were female. A more specific example would be how there were a total of five 10th graders in the Washtucna Elementary/High School, and of those four were female. Grade level aggregated data will not be utilized in the analysis, only school level data and above. For this study, school-level data will be primarily utilized, focusing on key student demographic variables including: race (categorized as American Indian/Alaskan Native, Asian, Black/African American, Native Hawaiian/Other Pacific Islander, White, and Two or More Races), ethnicity (Hispanic/Latino), ELL proficiency (English Language Learners, Non-ELL), income status (Low Income, Non Low Income), and migration status (Migrant, Non Migrant).

The data set was downloaded in CSV format and opened in Excel, and was named "AllWA2324." The initial dataset dimensions were 20,565 rows, and 45 variables. The data set was then uploaded into SPSS, where frequency tables were created for all variables to screen for missing data. Missing data was found for variables "Educational Service District Organization ID," "District Code," "District Organization ID," "School Code," and "School Name," with the range of missing data being from 0.07% ("District Organization ID") to 21.77% ("School Code" & "School Name"). To see how missing data was handled, see technical appendix A.

Within the state of Washington in the 2023-2024 school year there were a total of 2,432 publicly funded schools (i.e., traditional public schools, charter public schools, online public schools, tribal schools, and Alternative Learning Experiences [ALEs]) with students enrolled, of which only 142 schools offer DL programs, 97 schools offered Heritage Language Programs,

and 43 schools offered Tribal Language Programs (The Official Washington State Open Data Portal, 2023). This study focused mainly on the 142 schools that offer DL Programs–when it comes to analyzing the demographics of the students to determine whether there is the possibility of White appropriation of the program. Of those 142 schools that do offer a DL program, there are a total of 38 school districts out of the 319 school districts that have schools with DL programs (i.e., 295 traditional public school districts, 18 public charter schools, and 6 state-tribal education compact schools).

A case study design is appropriate for the research questions because it allows for an in-depth analysis of DL program implementation within Washington State's K-12 schools. Since only 142 schools out of 2,432 in the state offer DL Programs, this focused approach enables a detailed analysis of the "what," which are indicators of "White appropriation" in promotional language, and the "how," which is the disproportionate enrollment, within this specific bounded system. Additionally, the use of a case study design facilitates the integration of multiple data sources, such as state promotional materials, the dispersion of school implementation, and enrollment data, to provide a holistic understanding of the complex issues surrounding equity and access in DL education.

Dual Language, Heritage Language, and Tribal Language Washington State 2023-24

The second data set included is the "Dual Language, Heritage Language, and Tribal Language Washington State 2023-24," which contains the school district, school name, DL program type, program model, and instructional language of each school with a DL program implemented for the 2023-2024 school year. An example of the structure of this data set is how Mercer International Middle School from the Seattle School District No. 1 has a Two-Way DL program with a 50-50 model, and where the instructional language is Chinese-Mandarin.

The data set was downloaded in CSV format and opened in Excel, and was named "DLProgram 23-24 (School)." The dataset dimensions were 312 rows, and 5 variables. Since the data set is quite small, there was no need to upload it into SPSS and run frequency tables to screen for missing data. After assessing the data set no missing data was identified.

Data Merging

Both the "DLProgram 23-24 (School)" and "WA Enrollment 23-24 (Schools)" were merged into a new single data set named "Capstone Data set" by creating a copy of the "WA Enrollment 23-24 (Schools)" data set, and adding 5 additional variables: (1) DL Program Implementation, which is a binary variable where it is either "Implemented" or "Not Implemented," indicating whether the school has a DL program implemented, (2) Number of Instruction Languages, which is a numerical variable that indicates the amount of different partnered languages offered at the school, as some schools include more than one, (3) Instructional Languages, which is a nominal variable that contains the partnered languages taught by the school (separated by a comma if containing more than one), (4) DL Program Type, which is a nominal variable that contains the DL program types taught by the school (separated by a comma if containing more than one), and (5) Program Model, which is a nominal variable that contains the program model taught by the school (separated by a comma if containing more than one).

Data Analysis

This section outlines both the qualitative and quantitative approaches employed to address the research questions. The first question, "Are there indicators of White appropriation in the state's promotional language, specifically in its messaging and framing of Dual Language programs?" was answered through a qualitative analysis of publicly accessible state promotional

websites and online legal documents to assess the language utilized to promote the DL programs. This analysis was conducted using the analytical framework developed by Juan A. Freire et al. (2021), which examines the expropriation of DLBE. The framework identifies patterns in the state's messaging that might prioritize or implicitly benefit English-monolingual students or frame bilingualism in a capitalistic manner.

The selection of statistical tests for the quantitative analysis was guided by the nature of the data and the specific research questions. For the district-level analysis, Pearson's r correlation was chosen as the primary method to examine the relationships between the percentage of schools with DL programs and various demographic variables. This approach was deemed most appropriate because it directly measures the strength and direction of the linear relationship between these continuous variables, providing a more precise analysis than methods that rely on binned or categorical data. This decision was made in favor of other approaches, such as Chi-Square analysis, which is better suited for comparing the frequencies of categorical variables rather than continuous ones. While an initial logistic regression model was employed to explore potential multivariate predictors, the focused bivariate correlations were selected for the main body of the analysis to provide a clear and detailed examination of each individual relationship. This intentional selection of analyses ensures that the chosen tests are a direct and transparent reflection of the data and research aims.

The second question, "How do school demographics, including racial and socioeconomic factors, differ across the various types and instructional models of Dual Language programs implemented in Washington State?" was answered through a comprehensive quantitative analysis conducted at three distinct levels: geospatial county-level, district-level, and

school-level. This multi-tiered approach is designed to provide a holistic and granular understanding of the implementation of DL programs in Washington State.

Geographical County-Level Analysis

Complementing these quantitative analyses, a two-tiered geographical county-level analysis was utilized to visualize the distribution of DL programs across Washington state schools. The first tier of this analysis involved examining three maps to establish a baseline understanding of county-level diversity, economic levels, and DL program implementation rates. The second tier then focused on a more granular analysis, using maps to visualize the specific locations and characteristics of all K-12 schools that offer DL programs, including Two-Way, One-Way, World Language Immersion, Heritage, and Tribal Language programs. This approach also examined whether specific DL program types are concentrated in certain geographical areas. The interactive Google My Maps (Appendix C, Figure C1) was utilized to plot the schools.

District-Level Analysis

The district-level analysis begins with descriptive statistics to establish the baseline characteristics, including overall rates of DL program implementation. A paired-samples t-test was utilized to determine if there was a statistically significant difference between the number of schools with a DL program implemented and those without. Following this, bivariate analyses utilizing Pearson's r correlation examined the associations between a district's percentage of schools with a DL program and key demographic and socio-economic variables. These analyses aimed to determine the strength and direction of the linear relationship between DL program presence and the concentration of various student populations. Finally, a logistic regression model was employed to conduct a multivariate analysis, identifying which district-level

characteristics independently predict the likelihood of a district implementing a DL program, while accounting for the influence of other factors.

School-Level Analysis

For the school-level analysis, with the usage of publicly available enrollment data from the 2023-2024 school year, descriptive statistics were utilized for all relevant variables (e.g., mean, median, standard deviation for percentages of White, Hispanic/Latino, and ELL students; frequencies for DL program types and models). It is crucial to note that these demographic data reflect the overall student population of the schools where DL programs are implemented, rather than the precise demographic composition of students enrolled directly in the DL program itself; this distinction is vital for interpreting findings related to program-specific enrollment and potential appropriation. Comparative analysis was utilized to examine the demographics of schools with different DL program models (specifically Two-Way DL, One-Way DL, and World Language Immersion) from a second data set (Washington Office of Superintendent of Public Instruction, n.d.b). This included comparing the average percentage of White students and low-income students in schools offering various program models to determine if certain models are disproportionately implemented in specific demographic contexts. Furthermore, visual representations through scatter plots were employed to illustrate relationships between overall student enrollment and various demographic percentages within schools implementing DL programs. Given the overwhelming predominance of Spanish as an instructional language, detailed analyses, including comparative and regression analyses, focused primarily on Spanish DL programs. Regression analysis was utilized to model the relationships between school demographics (specifically the percentage of White students and the percentage of non-ELL students) and both the presence (binary outcome) and the type of DL programs (categorical

outcome). This allowed for the assessment of how changes in the percentage of White students and ELL students predict the likelihood of a school having a DL program, or the type of DL program implemented. The analysis helped identify whether student racial demographics are significant predictors of DL program implementation, thereby addressing the concern of disproportionate implementation of certain DL programs in specific demographic contexts.

Cross-Sectional Analysis and Integration

The convergent parallel mixed-methods design of this study necessitates a cross-sectional analysis to integrate the findings from the four distinct levels. This integrative approach will be a central component of the conclusion, where the insights from each level will be synthesized to provide a holistic understanding of DL program implementation in Washington State. Specifically, the qualitative analysis of state-level promotional material will establish a critical framework by identifying the presence of discourses such as whitestreaming and globalized human capital. The geospatial county-level analysis will then serve as a crucial test of these findings, examining whether these policy-level discourses are reflected in the real-world geographic distribution of DL programs in relation to diversity and economic levels. The quantitative analyses at the district and school levels will provide the statistical evidence to either confirm or challenge these visual and qualitative observations. For instance, a finding that promotional material frames DL as a benefit for "all students" can be critically analyzed against the quantitative finding that World Language Immersion programs (benefiting English speakers) are statistically more likely to be found in schools with a higher percentage of White students. The final discussion will weave these threads together to argue that the subtle biases identified in state policy are not merely rhetorical, but are structurally reinforced through a stratified implementation of programs at the district and school levels. This integrative process will allow

the study to move beyond simply presenting a list of findings to offering a coherent and compelling argument about the potential for appropriation within Washington State's DL education system.

Limitations of Current Study

This study acknowledges several limitations inherent in its design and data sources. A primary limitation is the reliance on existing publicly available data, which does not specifically track Dual Language Learners (DLLs) as a distinct demographic group. This absence limits the ability to directly assess the impact of DL programs on this specific population. Additionally, the datasets may follow vague or aggregated interpretations of racial and other demographic variables, potentially limiting the precision and granularity of the demographic analysis. Furthermore, the qualitative analysis of state promotional language is inherently interpretive. While guided by Freire et al.'s (2021) analytical framework and critical race theory, qualitative analysis is subject to researcher interpretation and potential biases in identifying and categorizing themes of White appropriation. The study also does not directly assess the quality of implemented DL programs, nor does it track the long-term academic or linguistic outcomes of students participating in these programs, as such data information is beyond the scope of publicly available information for this specific research.

Despite these acknowledged limitations, the chosen case study design with a mixed-methods approach remains preferable and highly suitable for addressing the research questions. This approach allows for an in-depth, nuanced exploration of the complex issue of White appropriation within DL education in Washington State, a specific and critical concern that might be overlooked or simplified by broader quantitative studies alone. The combination of qualitative content analysis of state promotional materials and quantitative analysis of enrollment

data provides a robust and complementary framework to investigate both the explicit and implicit messages surrounding DL programs and their demographic distribution. This integrated approach allows for a richer understanding of the phenomenon within the specific context of Washington State, contributing directly to the ongoing scholarly conversation about equity and access in DL education. The findings, while subject to the stated limitations, will nonetheless have significant implications for policy by highlighting areas where state promotional language or program implementation may be inadvertently perpetuating inequities, thereby informing future efforts to ensure equitable access to DL opportunities for all students, especially language-minority students and communities often undermined within schooling systems.

Findings

State Promotional Material Analysis

This section presents a critical analysis of Washington State's DL program promotional materials, guided by the analytical framework developed by Freire et a. 2022. This framework, comprising concepts of whitestreaming, English hegemony, and globalized human capital, was used to investigate whether the program's design and promotional materials suggest an expropriation of its foundational purpose.

The analysis of RCWs, WAC, and OSPI policy guidance revealed a nuanced dynamic. While initial provisions demonstrate an explicit commitment to supporting language-minoritized students, subsequent policy and promotional documents indicate notable shifts. The findings suggest that framing DL education through a "world language" discourse and emphasizing benefits for "all Washington students" aligns with globalized human capital, implicitly centering economic utility for English-dominant learners. These practices, which also include the prominent inclusion of "native English speakers" as key beneficiaries, exemplify whitestreaming and English hegemony by subtly positioning English as the linguistic norm and potentially framing multilingual learners' existing linguistic assets as capital for English-privileged students.

Detailed Findings by Document Type

Statutory Law. Building upon the framework applied to the Utah DLBE Model by Freire et al. (2022), the analysis of Washington State's DL program promotion reveals that the state identifies the needs for language-minoritized students to learn in their primary language, in both the Legislative and Executive branches, the need to provide supplemental instruction for students whose primary language is other than English, in order to obtain English proficiency, is identified. For example, the intent statement within one of the legislation, directed at other

legislative bodies and elected officials who represent the public, declares that the state must provide "supplemental instruction and services for eligible and enrolled students whose primary language is other than English through the transitional bilingual instruction under RCW 28A.180.010 through 28A.180.080" (Laws of Washington, 2009, ch. 548, § 104). The identification of the needs of language-minoritized students does not indicate whitestreaming, where White students are centered as the policy beneficiaries, or where there is the lack of mention of diversity or race. While the legislation aims for English proficiency, a pragmatic goal for communication in a predominantly English-speaking country, it does not necessarily indicate the prevalence of power among English-privileged speakers or hint at English hegemony, even when multiple languages are promoted, and much less does it indicate globalized human capital discourse.

Administrative Regulation. Within the Transitional Bilingual Instruction Act (TBIA), a foundational law designed to ensure that students whose primary language is not English receive appropriate education support to achieve English proficiency, one can find the affirmation of the legislature's findings regarding the educational needs of multilingual learners, "[t]he legislature finds that there are large numbers of children who come from homes where the primary language is other than English. The legislature finds that a transitional bilingual education program can meet the needs of these children" (Wash. Rev. Code § 28A.180.010). Transitional bilingual instruction is described as a "system of instruction which uses two languages, one of which is English, as a means of instruction to build upon and expand language skills to enable the pupil to achieve competency in English," in which DL and Tribal Language Education "are the preferred transitional bilingual instruction program models" (Wash. Rev. Code § 28A.180.030). The identification of the needs of language-minoritized students does not indicate whitestreaming, as

it does not demonstrate the normalization and promotion of White supremacy in educational institutions.

In alignment with these provisions, the Washington Administrative Code, which provides detailed regulations and guidelines for school districts and their personnel implementing state educational laws, also defines transitional bilingual instruction as a system with two languages, one of which is English, aimed at achieving English proficiency. The WAC further specifies that an "eligible student" is "any student who meets the following conditions: (a) The primary language of the student must be other than English; and (b) The student's English skills must be sufficiently deficient or absent to impair learning" (Wash. Admin. Code § 392-160-005, 2017). Based on these core legislative and administrative definitions, the explicit identification of, and focus on, the needs of language-minoritized students at this foundational level does not, in itself, demonstrate the normalization and promotion of White supremacy in educational institutions, thus not indicating whitestreaming. As a whole, the foundational legal provision for the DL program clearly articulates a shared commitment to supporting multilingual students through their primary language in order to foster English proficiency.

Conversely, in the section of Washington law detailing dual and tribal language education programs, grants, and definitions, DLE is described as "an instructional model in which public school students are taught subject matter in both English and a *world language* other than English" (Wash. Rev. Code § 28A.300.577) (emphasis added). The usage of the term "world language" often appears in policy and promotional materials alongside the discourses of globalized human capital, which as described previously, is the emphasis on economic benefits of learning a language for all students, including English-monolinguals, to compete in a global marketplace. Freire et al. argue that this shifts the purpose of DL education away from its

historical roots of serving language-minoritized students and promoting linguistic equity, and it is because when a language is framed as a "world language" for economic advantage it tends to center the interests of English-speaking students who are taking on an addition language for competitive purposes, rather than supporting heritage language speakers in maintaining and developing their first language.

The globalized human capital discourse can be seen further on as the section states, "[t]he legislature finds that a multilingual, multiliterate education will benefit *all* Washington students. A multilingual, multiliterate student body is better prepared to enter a *global job market*, has developed cognitive skills unique to working within two or more languages, and can build cohesive communities across the state while sharing, celebrating, and strengthening individual cultural ties" (Wash. Rev. Code § 28A.300.577) (emphasis added). This legislative framing, which generalized benefits to "all Washington students" while omitting acknowledgment of language-minoritized students' existing linguistic assets and potential economic contributions, exemplifies a narrow, globalized human capital approach to DLBE. Such a perspective constitutes a form of policy expropriation. The framing also exemplifies a whitestreaming approach as it centers White students as policy beneficiaries, given that in Washington State during the 2023-24 school year, White students constitute 65.61% of the PK-12 population, while students categorized as ELL represented 14.26% of the student body. In contrast, students from all other racial groups combined represent 34.39% (Washington State Office of Superintendent of Public Instruction [OSPI], 2023a).

Regarding this point, Washington law states that "[t]he legislature recognizes that English learners benefit from specific instructional models and supports to thrive in public schools, and that dual language education is the best instructional model for providing those supports" (Wash.

Rev. Code § 28A.300.577). Despite the emphasis on language-minoritized students, whitestreaming remains evident in the program's design, as its universal accessibility subtly normalizes a dominant-culture approach, rather than primarily centering the linguistic and cultural assets of language-minoritized students that have been historically marginalized.

OSPI Policy Guidance. Upon consulting publications on DL by the Office of the Superintendent of Public Instruction (OSPI), it becomes apparent that the program's intended beneficiaries extend beyond language-minoritized students. As the publicly accessible Dual Language Education and Resources page, designed for families, community members, and the general public, states, "Dual language education is the most effective instructional model for multilingual learners (MLs), *native English speakers*, and historically underserved student groups and is the preferred model for MLs in Washington state." (OSPI, Dual Language Education and Resources) (emphasis added). This inclusive framing, while seemingly promoting broader access, aligns with the concept of whitestreaming. By explicitly mentioning "native English speakers" alongside multilingual learners and underserved student groups, it effectively normalizes and promotes the participation of the dominant linguistic and cultural majority within the program. Such generalization, as critiqued by Freire et al. (2022), can obscure the unique needs of language-minoritized students and implicitly center the benefits for English-privileged speakers, contributing to English hegemony where their linguistic journey, in learning a "world language," becomes a primary focus, even when multiple languages are promoted. This broad appeal, as previously seen being tied to a globalized human capital discourse, which values language for economic competition for all students, transforms the program's original purpose. Ultimately, this represents a form of policy expropriation.

Furthermore, when analyzing the Washington State Dual Language Program Guide: For Developing and Implementing Dual Language Programs published by OSPI specifically for school districts, administrators, and program implementers, the guide mentions how, when designing or adopting a DL program model, the program implementer must "[d]etermine the dual language program model (90/10, 80/20, 50/50) that best fits student and community needs with consensus among all stakeholders" (2023b, p. 5). Crucially, the document also emphasizes ensuring equitable access, advising program implementers to "[d]etermine clear enrollment policies that allow for *equitable* access for multilingual English learners who speak the program language" (p. 5) (emphasis added). However, despite these explicit commitments to student needs and equitable access, and despite outlining several benefits for 90/10 and 80/20 models–such as "[b]est research-based outcomes for students," "[m]ore home language support for multilingual learners," "[m]ore partner language development for English speakers," and the requirement for "a bilingual teacher in every K-3 classroom" (p. 14)--the guide concurrently introduces a subtle bias in its practical guidance. While discussing the 50/50 model, the guide lists advantages such as"[t]eachers can team up and collaborate (one English, one partner language teacher)" and requiring "[f]ewer bilingual teachers," alongside the key benefit that it "[c]an be easier for families to accept initially" (p. 14). Nonetheless, it also explicitly cautions that the 50/50 model "[w]ill not have as strong of outcomes as 80/20 or 90/10" and "[t]eam teaching can require more transitions for students" (p. 14). This framing is notable for its implicit prioritization, where despite acknowledging that the 50/50 model yields weaker outcomes, the guide prominently features its ease of "initial acceptance" for families, without explicitly differentiating which families might be "skeptical" and why. By explicitly acknowledging the pedagogical advantages of 90/10 and 80/20 models but then framing their implementation

challenge around "skeptical families" and ease of "initial acceptance," the guide implicitly prioritizes the comfort and perceived marketability to English-monolingual families over optimal research-based design for all. This subtle guidance reflects a tendency towards whitestreaming, where program design is influenced by the perceived acceptance of the dominant linguistic group.

The guide further reinforces this subtle prioritization by noting that "English-proficient students develop stronger skills in the additional language with this extra time immersed in the early years" in 90/10 and 80/20 models (2023b, p. 14). This emphasis on the benefits for English-proficient students, combined with the implicit steering towards models "easier to accept" for presumably English-monolingual families, exemplifies how programs can be reoriented to serve generalized, neoliberal interests. Such a dynamic and marketability can subtly overshadow the historical imperative to serve language-minoritized students, potentially diluting the program's foundational mission.

The Washington State Dual Language Program Guide explains why 90/10 model is better for English-monolingual students, as "[r]esearch shows that the 90/10 program is the most effective dual language model because it *immerses* students quickly in the partner language for initial content and literacy instruction. With this solid foundation in their home language, multilingual learners develop strong English skills as English instruction increases. English-proficient students develop stronger skills in the additional language with this extra time immersed in the early years" (2023c, p. 14) (emphasis added). This detailed explanation reinforces that the guide explicitly recognizes the profound benefits of higher partnered language allocation for both multilingual learners and English-proficient students. However, the guide's consistent use of the term "immersion" to all students within these models overlooks a crucial

distinction, as multilingual learners, whose home language often is the partner language, the program does not represent an "immersion" in the same sense as it does for English-monolingual students. This unscrutinized use of "immersion" implicitly positions English as the default linguistic norm, and risks framing the existing bilingualism of language-minoritized students primarily as linguistic capital to be leveraged for the benefit of English-privileged students. This dynamic further demonstrates English hegemony, as Freire et al. (2022) critically observe, by questioning "for whom this 'immersion' is, since for U.S. language-minoritized youth immersion in both languages already occurs on a daily basis."

Further emphasizing this English-centric lens with the agency's resources, the Dual Language 8 Steps to Success guide, designed for schools and districts implementing the program, explicitly categorizes program types by whom they serve, specifying that "Two-way Dual Language - serves both multilingual learners (at least 30%) and English proficient students (at least 30%). One-way Dual Language - serves mostly or all multilingual learners from one language group. World Language Immersion - serves mostly English speakers with less than 30% MLs" (OSPI, 2025, p. 20). This internal directive, while providing a minimum for multilingual learner participation, inherently allows for significant flexibility that can result in a disproportionate number of English-dominant students. This implicitly positions English as the linguistic norm and risks framing multilingual learners' existing linguistic assets primarily as capital for English-privileged students.

However, a significant discrepancy in enrollment guidance emerges when comparing this internal directive with information provided directly to the families and community. Consistently, OSPI's public vision and community-facing resources articulate a stronger commitment to multilingual learner prioritization. For instance,"The Vision: Dual Language for

All" states that "[t]wo-way dual language programs prioritize at least half of the seats for multilingual/English learners and English dominant students are invited into the program as an opportunity to become bilingual and biliterate while learning the general education curricula" (OSPI, 2023b, p. 1). On the publicly accessible "Dual Language Education: What Families Should Know" webpage, OSPI states that "[i]n Washington, multilingual/English learners and American Indian/Alaska Native students are prioritized for at least half of the seats in two-way dual language programs to prevent opportunity gaps and encourage students to fully develop their first or heritage language" (n.d.-b) (emphasis added). This public-facing prioritization strongly aligns with the program's original equity-driven goals, explicitly aiming to prevent opportunity gaps and support the full development of heritage language for historically marginalized groups. This divergence—a 30% minimum in internal guidance versus prioritizing at least 50% for public consumption—highlights a tension in program communication and intent depending on the audience. This distinction reveals that while "immersion" is explicitly named in connection to programs for predominantly English speakers, the 2023 guide's broader use of the term (as seen on p. 14) combines the two distinct linguistic experiences. This implicit centering of the English-speaking learner's journey as the standard for "immersion" undermines how language-minoritized students' existing bilingualism is often framed as a resource to enrich their English-speaking peers rather than a foundational asset in its own right.

Indeed, the 2023 Dual Language Program Guide also reveals an awareness of this power dynamic when it advises, "Dual language programs must be designed to prioritize the enrollment of eligible multilingual/English language learners who benefit the most from these programs. Programs can become very popular with English-speaking families as they recognize the benefits of developing another language, so it is important to lay out clear plans that ensure a balance of

students in two-way programs and develop strong communication plants for family outreach" (Washington State Office of the Superintendent of Public Instruction, 2023c, p. 20). This explicit instruction to prioritize multilingual learners and manage English-speaking enrollment implicitly acknowledges the very tension of linguistic capital at play, where the program's perceived value for English speakers can inadvertently overshadow its primary design and benefit for language-minoritized students.

In summary, the critical analysis of Washington State's promotional materials for DL programs reveals a significant tension between the foundational legal intent and subsequent policy discourse. While initial statutory law clearly articulates an equity-driven purpose to support language-minoritized students, later legislative language and OSPI guidance introduce a broader, market-oriented framing. This shift, which frames language learning as a "globalized human capital" and a benefit for "all students," demonstrates subtle but pervasive indicators of whitestreaming and English hegemony. These discursive changes, exemplified by a divergence in internal vs. public-facing enrollment guidance and an implicit prioritization of models that are "easier to accept" for English-dominant families, collectively suggest that the program's original equity-focused mission is being subtly expropriated to serve the interests and comfort of the dominant linguistic group.

Building on the critical analysis of Washington State's DL promotional materials, which identified a tension between the program's foundational purpose and subtle framings of whitestreaming, English hegemony, and globalized human capital, the research now shifts from policy to practice. The following section employs a geospatial analysis to examine whether these policy tensions and discourses are reflected in the real-world distribution and characteristics of DL programs. By analyzing the location of Heritage, Two-Way, and other language programs in

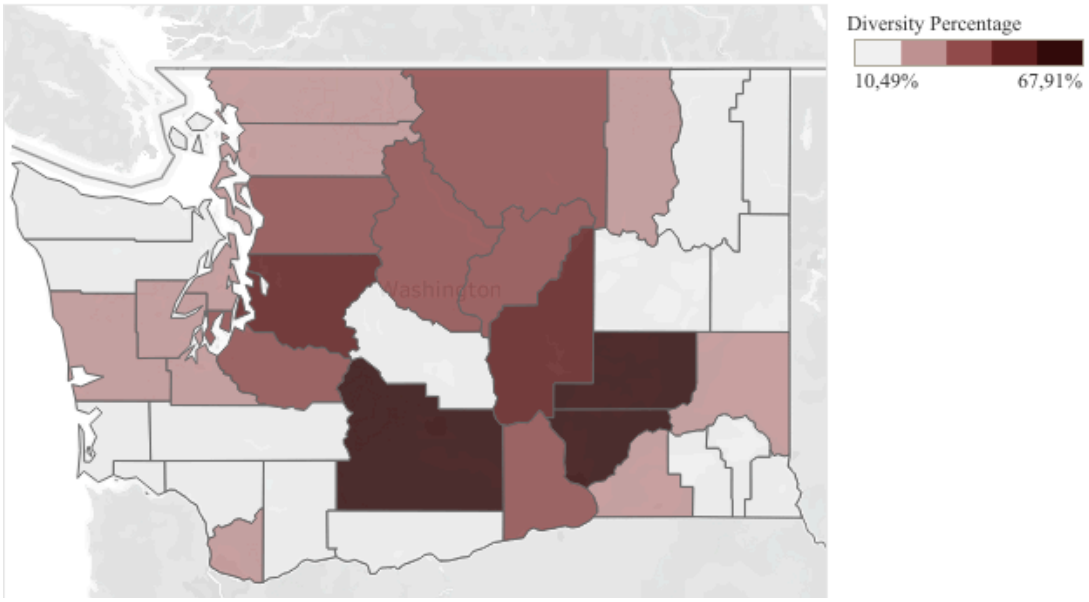
relation to county-level data on diversity, demographics, and economic levels, this section seeks to determine if the program's implementation aligns with its equity-driven goals or if it instead reflects the subtle biases identified in the promotional materials.

County-Level Geospatial Analysis

This analysis explores the multifaceted landscape of Washington State by examining the geographic distribution of diversity, economic levels, and DL program implementation. The study is divided into two main sections. The first section provides a high-level overview, utilizing three maps to identify key demographic and educational patterns across the state's counties. The second section delves into a more granular analysis of the specific DL program types, exploring the locations and characteristics of Heritage, Two-Way, and other language programs. By identifying key themes and correlations, this study aims to provide a comprehensive overview of how wealth, diversity, and language education programs are intertwined, offering a detailed look into the unique characteristics of communities throughout the state.

Figure 1

Washington State 2023 Diversity Index by County



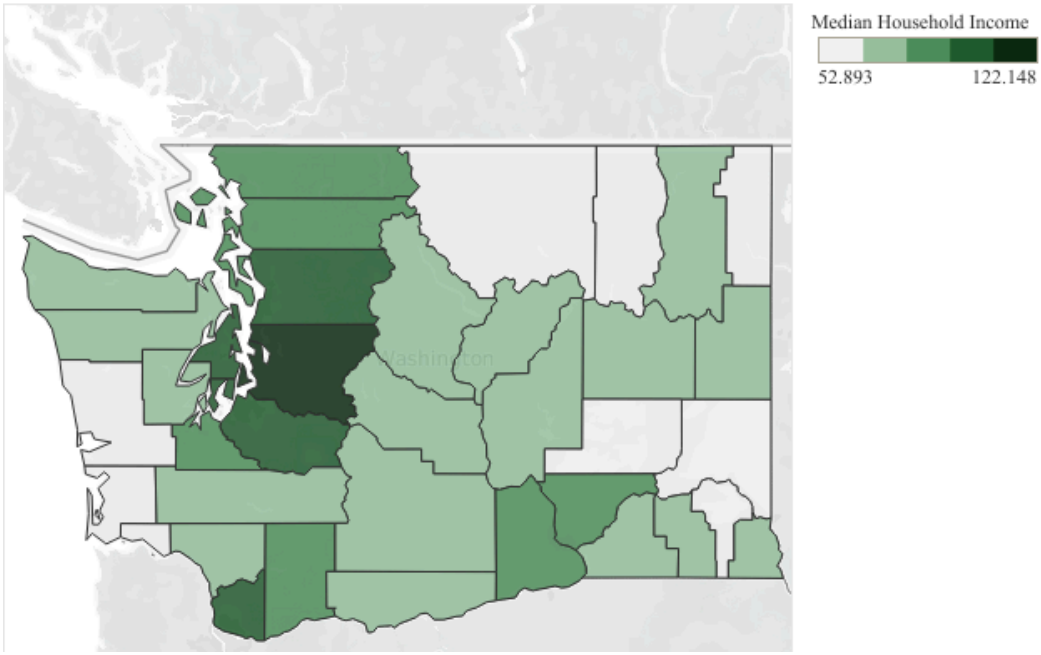
The map above visually represents the distribution of diversity across Washington State counties. The diversity percentage was calculated using data from the Census Reporter (2023a).

The metric was derived by first subtracting the total "White alone" population from the "Total Population" for each county, and then dividing that number by the total population to get the final percentage. The color scale shows that darker shades of red correspond to a higher percentage of non-White populations. The data reveals a clear regional trend, with the state's highest diversity percentages concentrated in a few counties. The top four most diverse counties–-Adams, Franklin, Yakima, and Grant–are all located in the eastern part of the state, with non-White population percentages ranging from 50.03% to a high of 67.91%. In contrast, most counties in western Washington show moderate to low diversity. While King County stands out as the fifth most diverse county at 45.66%, it is surrounded by counties like Pierce and Snohomish, which have more intermediate diversity percentages ranging from 33.76% to 40.80%.

The vast majority of the state's counties, particularly in the outer regions of both eastern and western Washington, have very low diversity. The non-White population in these areas, including counties like Clallam, Stevens, and Asotin, fall within a narrow range of 10.49% to 20.01%. The map also reveals a clear relationship between population density and diversity. The most urbanized counties, such as King County, display some of the highest diversity percentages. In contrast, many of the more rural counties in both the eastern and western parts of the state show significantly lower diversity percentages. This is a common demographic pattern where major cities tend to attract a wider range of people due to more diverse economic opportunities.

Figure 2

Washington State 2023 Economic Levels by County



The map above visually represents the distribution of wealth across Washington state counties, utilizing median household income as the key metric. The data was obtained from the Census Reporter (2023b). The wealthiest counties are located in western Washington, with the highest median household incomes being found in King County, at $122,148, followed closely by its neighbors Snohomish County ($107,982) and Kitsap ($98,546). Other high-earning counties in this region include Pierce, Clark, Thurston, all with median incomes above $80,000. The lowest-earning western county is Wahkiakum, with a median income of $57,091.

In contrast, eastern Washington contains a mix of mid-to-low earning counties. The highest incomes in this region are in Benton ($87,316) and Franklin ($82,755) counties. However, the eastern side of the state also includes the lowest-earning counties in the entire state, with Whitman at $52,893, and Ferry at $54,650.

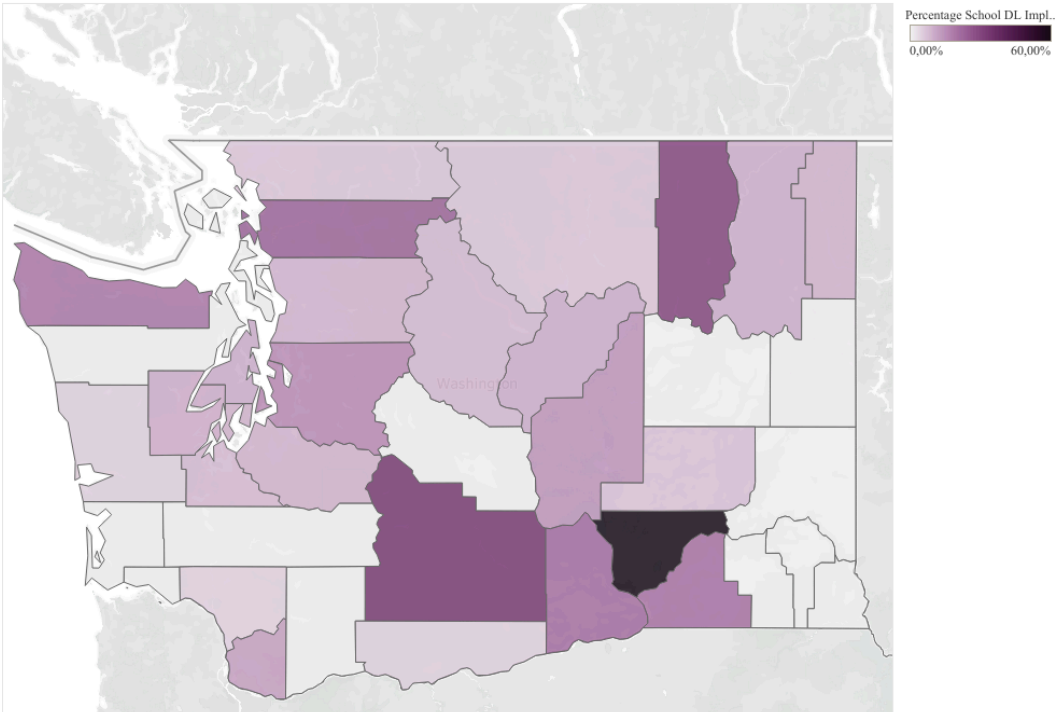
By comparing the Economic Levels map and the Diversity Index map, several key patterns emerge across Washington State's counties. In western Washington, there appears to be a positive relationship between diversity and economic levels. King County, for example, leads

both in diversity and median household income in western Washington with a median income of $122,148 and a diversity rate of 45.66%. King County is the wealthiest county in the state, but not the most diverse. Similarly, Snohomish and Pierce counties, which are among the wealthiest, also have relatively high non-White population percentages (36.37% and 37.52%, respectively). Other counties in this region, such as Clark, Kitsap, and Thurston, also show a consistent pattern of both above-average median incomes and moderate diversity rates.

Conversely, the trend is notably different in eastern Washington, where there appears to be little to no correlation between diversity and economic standing. For instance Adams County is the most diverse county in Washington, with a diversity rate of 67.91%, yet is among the lowest earning counties in the state, with a median income of $65,042. Benton County is the wealthiest county in eastern Washington with an income of $87,316, but has a mid-level diversity percentage of 34.26%. This suggests that the factors driving diversity and economic success in eastern Washington's counties are likely different from those in the western part of the state.

Figure 3

Washington State 2023 DL Program Implementation by County



The map above visually represents the percentage of schools implementing a DL program across Washington's counties. The data reveals a clear trend where the highest implementation rates are concentrated in eastern Washington. Franklin county leads the state with a 60.0% implementation rate, followed by Yakima and Ferry counties with 33.33% and 30.0% respectively. Other counties in the region, such as Benton and Walla Walla, also have notable rates of around 20%. In western Washington, the highest implementation rates are lower than those found in the east. Skagit County has the highest rate at 23.07%, followed by Clallam County at 19.23%. Major metropolitan areas like King and Clark counties show more moderate implementation rates of 15.36% and 12.30% respectively.

By cross-analyzing all three maps (DL implementation, economic levels, and diversity rates) several key patterns emerge. The data reveals that high diversity and high DL implementation rates can be found together, particularly in eastern Washington. For example, Franklin County has the highest DL implementation rate (60.0%), is among the most diverse

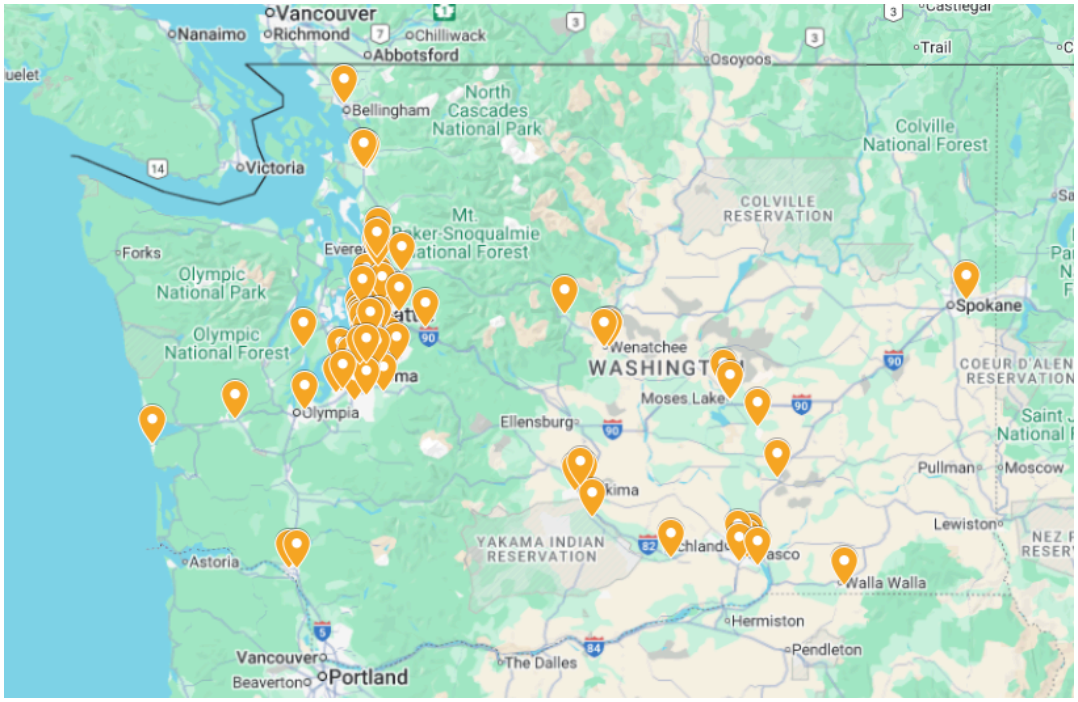
counties in the state (62.28%), and is also one of the highest-earning counties in eastern Washington. Similarly, Yakima and Benton counties show a combination of high-to-moderate rates in both diversity and DL implementation. However, this trend is not universal. Some counties with high diversity and DL implementation rates are not among the wealthiest. For instance, Yakima County has high rates in both areas but falls into the mid-to-low range for median income.

Ferry County also has a high implementation rate, but a low diversity rate, and is one of the lowest-earning counties in the state. A strong contrast is visible when examining Adams County, which has the highest diversity rate in the state (67.91%), but is among the lowest-earning counties ($65,042) and is among the lowest DL implementation rates (6.66%). In western Washington, the counties with the highest DL implementation rates, such as Skagit and Clallam, have mid-to-low diversity rates and a wide range of economic levels. This contrasts with King County, which is the wealthiest in the state and highly diverse, yet has a moderate DL implementation rate of 15.36%. This suggests that the relationship between these three factors is complex and varies by region.

The previous analysis of diversity rates and economic levels has provided a valuable backdrop for understanding DL program implementation. While some initial correlations were identified, a deeper understanding requires a closer look at the programs themselves. The analysis will now shift its focus to a new set of maps that analyze the locations and characteristics of these DL programs across the state.

Figure 4

Heritage Programs in Washington State 2023



The map above visually represents the schools and programs that only contain Heritage programs in Washington State for the 2023-2023 school year, which are found across a total of 17 counties for a total of 108 Heritage programs. The analysis of these programs reveals a distinct distribution pattern, with a significant concentration in western Washington's most populous counties and a more dispersed network throughout the central and eastern agricultural regions.

King County, the state's most populous county, contains the vast majority of these programs, with a total of 47, accounting for 50.54% of the county's total DL programs (Appendix C, Table C2). This concentration serves a diverse range of communities, offering programs in languages such as Spanish, Somali, Dari, Khmer, Arabic, Chinese-Mandarin, Vietnamese, and French (Appendix C, Table C1**)**. This distribution directly reflects the county's diverse demographics. Spanish is the largest non-English language group among school-aged children, with 34,232 students (9.66% of the student population) speaking it at home, indicating

a demand for these programs (U.S. Census Bureau, 2023g). However, the implementation of these programs is not directly proportional to population size. For instance, while Asian and Pacific Islander languages are spoken by a substantial student population (7.86%), the programs offered for this group are in only a few specific languages, reflecting the linguistic fragmentation of the community (2023g).

Following King County, Pierce County has the next largest cluster of Heritage programs, with 14 in total. All of these programs are in Spanish, representing 60.87% of all the DL programs in the county (Appendix C, Table C2). This focus on Spanish reflects the county's demographics, as Spanish is the largest non-English language group among students (6.63% of the student population) (U.S. Census Bureau, 2023j). The absence of Heritage programs for other language groups, such as Asian or Pacific Islander languages (which comprise 3.2% of the student population), suggests that linguistic unity within a community may be a factor in program implementation (2023j).

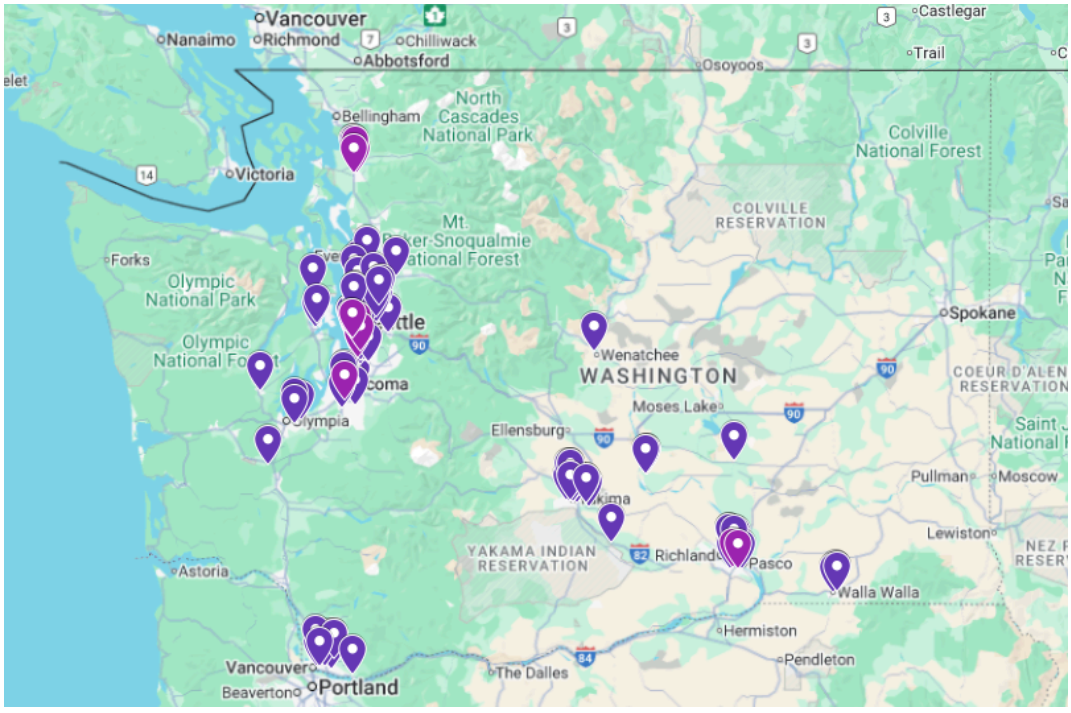
A more dispersed cluster of Heritage programs is found in central and eastern Washington across Yakima, Chelan, Douglas, Frank, Franklin, Benton and Walla Walla counties. These counties contain a combined total of 24 Spanish Heritage programs, aligning with the unique demographics of the state's agricultural regions. In counties such as Yakima, Douglas, and Walla Walla, the presence of Spanish-only programs is directly supported by the student demographics. For example, in Yakima County, Spanish is the dominant non-English language spoken at home by 42.94% of students (U.S. Census Bureau, 2023o), which correlates with the five Heritage programs offered there (Appendix C, Table C1). A similar pattern is seen in Douglas and Walla Walla counties, where significant percentages of students speak Spanish, providing a need for the programs (2023d; 2023n). For counties where student-level data was not

available, an analysis of the adult population provided a strong justification for the Spanish-only programs. In Chelan, Grant, and Franklin counties, a high concentration of Spanish-speaking adults provided strong evidence of a community-wide demand for Spanish instruction that is not seen in any other linguistic group (U.S. Census Bureau, 2023b; 2023f; 2023e).

The analysis of Heritage programs throughout the state indicates that their presence is a response to both the size and the linguistic unity of the communities being served. While highly diverse urban areas like King County offer a wide range of language programs, the implementation of Spanish-only programs across both eastern and western Washington highlights the specific need and demand from the large Spanish-speaking student population. Building on these findings, an examination of Two-Way DL programs offers a further insight into how schools are addressing the linguistic needs of students in their counties.

Figure 5

Two-Way DL Programs in Washington State 2023



The map above illustrates the locations that contain Two-Way DL programs in Washington State for the 2023-2023 school year, which are found across a total of 15 counties for a total of 131 programs. These programs are concentrated in three distinct geographic clusters: the Puget Sound region, Clark County, and a dispersed network in central and eastern Washington. Notably, 14 schools (represented by light purple pins) offer both Two-Way and Heritage programs, showing an overlap in implementation.

The densest concentration of Two-Way programs is found in the populous counties of the Puget Sound regions. King County, with 40 programs, has the highest number in the state, reflecting its linguistically diverse student population (Appendix C, Table C2). These programs serve a wide range of needs, including 28 Spanish programs, 2 Vietnamese, 3 Mandarin, and 1 Japanese program (Appendix C, Table C1). This correlates with the county's demographics, which include 32,232 Spanish-speaking students, 27,840 Asian and Pacific Islander students, and 23,497 other Indo-European students (U.S. Census Bureau, 2023g).

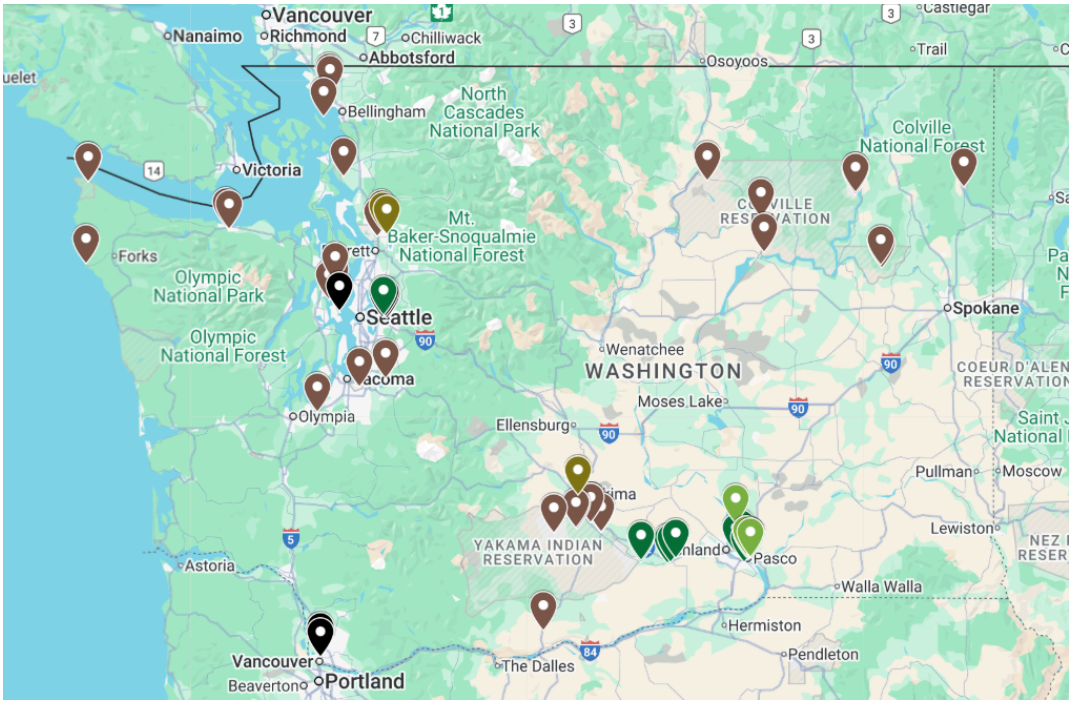
Surrounding King County, Pierce, Snohomish, Skagit, Thurston, Kitsap, and Mason counties also form a concentrated cluster. In these counties, all of the Two-Way programs are exclusively Spanish, correlating with their substantial Spanish-speaking student populations (U.S. Census Bureau, 2023j; 2023l; 2023k; 2023m; 2023h; 2023i). For example, Snohomish County offers six programs to a student population with 15,160 Spanish speakers (2023l). A separate, significant cluster of programs is found in Clark County, which has 13 programs, all of which are in Spanish (Appendix C, Table C1). These programs correlate to a student population of 90,681 that includes 7,989 Spanish speaking students (2023c). The exclusive focus on Spanish here aligns with the demographics of the county's dominant non-English language student group.

In central and eastern Washington, the programs are clustered in agricultural regions and almost exclusively are offered in Spanish. Yakima County, for instance, has 17 programs, which correlates to its Spanish-speaking student population of 25,141 (U.S. Census Bureau, 2023o). This trend holds true for Franklin, Grant, Chelan, Benton, and Walla Walla counties, which all have exclusively Spanish Two-Way programs that reflect their high numbers of Spanish-speaking students or adults (2023e; 2023f; 2023b; 2023a; 2023n). The predominant models in this region are the 50-50 and 80-20 Two-Way programs, which are used across these counties (Appendix C, Table C1).

The distribution and language of Two-Way DL programs across Washington State show a strong correlation with regional demographics. These programs are not evenly distributed but are heavily concentrated in three distinct geographic clusters. The language of the programs overwhelmingly corresponds to the dominant non-English language group in each county, which is Spanish in all but the most linguistically diverse areas of western Washington. While the 50-50 instructional model is the most common, the presence of 80-20 and 90-10 models in certain counties indicates a couple variety of pedagogical approaches are being used across the state. While Two-Way programs are a primary focus, it is also important to analyze the minority DL (One-Way and World Language Immersion) and Tribal programs to understand the broader landscapes of DL education in the state. The following analysis explores the characteristics, geographic distribution, and languages of these programs, providing a comparative perspective to the Heritage and Two-Way program findings.

Figure 6

Tribal, One-Way DL, and World Language Programs in Washington State 2023



Note. Tribal programs are represented by the brown pins, One-Way programs by the green pins, and World Language Immersion programs by the black pins. Light-green pins represent locations that contain both Two-Way and One-Way programs, while the brown-green pins represent locations that contain both Tribal and Heritage programs.

The map above provides a comprehensive view of three distinct types of language programs implemented in Washington State during the 2023-2024 school year: One-Way programs, World Language Immersion programs, and Tribal language programs. An analysis of the map reveals clear patterns of distribution, purpose, and language, showing a varied approach to language education across the state.

A total of 22 One-Way programs were implemented in 18 schools across four counties, with a distinct concentration in central and eastern Washington. The largest concentration is found in the Pasco area, which includes Franklin and Benton counties, with 15 programs in Franklin and 4 in Benton (Appendix C, Table C2). These programs are primarily a response to

the large Spanish-speaking populations in these agricultural regions, and the language instruction is overwhelmingly Spanish. A notable exception is found in Franklin County, which also has four Russian One-Way programs. A separate cluster of two Spanish One-Way programs is located in Yakima County, and a single Spanish One-Way program is found in King County.

In contrast to the concentrated One-Way programs, World Language Immersion programs are fewer in number, with a total of eight programs in seven schools, and they are located in specific urban areas. These programs, designed for native English speakers, are found in the Puget Sound region, specifically in King and Kitsap counties, as well as in a separate cluster in Clark County. While King County offers World Language programs in both Spanish and Chinese-Mandarin, Clark County has a singular focus on Chinese-Mandarin, making it a key hub for immersion education in that language.

Tribal Language programs have a distinct patter from the others, situated in or near tribal reservations, with a widespread dispersal across 15 different counties. These 41 programs are fewer in number than Two-Way programs, but are more broadly distributed, and they are driven by the vital mission of language revitalization and cultural preservation. The languages offered reflect the rich linguistic heritage of the tribes, with several counties showing a concentration of programs in specific tribal languages, such as Ichishkin in Yakima County and Lushootseed in both Snohomish and Kitsap counties. A small overlap between Tribal and Heritage programs exists, with three of the Tribal program locations also housing a Heritage program.

The map illustrates that the landscape of language programs is not uniform but is shaped by distinct regional demographics and pedagogical goals. While One-Way programs are concentrated in specific counties to respond to the possible needs of large Spanish-speaking populations, World Language Immersion programs are fewer in number and are concentrated in

affluent urban areas to provide new language skills to native English speakers. In contrast, Tribal programs are more widely dispersed and are driven by the critical mission of language revitalization and cultural preservation. Overall, program type, language of instruction, and geographic location are closely intertwined, reflecting a complex and varied approach to language education throughout Washington.

The county-level geospatial analysis revealed a complex interplay between demographics, economic levels, and DL program implementation across Washington State. The study first identified clear geographic trends, with high diversity concentrated in a few counties in both eastern (e.g. Adams, Franklin, Yakima) and western Washington (e.g., King). Conversely, the wealthiest counties were predominantly located in western Washington, with a positive correlation between wealth and diversity, a trend that was not observed in the eastern part of the state.

When cross-analyzed, the data showed that high DL program implementation rates were concentrated in eastern Washington (e.g., Franklin County with a 60.0% rate), and while this often corresponded with high diversity, it did not consistently correlate with high economic levels. The analysis of specific program types further detailed these trends, showing that Heritage, One-Way, and Two-Way programs were largely concentrated in both populous urban areas and specific agricultural regions with high Spanish-speaking populations. In contrast, World Language Immersion programs were fewer and found in affluent urban centers, while Tribal language programs were widely dispersed and driven by the mission of language revitalization. This analysis provided a valuable macro-level overview of the nuanced relationships between these factors.

While the county-level analysis offered a comprehensive overview of program distribution and initial correlations, it did not provide the statistical granularity needed to identify the precise relationships between specific variables. The following section, therefore, shifts to a district-level quantitative analysis. This more focused approach utilizes Pearson's r correlation to statistically investigate the strength and direction of the relationships between the percentage of DL program implementation and a variety of demographic and socioeconomic variables, moving beyond geographical patterns to confirm specific associations.

District-Level Quantitative Analysis

This section provides a granular examination of DL program implementation at the district level, utilizing district-level data to explore the characteristics associated with the presence of DL programs. The analysis begins with descriptive statistics, followed by bivariate Pearson's r correlations and a multivariate logistic regression to identify factors that predict program implementation.

Descriptive Statistics: DL Program Implementation Rates

To understand the overall landscape of DL program implementation in Washington state, a paired-samples t-test was conducted on the number of schools with implemented programs versus those without. Descriptive analysis revealed that across the 319 school districts, the mean number of schools with a DL program implemented was 0.82 (standard deviation [SD] = 2.38), while the mean number of schools without a DL program was 6.13 (SD = 9.32). The paired-samples t-test below (Table 2) confirmed a statistically significant mean difference of -5.307 ($t(318) = -11.029$, $p < .001$). This indicates that districts have a significantly higher number of schools without a DL program than with one.

Table 2

Paired-Samples T-Test Analysis of Implemented & Not-Implemented Programs

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Implemented	.82	319	2.382	.133
	Not Implemented	6.13	319	9.325	.522

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Implemented - Not Implemented	-5.307	8.595	.481	-6.254	-4.360	-11.029	318	<.001	<.001

Bivariate Analysis

A series of Pearson's r correlation analyses revealed a number of significant relationships between DL program implementation and district-level demographics. As summarized in Table 3, a strong positive correlation was found with the percentage of Native American students (r = 0.599, p < .001) and a strong negative correlation with the percentage of White students (r = -0.552, p < .001). Moderate positive correlations were also observed for the percentage of Migrant students (r = 0.321, p < .001) and the percentage of Hispanic students (r = .229, p < .001). Weaker, though still statistically significant, relationships were also found with the percentage of ELL students (r = 0.302, p < .001), low-income students (r = 0.215, p < .001), and students identifying as two or more races (r = 0.114, p < .041). However, no statistically significant correlations were found for the percentage of Black students (r = -0.041, p < .467) and Asian students (r = 0.031, p < .576).

Table 3

Summary of Pearon's r Correlations with Percent of Schools with DL Programs Implemented

Variable	Pearson's r	P-value	Interpretation
PercentNativeAmerican	0.599	<.001	Strong, positive
PercentWhite	-0.552	<.001	Strong, negative
PercentMigrat	0.321	<.001	Moderate, positive
PercentELL	0.302	<.001	Moderate, positive
PercentHispanic	0.229	<.001	Weak, positive
PercentLowIncome	0.215	<.001	Weak, positive
PercentTwoOrMoreRaces	0.114	.041	Very weak, positive
PercentBlack	-0.041	.467	Extremely weak, negative
PercentAsian	0.031	.576	Extremely weak, positive

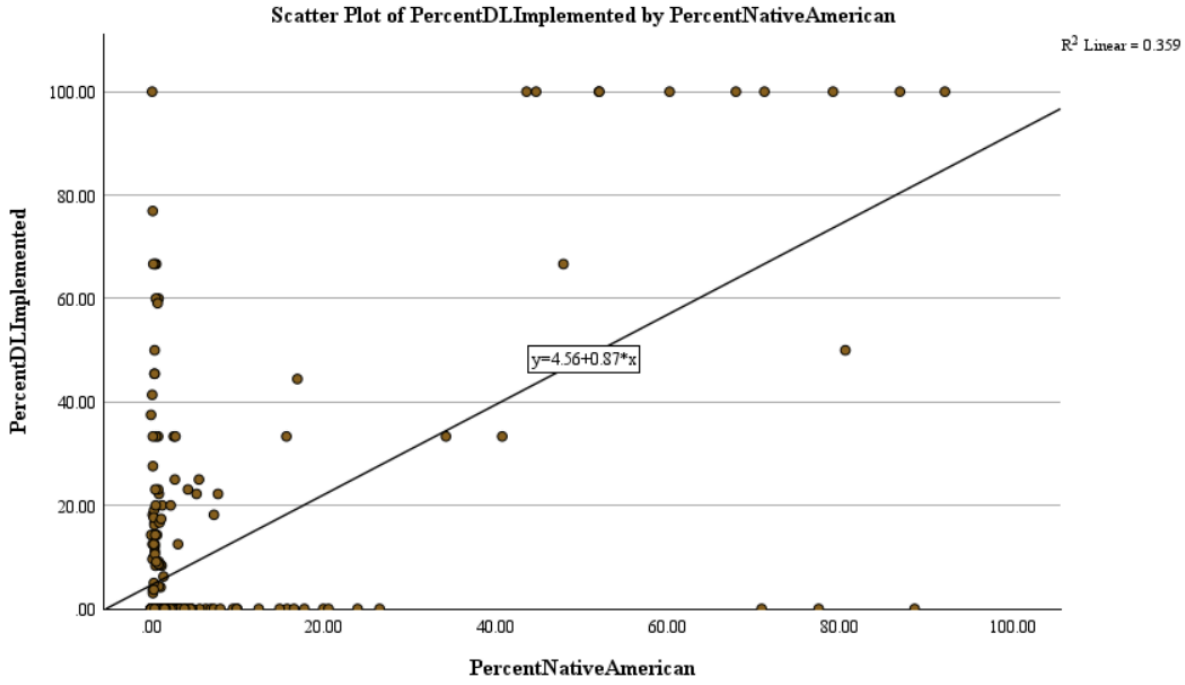
The scatter plots below visually represent these relationships, starting with the strongest correlations. A strong, positive and statistically significant correlation was found between the percentage of implemented DL programs and the percentage of Native American students in a district ($r = 0.599$, $p < .001$). This indicates that districts with a higher proportion of Native American students are more likely to have a higher percentage of schools with DL programs.

Figure 8

Pearson's r Correlation for Percent Native American & Percent Implemented (with Scatter Plot)

		PercentDLImplemented	PercentNativeAmerican
PercentDLImplemented	Pearson Correlation	1	.599**
	Sig. (2-tailed)		<.001
	N	319	319
PercentNativeAmerican	Pearson Correlation	.599**	1
	Sig. (2-tailed)	<.001	
	N	319	319

**. Correlation is significant at the 0.01 level (2-tailed).



Conversely, there was a strong, negative and statistically significant correlation between the percentage of implemented DL programs and the percentage of White students ($r = -0.552$, p

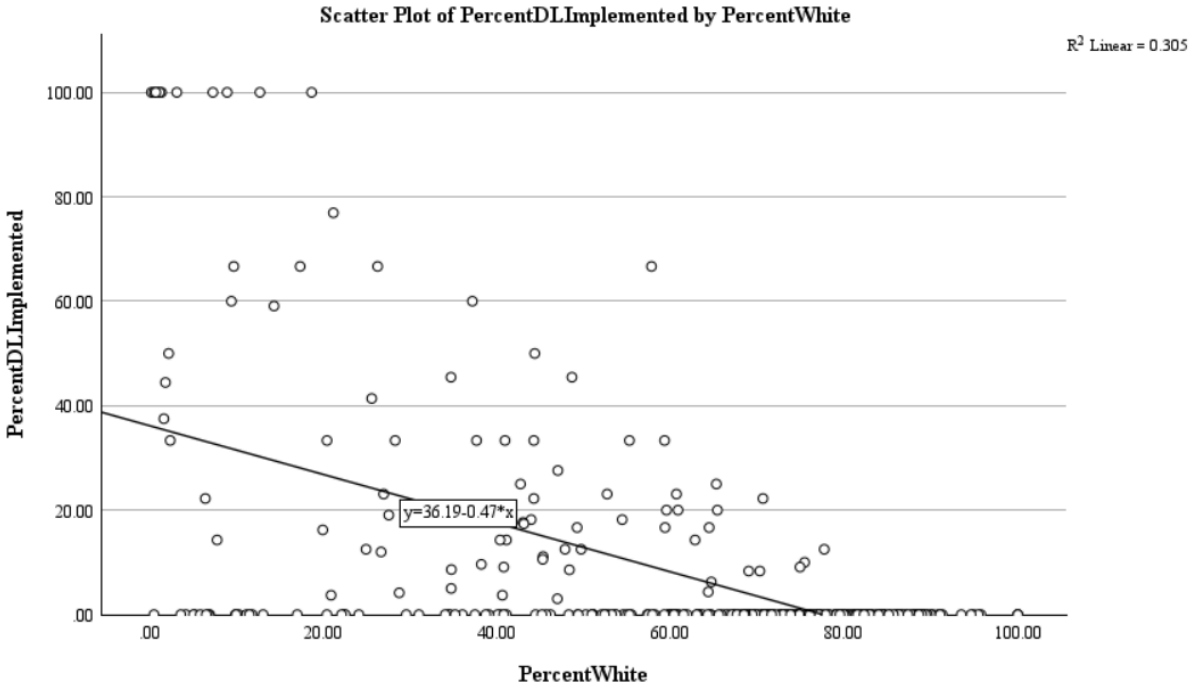
< .001). This finding suggests that as the percentage of White students increases in a district, the percentage of schools with DL programs in a district tends to decrease.

Figure 9

Pearson's r Correlation for Percent White & Percent Implemented (with Scatter Plot)

		PercentDLImplemented	PercentWhite
PercentDLImplemented	Pearson Correlation	1	-.552**
	Sig. (2-tailed)		<.001
	N	319	319
PercentWhite	Pearson Correlation	-.552**	1
	Sig. (2-tailed)	<.001	
	N	319	319

**. Correlation is significant at the 0.01 level (2-tailed).



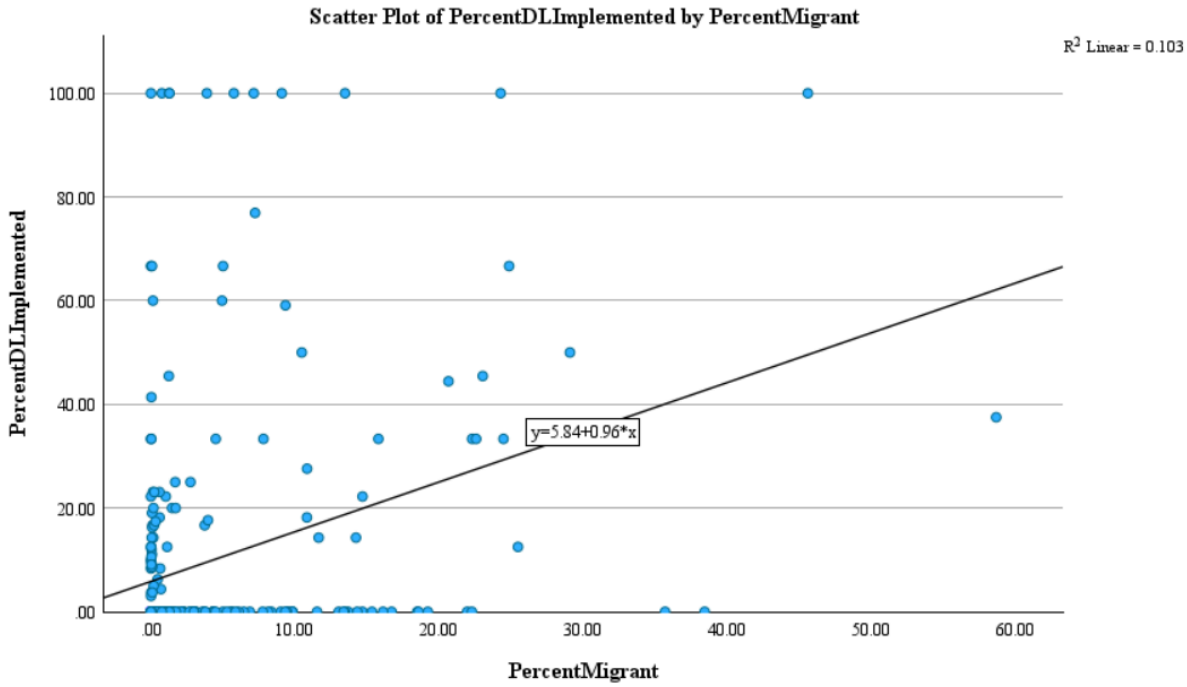
A moderate, positive and statistically significant correlation was found between the percentage of implemented DL programs and the percentage of migrant students ($r = 0.321$, $p <$ .001). This finding suggests that districts with a higher percentage of migrant students are moderately more likely to have DL programs implemented in their schools. The scatter plot below (Figure 10) depicts this trend.

Figure 10

Pearson's r Correlation for Percent Migrant & Percent Implemented (with Scatter Plot)

PercentDLImplemented	Pearson Correlation	1	.321**
	Sig. (2-tailed)		<.001
	N	319	319
PercentMigrant	Pearson Correlation	.321**	1
	Sig. (2-tailed)	<.001	
	N	319	319

**. Correlation is significant at the 0.01 level (2-tailed).



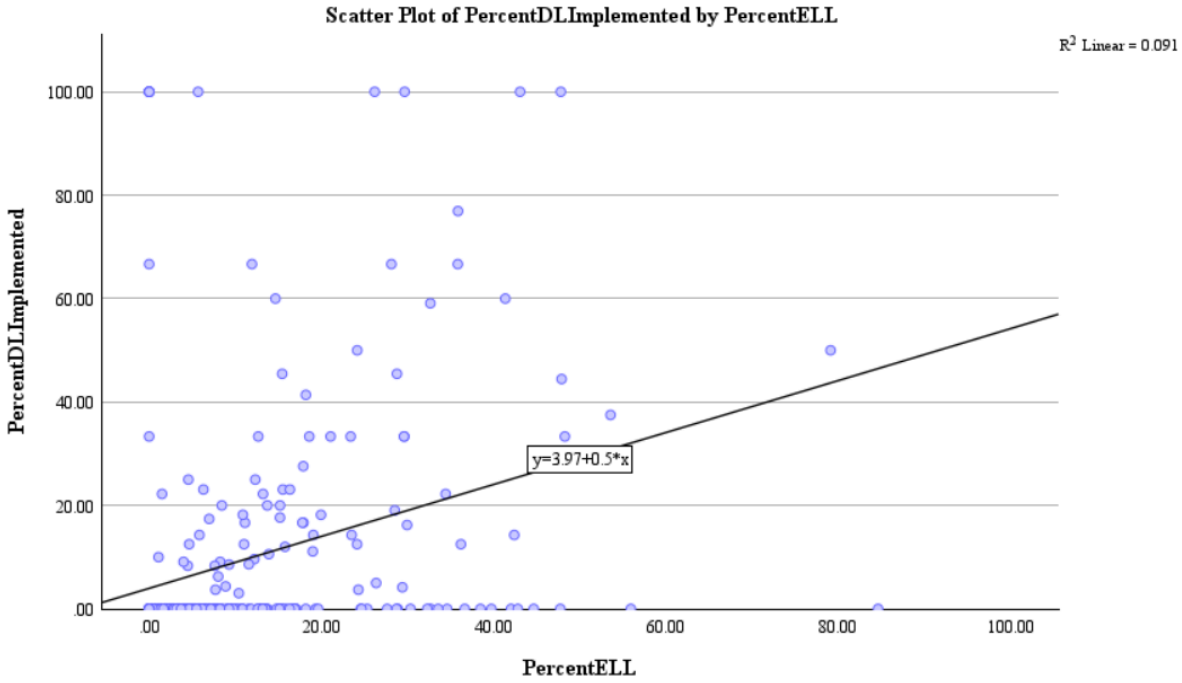
Similarly, a moderate, positive and statistically significant correlation was identified between the percentage of implemented DL programs and the percentage of ELL students (r = 0.302, $p < .001$). This indicates that districts with a higher percentage of ELL students are moderately more likely to have DL programs. The scatter plot below (Figure 11) visually represents this relationship.

Figure 11

Pearson's r Correlation for Percent ELL & Percent Implemented (with Scatter Plot)

		PercentDLImplemented	PercentELL
PercentDLImplemented	Pearson Correlation	1	.302**
	Sig. (2-tailed)		<.001
	N	319	319
PercentELL	Pearson Correlation	.302**	1
	Sig. (2-tailed)	<.001	
	N	319	319

**. Correlation is significant at the 0.01 level (2-tailed).



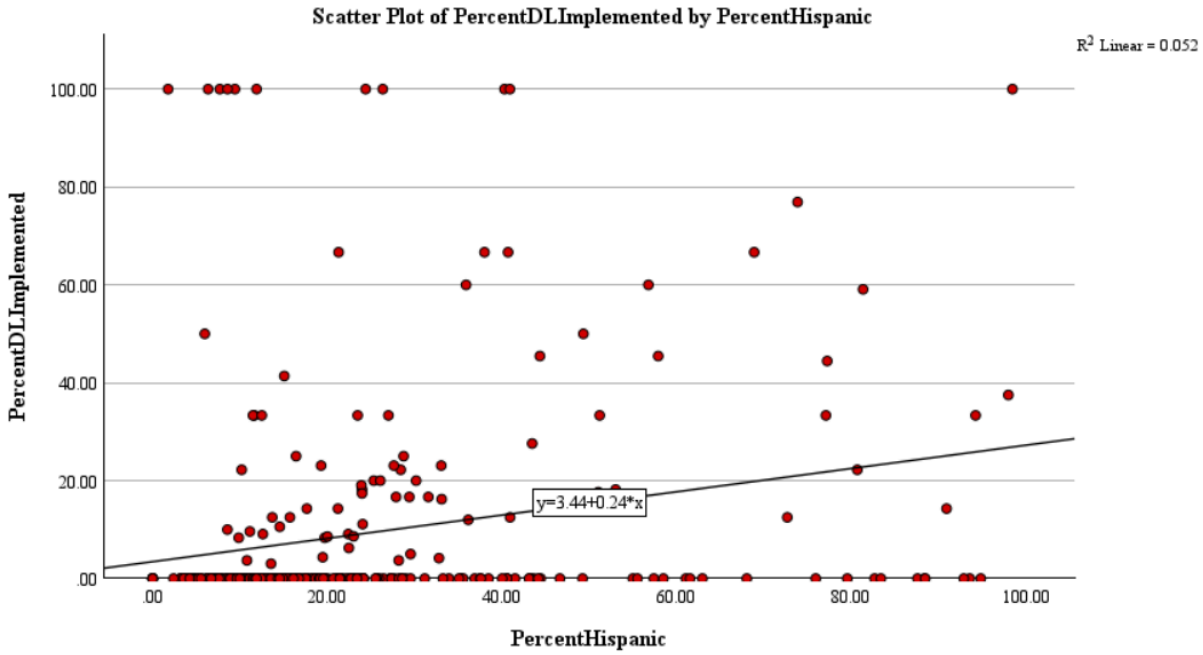
A weak, positive and statistically significant correlation was found between the percentage of implemented DL programs and the percentage of Hispanic students ($r = 0.229$, $p < .001$). While statistically significant, this relationship is not as strong as the others, suggesting that districts with a higher percentage of Hispanic students have a slightly higher tendency to implement DL programs. The scatter plot for this correlation is represented below (Figure 12).

Figure 12

Pearson's r Correlation for Percent Hispanic & Percent Implemented (with Scatter Plot)

		PercentDLImplemented	PercentHispanic
PercentDLImplemented	Pearson Correlation	1	.229**
	Sig. (2-tailed)		<.001
	N	319	319
PercentHispanic	Pearson Correlation	.229**	1
	Sig. (2-tailed)	<.001	
	N	319	319

**. Correlation is significant at the 0.01 level (2-tailed).



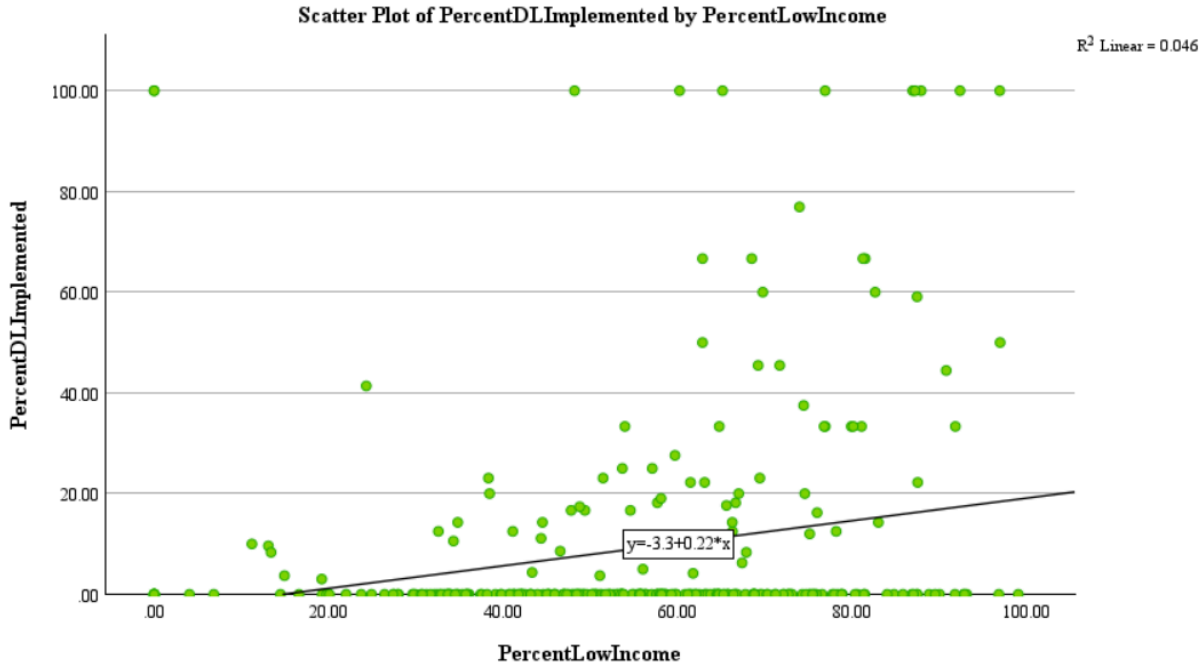
The analysis also revealed a weak, positive and statistically significant correlation between the percentage of implemented DL programs and the percentage of low-income students ($r = 0.215$, $p < .001$). This result, while statistically significant, indicates a minimal linear relationship between these two variables. The scatter plot below (Figure 13) shows this weak trend.

Figure 13

Pearson's r Correlation for Percent Low-Income & Percent Implemented (with Scatter Plot)

		PercentDLImplemented	PercentLowIncome
PercentDLImplemented	Pearson Correlation	1	.215**
	Sig. (2-tailed)		<.001
	N	319	319
PercentLowIncome	Pearson Correlation	.215**	1
	Sig. (2-tailed)	<.001	
	N	319	319

**. Correlation is significant at the 0.01 level (2-tailed).



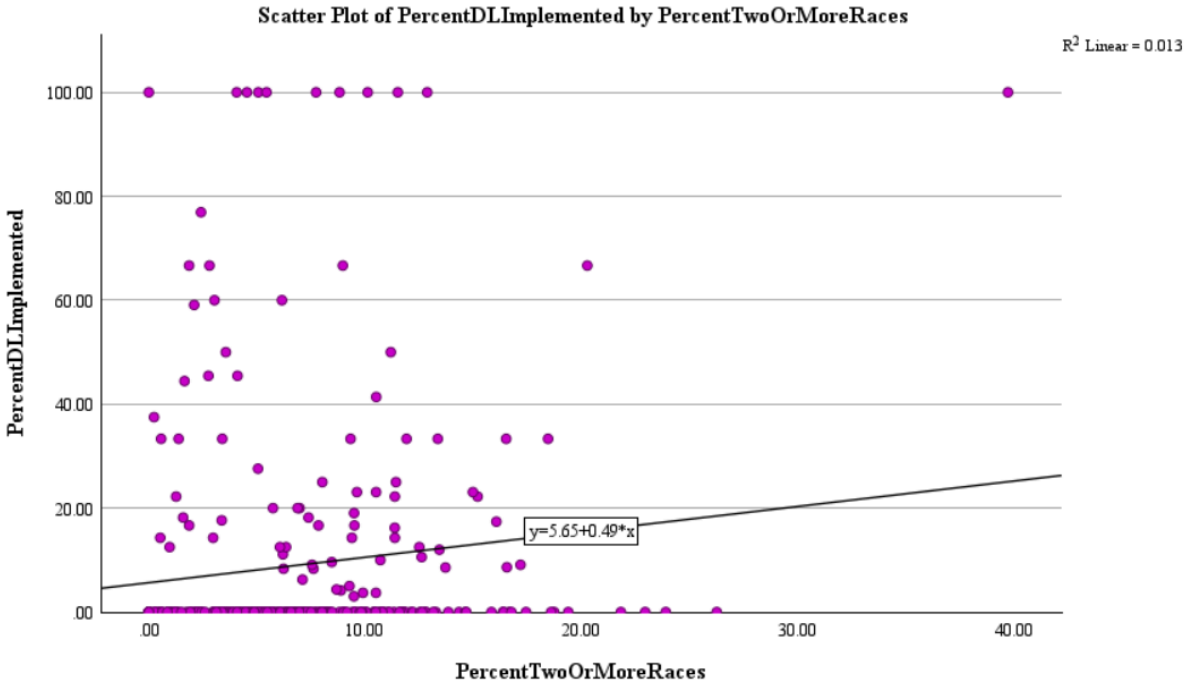
Finally, a very weak, positive and statistically significant correlation was found between the percentage of implemented DL programs and the percentage of students identifying as two or more races ($r = 0.114$, $p < .041$). While this result is statistically significant at the 0.05 level, the correlation is very weak. The scatter plot below (Figure 14) shows this very minimal linear trend.

Figure 14

Pearson's r Correlation for Percent Two Or More Races & Percent Implemented (with Scatter Plot)

		PercentDLImplemented	PercentTwoOrMoreRaces
PercentDLImplemented	Pearson Correlation	1	.114*
	Sig. (2-tailed)		.041
	N	319	319
PercentTwoOrMoreRaces	Pearson Correlation	.114*	1
	Sig. (2-tailed)	.041	
	N	319	319

*. Correlation is significant at the 0.05 level (2-tailed).

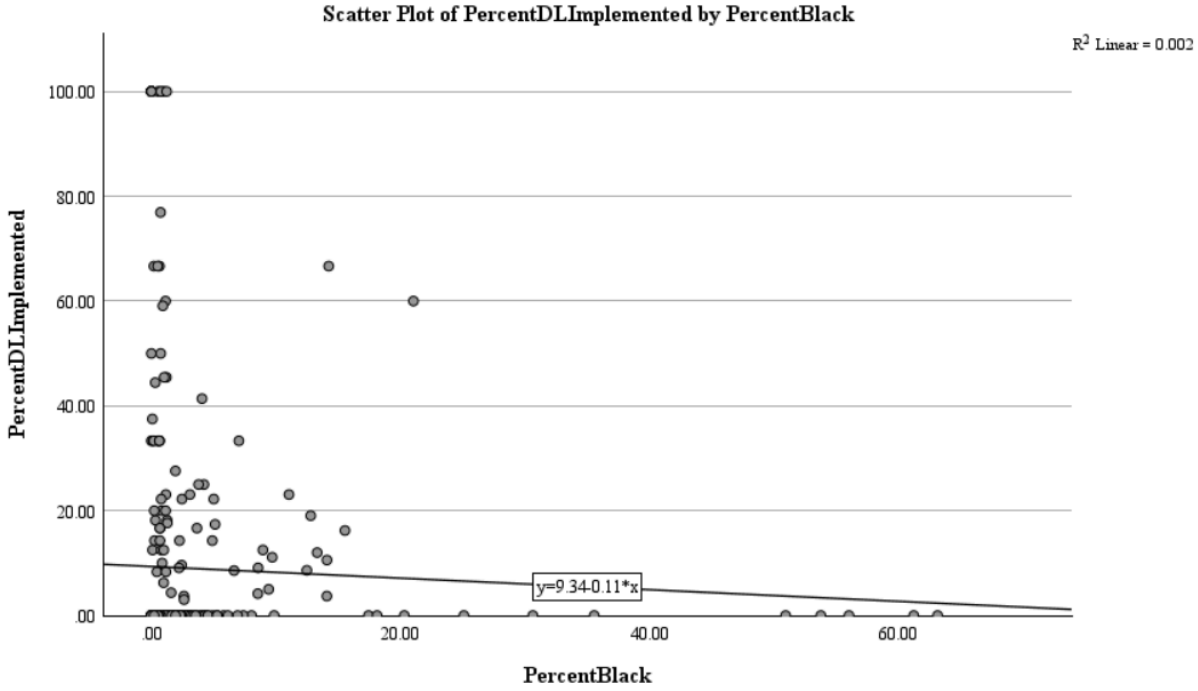


For the demographics that showed no statistical significance, there is an extremely low, negative correlation found between the percentage of implemented DL programs and the percentage of Black students (r = -0.041, p < .467). The correlation is very weak, and there is no statistical significance. This is illustrated in Figure 15 below.

Figure 15

Pearson's R Correlation for Percent Black and Percent DL Implemented (with Scatter Plot)

		PercentDLImplemented	PercentBlack
PercentDLImplemented	Pearson Correlation	1	-.041
	Sig. (2-tailed)		.467
	N	319	319
PercentBlack	Pearson Correlation	-.041	1
	Sig. (2-tailed)	.467	
	N	319	319

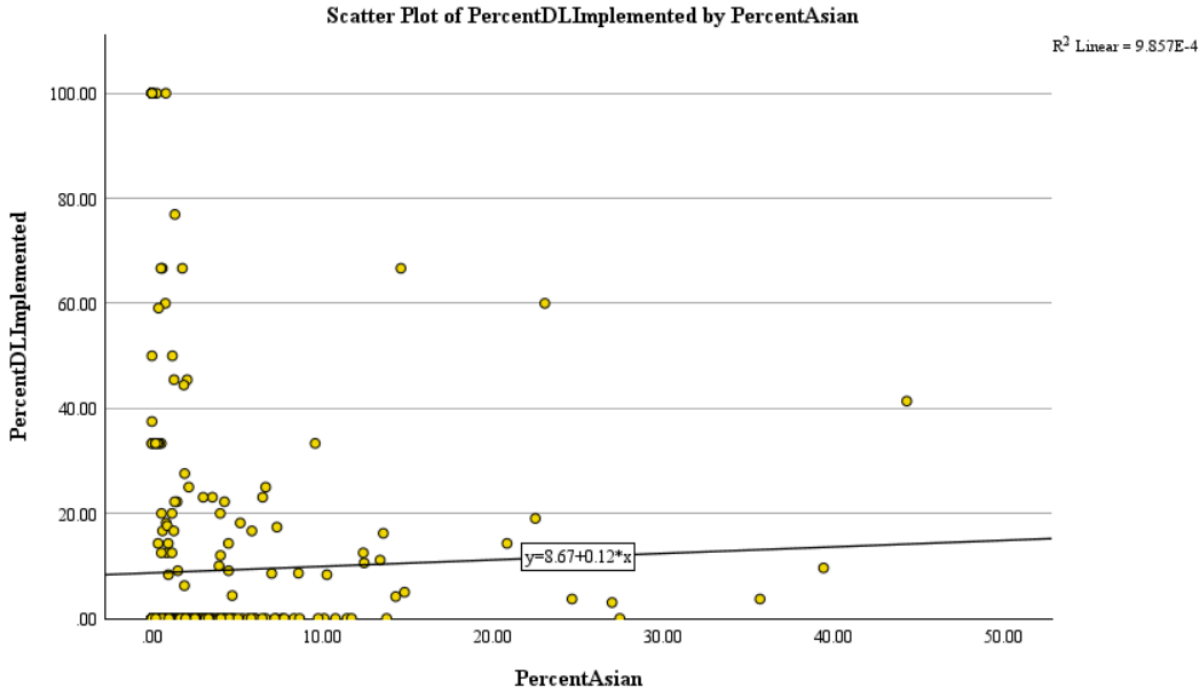


Lastly, there was an extremely weak, positive, statistically insignificant correlation between the percentage of DL programs implemented and the percentage of Asian students (r = 0.031, p < .576). The correlation is very weak, and there is no statistical significance. This is illustrated in Figure 16 below.

Figure 16

Pearson's R Correlation for Percent Asian and Percent DL Implemented (with Scatter Plot)

		PercentDLImplemented	PercentAsian
PercentDLImplemented	Pearson Correlation	1	.031
	Sig. (2-tailed)		.576
	N	319	319
PercentAsian	Pearson Correlation	.031	1
	Sig. (2-tailed)	.576	
	N	319	319



Further, a multivariate logistic regression model was employed to identify which district-level characteristics independently predict the likelihood of a district implementing a DL program. The model, as presented in Table 4, revealed that the percentage of Native American students was a highly significant predictor ($p < .001$), with a positive odds ratio (Exp(B) = 1.065), and the percentage of Hispanic students also emerged as a significant positive predictor ($p = .031$), with a positive odds ratio (Exp(B) = 1.039). The model also found that the total number of schools was a significant predictor ($p = .020$) with a positive odds ratio (Exp(B) = 1.293). These findings suggest that even when controlling for other demographic factors, the presence of Native American, Hispanic, and a larger number of schools remain as key independent predictors of DL program implementation.

Table 4

Logistic Regression Analysis of District Characteristics as Predictors of DL Program Implementation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	PercentELL	.023	.024	.935	1	.334	1.024	.976	1.073
	PercentHispanic	.038	.018	4.640	1	.031	1.039	1.003	1.076
	PercentLowIncome	.002	.013	.036	1	.849	1.002	.978	1.027
	PercentHomeless	.015	.030	.234	1	.628	1.015	.957	1.076
	PercentMigrant	.007	.030	.062	1	.803	1.007	.951	1.067
	PercentNativeAmerican	.063	.012	26.508	1	<.001	1.065	1.040	1.091
	PercentAsian	.106	.057	3.496	1	.062	1.112	.995	1.242
	PercentBlack	-.052	.056	.854	1	.355	.949	.850	1.060
	PercentHawaiian	.208	.171	1.484	1	.223	1.231	.881	1.721
	PercentTwoOrMoreRaces	.089	.042	4.505	1	.034	1.093	1.007	1.187
	Total Number of Schools	.257	.110	5.408	1	.020	1.293	1.041	1.605
	All Students	.000	.000	1.003	1	.317	1.000	.999	1.000
	Constant	-5.363	.847	40.098	1	<.001	.005		

[a]. Variable(s) entered on step 1: PercentELL, PercentHispanic, PercentLowIncome, PercentHomeless, PercentMigrant, PercentNativeAmerican, PercentAsian, PercentBlack, PercentHawaiian, PercentTwoOrMoreRaces, Total Number of Schools, All Students.

In summary, the district-level analysis revealed several key findings regarding DL program implementation in Washington state. The paired-samples t-test confirmed a significant disparity in the number of schools with and without DL programs. Bivariate correlation analysis demonstrated strong associations between implementation rates and the racial and ethnic demographics of a district, particularly with Native American and White student populations. The multivariate logistic regression further specified that, even when controlling for other factors, the presence of Native American and Hispanic students, as well as the total number of schools in a district, remain as key independent predictors of DL program implementation. These findings provide a robust understanding of the demographic and structural factors associated with the adoption of DL programs at the district level.

School-Level Analysis

The school-level analysis conducted a series of one-way analyses of variance (ANOVA) to compare the demographic profiles of schools offering different types of Spanish DL programs. The analysis focused on the overall student population of the schools themselves, not specifically the students enrolled in the DL programs, as such information is not publicly accessible. The analysis was conducted in two parts: first by Program Type (One-Way, Two-Way, and World Language Immersion), and second by Program Model (90-10, 80-20, 70-30, and 50-50). The goal of this analysis was to identify whether there are statistically significant differences in the demographic makeup of schools based on the type of DL program they implement.

Differences Between DL Program Types

The first analysis compared the demographic profiles of schools based on their program type: One-Way, Two-Way, and World Language Immersion. The descriptive statistics revealed a clear pattern in the demographic composition of these schools, as illustrated in the summary table below.

Table 5

Descriptive Statistics of School-Level Demographics by Program Type

Program Type	Average White %	Average Hispanic %	Average ELL %	Average low-income %
One-Way DL	14.8%	79.4%	50.4%	83.5%
Two-Way DL	26.3%	51.9%	35.3%	68.0%
World Language	41.6%	23.6%	11.5%	24.5%

Note. For the full descriptive statistics, please refer to Appendix E, Table E1.

As the table shows, schools with World Language Immersion programs have, on average, the highest percentage of White students and the lowest percentages of Hispanic, ELL, and

low-income students. Conversely, schools with One-Way DL programs have the highest percentages of Hispanic, ELL, and low-income students.

Inferential Findings

An ANOVA was conducted to determine if these differences in the mean percentages were statistically significant–meaning they are unlikely to be due to random chance. The analysis revealed that the differences for all four demographic variables were statistically significant ($p < .05$). To understand which specific program types were different from each other, a post-hoc test was conducted (see Appendix E, Table E2 for full ANOVA results).

The results indicated that a statistically significant difference was found in the average percentage of White students across the three program types, $F(2,114) = 5.69$, $p = .004$. Post-hoc comparisons using the Turkey HSD test (see Appendix E, Table E3) indicated that schools with World Language Immersion programs had a significantly higher percentage of White students than both One-Way and Two-Way programs ($p < .01$). The difference between One-Way and Two-Way programs was not found to be statistically significant.

Similarly, a highly significant difference was found in the average percentage of Hispanic/Latino students, $F(2,114) = 16.37$, $p < .001$. The post-hoc analysis showed that the mean percentage of Hispanic/Latino students was statistically different across all three program types ($p < .05$ for all pairwise comparisons), as also shown in the Homogeneous Subsets table (see Appendix E, Table E4). This suggests that each program type is implemented in schools with a distinctly separate Hispanic/Latino population

The ANOVA also revealed a highly significant difference in the average percentage of ELL students, $F(2,114) = 10.21$, $p < .001$. Post-hoc tests showed that World Language Immersion programs had a significantly lower percentage of ELL students than both One-Way

and Two-Way programs ($p < .01$). The difference in ELL population between One-Way and Two-Way programs was not found to be statistically significant.

Finally, a highly significant difference was also found in the average percentage of low-income students, $F(2,114) = 18.59$, $p < .001$. Similar to the Hispanic/Latino population, post-hoc comparisons indicated a statistically significant difference between all three program types, with each program model implemented in schools with a distinct population of low-income students ($p < .05$ for all pairwise comparisons).

Differences Between DL Program Models

The second analysis compared the demographic profiles of schools based on their program model (90-10, 80-20, 70-30, and 50-50). The descriptive statistics revealed a clear pattern, as shown in the table below. The table suggests a pattern where schools with the 50-50 model have the highest percentage of White students and the lowest percentages of Hispanic, ELL, and low-income students. The 90-10 and 70-30 models appear to be implemented in schools with a higher concentration of Hispanic, ELL, and low-income students.

Table 6

Descriptive Statistics of School-Level Demographics by Program Model

Program Model	Average White %	Average Hispanic %	Average ELL %	Average low-income %
90-10	16.1%	75.3%	47.9%	79.0%
80-20	26.3%	51.9%	35.3%	68.0%
70-30	14.5%	80.9%	52.3%	85.0%
50-50	38.3%	36.3%	24.7%	45.4%

Note. For the full descriptive statistics, please refer to Appendix E, Table E6.

Inferential Findings

An ANOVA and post-hoc tests were performed to confirm these findings. The analysis revealed that the mean percentages for all four demographic variables were significantly different across the program models.

For White students, the results showed that schools with a 50-50 program model had a significantly different White student population than schools with any of the other models. For Hispanic and low-income students, a clear split was found. The schools with 90-10 and 70-30 models were grouped together as having statistically similar populations, while the schools with the 50-50 and 80-20 models formed a second group (see Appendix E, Table E8 for post-hoc results and Table E9 for homogeneous subsets). This suggests that the schools implementing traditional models have significantly different Hispanic and low-income populations than those with more balanced models. A similar pattern was observed for ELL students, where the 90-10 and 70-30 models were grouped together and found to be significantly different from the 50-50 and 80-20 models.

The school-level analysis provides definitive statistical evidence to support the claim that different types of Spanish DL programs and specific program models are implemented in schools that have distinct types of demographically different student populations. A consistent pattern emerges from the finding of both analyses. Specifically, the data indicate that World Language Immersion programs and the 50-50 program model are implemented in schools with a significantly higher percentage of White students and a significantly lower percentage of Hispanic, ELL, and low-income students compared to the other program models. This cross-analysis suggests a clear stratification of student demographics across DL program offerings.

Conclusion

This study embarked on a comprehensive, multi-level investigation into the landscape of DLE in Washington State, with the goal of exploring the relationship between the program's policy discourse and the demographic reality of its implementation. The research, which employed a critical analysis of state-level policy, geospatial mapping, and quantitative analyses at both the district and school levels, yields a powerful and cohesive conclusion that a fundamental tension exists between the foundational, equity-driven purpose of DL programs and a subtle, but pervasive, discourse that reorients these programs to serve the interests of native English speakers. The data across all four levels of analysis demonstrates that this discursive shift is not benign; it actively contributes to a two-tiered system of DLE that reinforces existing racial and socioeconomic divides, marginalizing the very students the programs were originally intended to serve.

The intellectual foundation of this stratification is rooted in the state's promotional and policy materials. The qualitative analysis of these documents reveals a departure from the program's original legislative intent, which was clearly articulated to support the academic and linguistic needs of language-minoritized students. In place of this equity-focused mission, a more market-driven discourse emerges, framing bilingualism as a form of globalized human capital and promoting its benefits for "all students." This theoretical shift is a form of whitestreaming, where the program's value is increasingly defined by its perceived advantages to the dominant linguistic group. The unscrutinized use of the term "immersion" and the explicit mention of "native English speakers" in guidance documents further reveal a reorientation of the program's purpose. Most critically, the public-facing promotion of the 50/50 program model for its "ease of acceptance" represents a form of policy expropriation, prioritizing the comfort and buy-in of

English-monolingual families over the pedagogical needs of multilingual students. This conclusion is further solidified by the policy's subtle contradictions, such as the discrepancy between internal guidance that allows for a 30% minimum of multilingual learners in Two-Way programs, and the public-facing promise of "at least half" of the seats being saved for MLs. This policy ambiguity provides the fertile ground for program implementation to be shaped by market forces rather than by an unwavering commitment to linguistic justice.

The most profound outcome of this discursive shift is the proliferation and co-option of Two Way DL programs, particularly the 50/50 instructional model. As the Literature Review and school-level analysis found, these programs, which are designed to serve both native English speakers and MLs, are uniquely susceptible to whitestreaming. The 50/50 model, in particular, is an attractive option for English-monolingual families because it offers a significant amount of English instruction time while simultaneously providing an *immersive* environment where multilingual peers serve as a linguistic resource. This appeal, however, creates a self-reinforcing cycle where the demand from families with greater cultural capital drives the implementation of these specific program models, as seen in the school-level data which found that schools with the 50/50 model have a significantly higher percentage of White students.

This creates a deeply problematic dynamic where multilingual students are placed in a position to have their language and culture *consumed* by their English-speaking peers, compromising the academic rigor and equity of the program. This is safely assumed to be due to the DL implementor's guide provided by OPSI, where they actively promoted 50/50 instructional models as the most appealing model, without taking into consideration the parental demographics of each county, district, or school and what the parents' preference might be for

their own children. It gives free rein for school districts to prioritize these programs towards the majority, to whom the program was not originally intended for.

The tangible results of this discursive and program-model shift is a statewide pattern of geographic and socioeconomic disparity. The geospatial analysis provides a powerful visual testament to this reality, illustrating that DL program implementation is a complex function of a community's wealth, diversity, and political capital. The stark contrast between King County and Adams County serves a definitive example of this stratification. King County, the wealthiest in the state with a diverse but not leading non-White population (45.66%), has a significant DL implementation rate (15.36%) that includes a high concentration of Spanish Two-Way 50/50 programs (28 programs). This data suggests that the wealth and associated cultural capital in King County are the primary drivers for implementing the specific programs that appeal to its dominant linguistic group. In sharp contrast, Adams County, the most diverse county in the state (67.91%), is also among the lowest earners. This lack of economic and political capital translates into an extremely low DL implementation rate (6.66%), with only a single Two-Way DL program. This compelling juxtaposition demonstrates that diversity alone is insufficient to drive the implementation of DL programs; it is coupled with the economic and political power to demand and sustain them.

This systemic stratification is further substantiated by the district-level quantitative analysis, which found a strong negative correlation between DL program implementation and the percentage of White students and a strong positive correlation with the percentage of Native American and Hispanic students when taking a look at all the different types of DL programs. This comes to no surprise since the most popular program, the Heritage program, coupled with the Tribal and One-Way programs comprise a total of 173 programs (55.5%). These programs in

their nature are designed specifically to serve multilingual students. The data conclusively shows that DL programs are not universally accessible; rather their distribution is a function of racial and socioeconomic variables. The confluence of these findings indicates that the policy's discursive shift, which prioritizes the interests of native English speakers, has created a system that systemically directs DL programs toward specific communities, leaving others without equitable access.

The findings of this study provide a direct and comprehensive answer to the research questions that guided this investigation. First, regarding whether there are indicators of White appropriation in the state's promotional language, the qualitative analysis of the state policy documents and promotional materials provides a definitive *yes*. This is evidenced by the shift in discourses from serving the equity needs of language-minoritized students to framing bilingualism as a form of globalized human capital for the benefit of "all students." Second, in response to how school demographics, including racial/ethnic and socioeconomic factors, differ across the various types and instructional models of DL programs, the quantitative analysis demonstrates that they differ significantly and systematically. Specifically, schools with World Language Immersion programs and the 50/50 Two-Way model serve a significantly higher percentage of White students and a lower percentage of Hispanic, ELL, and low-income students. Conversely, One-Way programs are implemented in schools with the highest percentage of Hispanic, ELL, and low-income students.

The geospatial analysis further revealed that affluence is a key stratifying factor. While World Language Immersion programs are found almost exclusively in high-wealth communities, the contrast between King and Adams counties serves as a powerful illustration. King County, the wealthiest county, has a higher number of Two-Way 50/50 programs, whereas the highly

diverse but low-income Adams County has almost no programs at all. This shows that the presence of specific DL programs is a function of both demographics and a community's economic and political capital. These compelling findings set the stage for a critical discussion of the broader implications for the future of DLE in Washington State and beyond.

Implications and Discussion

Building upon these findings, a critical discussion of the promise and peril of DL education in Washington State becomes possible, as the data reveals profound implications for both current policy and future societal shifts.

This study critically analyzed Washington State's DL program promotional and foundational materials, applying the framework developed by Freire et al. (2022)–encompassing whitestreaming, English hegemony, and globalized human capital. By extending their foundational work on the Utah DLBE Model to a new context, this research provides new empirical evidence of how original equity-driven intentions are gradually reconfigured within a different state's legislative, administrative, and public-facing documents. The observed tendencies towards whitestreaming, English hegemony, and globalized human capital discourse, while seemingly inclusive and progressive, demand further assessment of the actual implementation patterns through public schools within the state. The shifts identified in the language and framing of the DL program carry significant implications for its core purpose and for language-minoritized communities. The tendency to generalize benefits to "all Washington students" through the "world language" discourse, as identified in statutory law and promotional materials, effectively erases the unique needs and historical foundational purposes of bilingual education for language-minoritized students in the U.S**.** This reframing, while massifying appeal, inadvertently dilutes the program's original mission, which was rooted in nurturing linguistic

equity and supporting the academic success of students whose primary language is other than English.

Furthermore, the explicit inclusion of "native English speakers" as key beneficiaries in OSPI guidance, alongside the consistent and often uncritical use of the term "immersion" for all students, carries profound implications for English hegemony. When multilingual learners' existing linguistic assets are framed primarily as a resource to be cultivated for the benefit of English-privileged students, it implicitly positions English as the default linguistic norm and bolsters existing power imbalances. This approach contributes to a dynamic where the well-intentioned initiative is reshaped to serve broader interests, potentially dispossessing or marginalizing the very language-minoritized communities it was historically designed to uplift. The prominence of the globalized human capital discourse, emphasizing economic competitiveness for "all Washington students," signifies a wider shift in educational priorities. While multilingualism certainly offers economic advantages, framing DL education predominantly through this lens risks transforming a program designed for equity into one that primarily serves neoliberal interests. This perspective can subtly overshadow the historical imperative to address educational disparities and promote linguistic diversity for its inherent value, rather than solely for its marketability.

Beyond these broad conceptual shifts, a closer examination of specific enrollment guidelines reveals a critical numerical discrepancy. The identified discrepancy between OSPI's public commitment to prioritizing at least 50% of seats for multilingual learners and the internal guideline allowing for a 30% minimum raises critical questions about the program's practical implementation and its underlying priorities. One must consider why such a divergence exists in

official guidance, instead of a more cohesive and clearly defined minimum, such as 40% or even the publicly stated 50%, for multilingual students in two-way DL programs.

From a pedagogical standpoint, allowing a lower threshold of MLs, such as 30% in a two-way model, can significantly compromise the very benefits such programs purport to offer. Such a demographic imbalance, where English-monolingual students constitute a substantial majority (e.g., 70%), risks diluting the richness of the linguistic and cultural environment for all participants. While English-dominant students still gain the notable advantage of acquiring a new language, their opportunity to genuinely immerse themselves in and gain robust exposure to the partnered language and its associated cultures is diminished without sufficient representation from heritage speakers. Crucially, however, the disadvantage is far more profound for the multilingual learners themselves. This imbalance can be particularly detrimental: instructors, faced with a majority of English-monolingual students, may inadvertently "water down" the partner language curriculum or instruction to accommodate the dominant group, thereby severely limiting the depth of linguistic and academic development for those students who are intended to thrive in their primary language.

This raises the critical question of why a higher, more pedagogically sound minimum—such as 40% or the publicly articulated 50%—is not uniformly mandated across all implementation guidelines. If optimal student ratios for a true two-way immersion model cannot be met within a specific context, alternative program designs like One-Way DL or World Language Immersion are available. These models are specifically designed to cater to different student compositions, which further underscores that the allowance of a 30% minimum in Two-Way programs is a deliberate policy choice rather than a practical necessity born of limited options.

This strategic ambiguity or flexibility in enrollment targets, therefore, appears to align with a whitestreaming approach, where the program's design implicitly accommodates the comfort and perceived marketability to the dominant English-speaking population. It subtly redefines the program's "success" to include broader appeal, potentially at the expense of the intensive linguistic and cultural immersion vital for both robust language development and true equity. This practice suggests elements of policy expropriation, where the original, explicit commitment to language-minoritized students is diluted through operational leniency, allowing the program's core purpose to be subtly reconfigured to serve broader, perhaps more politically expedient, interests.

It is crucial to acknowledge that the observed policy characteristics—such as the flexible enrollment minimums, the emphasis on English acquisition for all, and the pursuit of broad program appeal—could be interpreted from a more sympathetic, pragmatic viewpoint. Proponents might argue that these elements represent necessary adaptations to real-world challenges, such as recruiting sufficient numbers of language-minoritized students in some areas, or responding to high parental demand from English-speaking families seeking an additional language for their children. The 30% minimum, in this view, could be seen as a practical threshold to enable programs to launch, while the 50% target serves as an aspirational goal for optimal balance. Furthermore, the focus on English proficiency could be framed as a pragmatic response to the undeniable global importance of English and parents' legitimate desires for their children's economic competitiveness. However, while these interpretations offer a different lens, they do not negate the underlying issues when viewed through the analytical framework of DLBE and the principles advanced by scholars like Freire et al. (2022).

Even if unintentional, such pragmatic adaptations can nonetheless perpetuate whitestreaming and English hegemony. Prioritizing broad appeal or "flexibility" that often results in English-dominant majorities implicitly centers the needs and comfort of the dominant linguistic group, subtly shifting the program's focus away from its foundational purpose of linguistic equity for language-minoritized students. As Freire et al. (2022) contend, genuine liberation and educational parity are not achieved by simply providing access to the dominant language; they require the affirmation and sustained development of heritage languages and cultures. When programs designed for linguistic equity implicitly or explicitly prioritize marketability or the acquisition of the dominant language above the robust maintenance and development of the minority language, they risk becoming instruments of policy expropriation, subtly re-aligning with existing power structures rather than challenging them. The potential for "watering down" the curriculum for the partner language, as discussed, is a direct manifestation of this subtle re-prioritization, demonstrating how practical compromises can inadvertently undermine the very linguistic assets they claim to value.

Additionally, by taking into consideration the study mentioned in the Literature Review, where White parents, which only constituted for 18% of the whole parent-body within a DL program, had gone out of their way to "work sneakily around families of color at the school and DL programming levels toward creating greater access to DL and education more broadly," the idea that the program model recommendations for OSPI are appealed towards English-monolingual parents does not seem that far fetched (Blanton et al., 2021). White parents are increasingly found to be the most active when it comes to opportunity hoarding, especially when they come from affluent communities, and the geospatial analysis demonstrated that within the counties that were high earning and had a decent percentage of diversity, they were the most

likely to implement a Two-Way DL program, in comparison to high-earning counties with lower-levels of diversity which were found to have World Language Immersion programs (e.g. Island County). Therefore, this system is driven by the appeal towards English-monolingual families due to their specific program types and models (e.g.50/50 Two-Way) that position bilingualism as a competitive advantage, often at the expense of multilingual students. The ultimate consequence is that DL programs, particularly in Two-Way models, may be inadvertently reinforcing the very linguistic and racial hierarchies they were originally designed to dismantle.

The need for justice for MLs within DL programs becomes further stressed when taking into consideration Washington State's own legislative goals. Through House Bill 1228, the legislature has set an ambitious goal to "annually fund at least 10 new dual language education programs… so that all school districts that want to may offer a program by 2040," with the explicit aim of building a "multilingual, multiliterate Washington." However, this seemingly noble goal is in direct conflict with the findings of this study, which reveal that the current system is neither accessible nor equitable. The state's own reports have consistently acknowledged the severe barriers to this expansion, most notably the insufficient number of bilingual educators and the vulnerability of funding. Simply scaling a flawed system will not address the systemic stratification identified in this research; instead, it risks perpetuating the two-tiered model of DL education. OSPI explicitly states that the number one reason as to why not all the districts in Washington can implement a DL program is because of the lack of funding to support "workforce development through incentives for bilingual teachers and paraeducators" (OSPI, 2019; 2023) as they are constantly having issues with maintaining DL instructors.

The scarcity of instructors becomes even more of an issue when viewed through the lens of climate change. As climate change and global warming are increasingly constraining habitable land, global collaboration becomes essential for human survival and progress. The escalating heat is predicted to hit harder in southern regions of the world, which in turn is projected to trigger significant northward migration within the U.S. and, more profoundly, a surge of migration from Latin American countries, which will be among the worst affected by climate change due to being third world countries (World Bank, 2018). Despite historical anti-immigration sentiments, the U.S. has a strategic opportunity to gain substantial economic and social benefits by proactively integrating this impending demographic shift (Migration Policy Institute, 2024). However, the findings of this study suggest that the current system of DLE is ill-equipped for this challenge, or at worst mainly equipped to further privilege the privileged. Instead of preparing for a future workforce that will be increasingly multilingual, the current DL system is designed to meet the demands of affluent, English-monolingual families. The two-tiered system uncovered in this research, where programs are stratified by race and socioeconomic status and co-opted to serve the dominant linguistic group, represents a profound failure to foresight. Therefore, understanding the subtle shifts in rhetoric and policy framing is crucial for ensuring that DL programs genuinely serve their intended beneficiaries and do not inadvertently perpetuate inequities. Future research, particularly focusing on the lived experiences of language-minoritized students and families within these programs, is vital to fully grasp the on-the-ground impact of these observed policy characteristics and better serve these communities who had historically been marginalized.

Lastly, opening up a small space for speculation, based on the findings on the correlation analysis conducted in this study within the district-level analysis, it was identified that Black and

Asian students had no statistical significance found in their extremely low correlations with DL program implementation, where Black student percentages were found to show a negative correlation ($r = -0.041$, $p = .467$) and Asian student percentages were found to show a positive correlation ($r = 0.031$, $p = .576$). This stands in stark contrast to the statistically significant, albeit weak, positive correlation observed for Hispanic students ($r = 0.215$, $p < .001$). A plausible hypothesis for this discrepancy lies in the linguistic diversity within the Asian categorization. White the categorization of Hispanic students also encompasses a wide variety of countries of origin, just like the Asian categorization, the Hispanic categorization unites a common linguistic foundation, which is the Spanish language.

This linguistic unity may lend credence to the higher correlation with the implementation of Spanish-focused DL programs (and DL programs overall). Conversely, the category of Asian students is an extremely broad classification that includes a multitude of distinct language groups (e.g. Mandarin, Vietnamese, Tagalog), each with unique linguistic needs. Because DL programs are language-specific, a program serving Mandarin-speaking students would not necessarily be relevant to students from other Asian language backgrounds. This inherent diversity within the Asian category, therefore, may dilute any potential correlation, as the implementation of a specific DL program would only serve a small subset of this larger demographic.

This finding underscores the inadequacy of broad ethnic and racial categories when analyzing the specific linguistic needs that DL programs are intended to address, providing further evidence of how generalized policies can inadvertently fail to serve specific language-minoritized communities. It is puzzling to find that as Black student percentages show a negative correlation with DL program implementation, given that there was a statistically significant, moderately positive correlation between the percent of Black students and the

percent of ELL students ($r = 0.255$, $p < .001$) (Appendix D, Table D1). It is also found that the correlation between the percentage of Asian students and percentage of ELL students was statistically significant, yet weakly positive correlation ($r = 0.150$, $p < .001$) (Appendix D, Table D2). This could be due to many things, one of them being the linguistic nature of these aggregated categorizations, as it blurs out the linguistic needs of students with different countries of origin when they are simply lumped as Black or Asian.

Recommendations

Based on the critical analysis of the Washington State DL program's promotional materials and policy framing it is evident that a reorientation is needed to safeguard the program's foundational mission of linguistic equity for language-minoritized communities. The observed shift towards economic utility and broader appeal to English-speaking dominant groups, as clarified by the framework of Freire et al. (2022) regarding the expropriation of DLBE, necessitates targeted interventions. The following recommendations are put forth for policymakers to consider, aiming to both address current inequities and guide future research. In general, reforming and straightening up these programs–by removing the whitestreaming and recommitting to an equity-first model–is not just an issue of social justice, but a matter of national strategic importance. DL programs can and must become a subtle yet powerful vehicle for fostering acceptance and preparing the children of these migrants to secure the future of the U.S. workforce.

Firstly, there must be a re-centering of foundational intent in policy language and promotional materials. The revision of state-level policy documents, RCW interpretations, and promotional materials for DL programs in order to explicitly and prominently emphasize their primary goal, which is to foster linguistic equity and academic success for emergent bilingual

students and language-minoritized communities. With the current emphasis on economic utility and broad appeal, there is a risk of alienating or marginalizing the very students the program was initially designed to serve. By re-centering the language on equity, the state can oppose the whitestreaming effect and reinforce the program's original social justice aims. This echoes Freire et al.'s call to deconstruct neoliberal and English-hegemonic narratives that dilute the program's purpose. A specific example of this recommendation can be seen as ensuring that alongside benefits for English speakers, the unique benefits for heritage language maintenance, cultural affirmation, and academic achievement for multilingual learners are equally, if not more, highlighted. For example, instead of solely emphasizing biliteracy for a global workforce, also highlight empowering multilingual learners to thrive academically and culturally in their heritage language.

Secondly, there needs to be an establishment of robust and equitable enrollment guidelines to safeguard linguistic balance, specifically for the Two-Way DL program. The mandate that state-level guidelines for DL program enrollment actively ensures a robust linguistic balance, particularly for the Two-Way DL program which constitutes the vast majority of programs in the state of Washington. This requires a re-evaluation of the current policy, which allows a minimum of 30% for either student group (language-minoritized and English monolinguals). Instead, policies should aim for a closer linguistic parity (e.g., 50% language-minoritized students and 50% English monolingual students) within Two-Way DL programs, while acknowledging the need for flexibility in the very limited cases where a school genuinely cannot meet this balance and must opt for a One-Way DL or World Language Immersion model. While the current minimum of 30% for each student group aims for flexibility, it paradoxically creates a loophole. In practice, this minimal threshold, particularly

when combined with the prevalence of Two-Way DL programs, can lead to scenarios where language-minoritized students constitute only 30% of the program's population, White English monolinguals comprising a disproportionate 70%. This imbalance fundamentally erodes the reciprocal language learning and cultural exchange central to the Two-Way model, effectively shifting the program's benefits disproportionately towards the dominant linguistic group and contributing to the whitestreaming and expropriation that Freire et al. (2022) describe.

By advocating for a more balanced enrollment target, policymakers can ensure that DL programs genuinely foster biliteracy and biculturalism for all participants, rather than merely serving as an enrichment opportunity primarily for English speakers. A way in which this can be seen is through OSPI's revision of its guidance and RCW interpretations to explicitly state that for Two-Way DL programs, the ideal and expected linguistic balance is near parity (e.g., a 50/50 split). Furthermore, if schools genuinely lack the sufficient populations of one student group to sustain a linguistically balanced Two-Way model, this should be reflected not by disproportionate enrollment, but by an increased implementation of One-Way DL programs, which are designed primarily for emergent bilingual students, or World Language Immersion programs, which are focused on language acquisition for English speakers. Data collection on program demographics should be refined to monitor the actual linguistic composition of DL programs at the school level and identify instances where significant imbalances occur.

As for areas of future research, one possible option would be a longitudinal study on program outcomes by student demographics, in which the intent is to identify to what extent do academic, linguistic, and socio-emotional outcomes for students in Washington State's DL programs differ across various racial, linguistic minority, and socioeconomic groups. This longitudinal study would track cohorts of students through DL programs and beyond,

disaggregating data by race, ethnicity, primary language, and socioeconomic status. This would involve collecting quantitative data (e.g., test scores in both languages, graduation rates, college enrollment) and qualitative data (e.g., student and family interviews on experiences of belonging and identity). This research is critical to empirically validate or refute the hypothesis of expropriation. Concrete data on who is truly benefiting from these programs, and in what ways, is essential for evidence-based policy making.

Another possible option would be the analysis of DL program implementation and school-level decision-making, in which the intent is to identify how local school districts and individual schools interpret and implement state DL program guidelines, and what factors (e.g., community demographics, parent advocacy, resource availability) influence these implementation decisions. This would involve case studies of diverse school districts across Washington State, through the employment of mixed methods that includes document analysis of district policies, interviews with administrators, teachers, and parents, and observations of program activities. Policy intentions can diverge significantly from local implementation, therefore, understanding the on-the-ground realities and decision-making processes will reveal potential bottlenecks or reinforcing mechanisms of the whitestreaming phenomenon and help identify best practices for equitable implementation.

An additional area for future research must address the finding that there were no statistically significant correlations between the percentage of Asian and Black students and the implementation of DL programs at the district-level. This counterintuitive finding highlights the limitations of using broad racial and ethnic categories in educational analysis. Therefore, it is recommended that future studies investigate this lack of correlation by collecting and analyzing more granular data. This research would involve disaggregating the "Asian" demographic by

specific country or language groups (e.g., Mandarin, Tagalog, Vietnamese) and correlating these more precise categories with the presence of DL programs that offer instruction in those specific languages. Similarly, for Black students, future research should explore the linguistic diversity within this demographic and the specific needs that may not be captured by a correlation with generic DL program implementation and student enrollment. This type of research is crucial for understanding the on-the-ground realities and ensuring that policies and programs are designed to serve the unique needs of all language-minoritized communities.

Lastly, a final recommendation must be addressed, which is the critical lack of qualified bilingual educators. While Washington State acknowledges the critical need for a multilingual workforce and has initiated efforts to expand DL programs, the state's own reports identify a severe and ongoing barrier, which is the inability to hire and retain enough qualified bilingual educators. The current legislative solution focuses on increasing funding for training and recruitment, but this approach fails to account for a more direct and strategic solution. In the face of impending climate-drive migration from Latin America, the U.S. and Washington State are presented with a unique opportunity. The influx of Spanish-speaking population could provide a readily available and culturally rich pool of qualified educators, capable of addressing the state's staffing shortages. However, successfully leveraging this opportunity is a matter of political will. It requires moving beyond the current system's whitestreaming and anti-immigrant sentiments and instead implementing a policy that genuinely values and integrates the linguistic and cultural capital that these immigrant communities bring. Only then can DL programs not only meet the state's ambitious expansion goals but also fulfill their foundational mission of equity and social justice.

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Appendix A1: Handling of Missing Data

After a careful examination it was found that all of the different aggregated organizational levels were included within the same data set, therefore each individual aggregated organizational level had its own individual data set created in CSV format (i.e., WA Enrollment 23-24 [Schools], WA Enrollment 23-24 [District], WA Enrollment 23-24 [ESD], and WA Enrollment 23-24 [State]). After the separation of the aggregated levels, the aggregated datasets were uploaded into SPSS and frequency tables were created for all variables to screen for missing data.

Missing data was again found, however, after careful analysis it was irrelevant for data to be there at all. For example, in the WA Enrollment 23-24 (ESD) data set, there was missing data at the 100% for the variables "School Code" and "School Name," yet the data is not aggregated at the school level. Any irrelevant variables within each data set were removed (as is "School Name" in ESD level data). After the removal of irrelevant variables, frequency tables were run again, and showed 0% missing data within the relevant variables based on the organizational level.

Once the data set had been screened for missing information, it was later screened for student enrollments of 0 value, this means that the schools did not enroll any students for that school year. They were removed from the data set as they skewed the data, which can lead to coverage error. A total of 33 schools were removed after the screening, initially there was a total of 2,465, after the removal there was left a total of 2,432 schools.

Appendix A2: Data Cleaning

Removal of Schools and Programs

From the merged data set "DLProgram 23-24 (Schools)" the following school and program categories were excluded from the analysis: Community and Technical Colleges or Early College Programs (CTCs), Youth Re-Engagement Programs (Open Doors / Alternative Pathways for Credit Recovery), Specialized State-Run Institutions, Specialized District Programs, and Juvenile Detention Centers or Confinement Schools.

Community and Technical Colleges or Early College Programs

This included a total of 4 programs. These post-secondary and pre-collegiate initiatives, encompassing Community and Technical Colleges (CTCs) and Early College programs such as Running Start (Wash. Rev. Code § 28A.600.300, n.d.), were systematically excluded from the K-12 dual language education dataset. This exclusion stems from fundamental differences in their core mission, instructional design, student demographics, and, most critically, their distinct funding and data reporting frameworks compared to K-12 dual language programs. Unlike the structured, multi-year K-12 dual language model aimed at fostering biliteracy and biculturalism through core academics in two languages within traditional K-12 settings (OSPI, 2025), CTCs prioritize workforce development, offering degrees and certificates, as detailed by the State Board for Community and Technical Colleges (n.d.). Running Start specifically focuses on accelerating college credit attainment. Collegiate instruction is subject-specific and delivered by faculty experts in their disciplines, emphasizing deep academic or vocational knowledge, which diverges significantly from the specialized K-12 dual language pedagogy that blends sustained language acquisition with comprehensive K-12 curriculum. Their student bodies also differ, with colleges serving diverse adult learners and credit-focused youth, contrasting with the stable,

age-banded cohorts of K-12 dual language programs. Furthermore, CTCs operate under a higher education finance model, rendering them ineligible for K-12-specific dual language program grants from the Office of Superintendent of Public Instruction (OSPI, 2025). This critical funding disjunction directly correlates with incompatible data collection: OSPI's systems are legislatively designed for K-12 metrics (e.g., K-12 student enrollment by grade, state assessment scores), whereas colleges report to different higher education agencies (State Board for Community and Technical Colleges, n.d.) using college-relevant metrics (e.g., college FTEs based on credit hours, degree completion rates), resulting in incomparable data that would fundamentally distort the scope and outcomes of K-12 dual language initiatives.

Youth Re-Engagement Programs

This included a total of 20 programs. Youth Re-engagement Programs, including models like Open Doors (Wash. Rev. Code § 28A.175.050, n.d.) and other alternative pathways for credit recovery, were systematically excluded from the K-12 dual language education dataset. Their primary objective—to reconnect older (ages 16-21), often disengaged youth with education for high school graduation or diploma attainment via credit recovery and flexible options (OSPI, n.d.-a)—is fundamentally distinct from K-12 dual language programs, which build foundational, sustained biliteracy and biculturalism across the K-12 curriculum for standard student cohorts. The instructional approach in re-engagement programs is highly individualized, competency-based, and often self-paced, employing methods such as online modules, which contrasts sharply with the integrated, multi-year K-12 dual language pedagogy designed for continuous language and content development. Their student population consists of youth who have typically struggled or disengaged from traditional K-12 settings and often have significant credit deficiencies, a profile divergent from the stable K-12 learners in foundational dual

language programs. Financially, these programs operate under specific re-engagement funding models (e.g., Wash. Rev. Code § 28A.175.050, n.d.) based on student engagement and progress (like weekly contact hours or competency completion), which is distinct from the traditional K-12 basic education apportionment. Consequently, K-12 dual language program grants (e.g., Wash. Rev. Code § 28A.300.577, 2025) are incompatible, as they are designated for K-12 basic education and tied to specific K-12 student enrollment metrics, meaning data from re-engagement programs would not align and would misrepresent the intended scope and outcomes of K-12 dual language initiatives within traditional public schools.

Specialized State-Run Institutions

This included a total of 3 schools. Specialized state-run institutions were systematically excluded from the K-12 dual language education dataset due to their unique primary mission, distinct instructional structure, specialized student demographics, and separate financial and data reporting frameworks, which fundamentally diverge from K-12 dual language programs. While K-12 dual language education aims for the foundational, sustained development of biliteracy and biculturalism through core academics for students progressing through standard K-12 grades in public schools, these state-managed institutions (such as the Washington State School for the Blind, n.d., and the Washington State School for the Deaf, n.d.) are specifically designed to deliver highly specialized care, treatment, and individualized instruction for students with acute and specific needs, often in residential settings, rather than general education focused on biliteracy. Their pedagogical methods are typically highly individualized, therapeutic, and adapted to profound individual requirements (e.g., specific IEPs, essential life skills), sharply contrasting with the structured, multi-year, integrated K-12 dual language curriculum. The student population comprises specific, often low-incidence populations whose enrollment may

be unstable due to transitions in and out of care, unlike the consistent cohorts in typical K-12 dual language programs. Financially, these facilities receive their primary funding from dedicated state agency budgets (e.g., Washington State Department of Social and Health Services, n.d.; Washington State Department of Children, Youth, and Families, n.d.), not the K-12 basic education formula, and their data collection systems are tailored to track residential status, treatment progress, or very specific educational outcomes tied to their unique populations. This makes their data incompatible with OSPI's K-12 general education metrics, thereby misrepresenting the scope and outcomes of K-12 dual language initiatives within the public school system.

Specialized District Programs

This included a total of 76 programs. Specialized district programs were systematically excluded from the K-12 dual language education dataset due to their distinct primary purpose, unique instructional models, specialized student demographics, and separate financial and data collection pathways, all of which diverge significantly from K-12 dual language programs. While K-12 dual language education focuses on sequential biliteracy and biculturalism development via core academics for students in standard K-12 grades, these specialized programs, operated directly by individual K-12 school districts, are fundamentally designed to provide highly individualized, targeted instruction and support for students with specific, high-acuity needs (e.g., severe special education requirements, early childhood interventions, or specific vocational training, as outlined by OSPI, n.d.-b). Their pedagogical approach is highly specialized, often therapeutic, and adaptive to profound individual requirements, adhering to specific IEPs or competency-based frameworks, which stands apart from the structured, multi-year, and integrated K-12 dual language instruction. The student population is distinct,

often comprising specific, low-incidence groups whose unique learning pathways and needs contrast with the stable, continuous learners typical in K-12 dual language programs. Furthermore, while housed within K-12 districts, their funding often originates from specific grants or categorical allocations distinct from the basic education formula that supports general education students and dual language programs, and their data collection is consequently tailored to track outcomes pertinent to their specific population and purpose. This renders their data incompatible with OSPI's K-12 general education metrics, and thus misrepresents the true scope and outcomes of K-12 dual language education initiatives within the broader public school system.

Juvenile Detention Centers or Confinement Schools

This included a total of 14 centers. Juvenile Detention Centers or Confinement Schools were systematically excluded from the K-12 dual language education dataset due to their unique core purpose, distinct instructional structure, specific student demographics, and entirely separate funding and data collection frameworks, which fundamentally diverge from the scope of K-12 dual language programs. While K-12 dual language education emphasizes the foundational, sustained, and sequential development of biliteracy and biculturalism across the K-12 curriculum for students progressing through standard K-12 grades in public schools, these institutions are primarily designed to provide compensatory education, secure custody, and rehabilitation for youth within the juvenile justice system (King County, n.d.), often for short, indeterminate periods. Their pedagogy is highly structured by security protocols, often individualized for credit accrual or basic academic needs during confinement, and characterized by high student mobility, sharply contrasting with the continuous, multi-year, and integrated K-12 dual language instruction. The student population is distinct, comprising youth whose attendance is often

mandated by court order, who experience frequent transitions, and often present with significant educational gaps or specific behavioral needs that necessitate trauma-informed approaches, unlike the stable K-12 cohorts in dual language programs. Financially, these facilities receive primary funding from justice systems (e.g., counties, n.d.) or specific alternative education grants rather than the K-12 basic education formula (King County, n.d.), and their data collection systems are tailored to track attendance in custody, specific educational interventions, and justice system outcomes. This makes their data incompatible with OSPI's K-12 general education metrics, thereby misrepresenting the intended scope and outcomes of K-12 dual language education initiatives within the public school system.

Appendix B

State Promotional Materials and Documents Analyzed

This appendix contains a list of the statutory laws, administrative regulations, and policy guidance documents that were critically analyzed in this study.

Statutory Law

1. **Laws of Washington, 2009, ch. 548 § 104:**

Description: An intent statement within Washington state law regarding supplemental instruction and services for students whose primary language is other than English.

Source: Laws of Washington, 2009, ch. 548. (2009). *An act relating to providing opportunities for students to obtain credit for demonstrated proficiency in world languages.* Retrieved from: https://leg.wa.gov/media/sq3pux1h/2009pam4.pdf

2. **Wash. Rev. Code § 28A.180.010 & § 28A.180.030:**

Description: Foundational state statutes that define transitional bilingual instruction programs and their intent to serve students from homes where the primary language is not English.

Source: Transitional Bilingual Instruction Program, Wash. Rev. Code § 28A.180 (2012). Retrieved from: https://app.leg.wa.gov/RCW/default.aspx?cite=28A.180

3. **Wash. Rev. Code § 28A.300.577:**

Description: A state statute that provides grants and further support for dual and tribal language education programs, and which uses the phrase "world language."

Source: Washington State Legislature. (n.d.). *RCW 28A.300.577: Dual and tribal language education programs*. Retrieved from: https://app.leg.wa.gov/Rcw/default.aspx?cite=28A.300.577

Administrative Regulations

1. **Wash. Admin. Code § 392-160-005, 2017:**

Description: A Washington Administrative Code entry that provides detailed regulations and guidelines for school districts and personnel implementing state educational laws.

Source: Transitional Bilingual Instruction Program, Wash. Admin. Code § 392-160-005 (2017). Retrieved from: https://app.leg.wa.gov/WAC/default.aspx?cite=392-160-005

OSPI Policy Guidance

1. **Dual Language Education and Resources (OSPI webpage):**

Description: A publicly accessible webpage from the Office of the Superintendent of Public Instruction (OSPI) that provides general information on dual language education.

Source: Washington State Office of the Superintendent of Public Instruction. (n.d.). *Dual language education and resources* [Web page]. Retrieved from: https://ospi.k12.wa.us/student-success/access-opportunity-education/migrant-and-multilingual-education/multilingual-education-program/dual-language-education-and-resources

2. **Washington State Dual Language Program Guide (2023b):**

Description: A policy guide for school districts, administrators, and program implementers on developing and implementing DL programs.

Source: Washington State Office of the Superintendent of Public Instruction. (2023b, November). *Washington State Dual Language Program Guide* [Program guide]. Retrieved from: https://ospi.k12.wa.us/sites/default/files/2023-11/duallanguageprogramguide.pdf

3. **Dual Language 8 Steps to Success guide (2025):**

Description: An internal guide designed for schools and districts to aid in the implementation of DL programs.

Source: Washington State Office of the Superintendent of Public Instruction. (2025, February). *Dual Language 8 Steps to Success* [Guide]. Retrieved from: https://ospi.k12.wa.us/sites/default/files/2025-02/dual-language-8-steps-success.pdf

4. **The Vision: Dual Language for All (2023):**

Description: An OSPI document that outlines the agency's vision for DLE in the state.

Source: Washington State Office of the Superintendent of Public Instruction. (2023). *The Vision: Dual Language for All* [Document]. Retrieved from: https://ospi.k12.wa.us/sites/default/files/2023-08/04-dual-language.pdf

5. **Dual Language Education: What Families Should Know (n.d.):**

Description: A community-facing resource on the OSPI website that explains DLE to parents and families.

Source: Washington Office of Superintendent of Public Instruction. (n.d.-a). *Dual language education: What families should know* [Web page]. Retrieved from: https://ospi.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

Appendix C

Geospatial Supplementary Material

Table C1

DL Program Implementation Across Counties (Detailed)

County	Programs	% Schools with each DL program (County)	% Schools with DL Programs (County)	Total Schools (County)
Adams	Spanish TW 50-50 (**1**)	6.66%	6.66%	15
Asotin	No programs	0%	0%	9
Benton	Spanish OW 80-20 (**3**) Spanish OW 50-50 (**1**) Spanish TW 50-50 (**4**) Spanish Heri Multi (**7**)	4.83% 1.61% 6.45% 11.29%	20.96%	62
Chelan	Spanish TW 50-50 (**1**) Spanish Heri Multi (**2**)	2.77% 5.55%	8.33%	36
Clallam	Makah Tribal (**2**) Klallam Tribal (**2**) Quileute Tribal (**1**)	7.69% 7.69% 3.84%	19.23%	26
Clark	Spanish TW 90-10 (**6**) Spanish TW 80-20 (**1**) Spanish TW 50-50 (**6**) Mandarin World 90-10 (**1**) Mandarin World 50-50 (**2**)	4.61% 0.76% 4.61% 0.76% 1.53%	12.30%	130
Columbia	No programs	0%	0%	5
Cowlitz	Spanish Heri Multi (**2**)	4.54%	4.54%	44
Douglas	Spanish Heri Multi (**2**)	10.0%	10.0%	20
Ferry	Nselxcin Tribal (**3**)	30.0%	30.0%	10
Franklin	Spanish TW 80-20 (**11**) Spanish TW 50-50 (**2**) Spanish OW 80-20 (**11**) Spanish Heri Multi (**3**) Russian OW 80-20 (**4**)	31.42% 5.71% 31.42% 8.57% 11.42%	60.0%	35
Garfield	No programs	0%	0%	2
Grant	Spanish TW 50-50 (**3**) Spanish Heri Multi (**4**) Nxa?amxcÃn Tribal (**1**)	5.35% 7.14% 1.78%	14.28%	56

Grays Harbor	Spanish Heri Multi (**2**)	4.76%	4.76%	42
Island	No programs	0%	0%	18
Jefferson	No programs	0%	0%	12
King	Spanish TW 90-10 (**2**)	0.40%	15.36%	488
	Spanish TW 80-20 (**4**)	0.81%		
	Spanish TW 50-50 (**28**)	5.73%		
	Spanish OW 80-20 (**1**)	0.20%		
	Spanish Heri Multi (**23**)	4.71%		
	Spanish Heri Extend (**7**)	1.43%		
	Spanish World 80-20 (**1**)	0.20%		
	Spanish World 50-50 (**2**)	0.40%		
	Mandarin TW 80-20 (**1**)	0.20%		
	Mandarin TW 50-50 (**2**)	0.40%		
	Mandarin Heri Multi (**1**)	0.20%		
	Mandarin World 50-50 (**1**)	0.20%		
	Somali Heri Multi (**1**)	0.20%		
	Somali Heri Extend (**5**)	1.02%		
	Somali Heri Immer (**1**)	0.20%		
	Vietnamese TW 50-50 (**2**)	0.40%		
	Vietnamese Heri Multi (**1**)	0.20%		
	Arabic Heri Multi (**1**)	0.20%		
	Arabic Heri Immer (**1**)	0.20%		
	Muckleshoot Tribal (**1**)	0.20%		
	Japanese TW 50-50 (**1**)	0.20%		
	French Heri Multi (**1**)	0.20%		
	Dari Heri Extend (**3**)	0.61%		
	Khmer Heri Extend (**2**)	0.40%		
Kitsap	Spanish TW 50-50 (**3**)	4.28%	10.0%	70
	Spanish World 50-50 (**1**)	1.42%		
	Lushootseed Tribal (**2**)	2.85%		
	Klallam Tribal (**1**)	1.42%		
Kittitas	No programs	0%	0%	15
Klickitat	Sahaptian Tribal (**1**)	4.76%	4.76%	21
Lewis	No programs	0%	0%	37
Lincoln	No programs	0%	0%	16
Mason	Spanish TW 50-50 (**1**)	4.76%	9.52%	21
	Spanish Heri Multi (**1**)	4.76%		
Okanogan	Colville Tribal (**2**)	6.06%	6.06%	33
Pacific	No programs	0%	0%	15
Pend Oreille	Salish Tribal (**1**)	9.09%	9.09%	11
Pierce	Spanish TW 90-10 (**4**)	1.67%	9.20%	239
	Spanish TW 70-30 (**2**)	0.83%		
	Spanish TW 50-50 (**2**)	0.83%		

	Spanish Heri Multi (**14**) Lushootseed Tribal (**1**)	5.85% 0.41%		
San Juan	No programs	0%	0%	14
Skagit	Spanish TW 50-50 (**5**) Spanish Heri Multi (**2**) Lushootseed Tribal (**1**) Mixteco Heri Extend (**4**) Russian Heri Extend (**1**) Ukrainian Heri Extend (**1**)	12.82% 5.12% 2.56% 10.25% 2.56% 2.56%	23.07%	39
Skamania	No programs	0%	0%	9
Snohomish	Spanish TW 90-10 (**5**) Spanish TW 50-50 (**1**) Spanish Heri Multi (**7**) Lushootseed Tribal (**5**)	2.74% 0.54% 3.84% 2.74%	8.79%	182
Spokane	Spanish Heri Multi (**1**)	0.63%	0.63%	158
Stevens	Salish Tribal (**3**)	9.67%	9.67%	31
Thurston	Spanish TW 50-50 (**4**) Spanish Heri Multi (**1**) Qulshootseed Tribal (**1**)	5.12% 1.28% 1.28%	7.69%	78
Wahkiakum	No programs	0%	0%	2
Walla Walla	Spanish TW 80-20 (**2**) Spanish TW 50-50 (**2**) Spanish Heri Multi (**1**)	8.0% 8.0% 4.0%	20.0%	25
Whatcom	Spanish Heri Multi (**1**) Lummi Tribal (**3**)	1.56% 4.68%	6.25%	64
Whitman	No programs	0%	0%	28
Yakima	Spanish TW 80-20 (**12**) Spanish TW 50-50 (**5**) Spanish OW 90-10 (**1**) Spanish OW 50-50 (**1**) Spanish Heri Multi (**5**) Ichishkin Tribal (**7**) Sahaptian Tribal (**3**)	12.12% 5.05% 1.01% 1.01% 5.05% 7.07% 3.03%	33.33%	99

Table C2

DL Program Implementation Across Counties (Simplified)

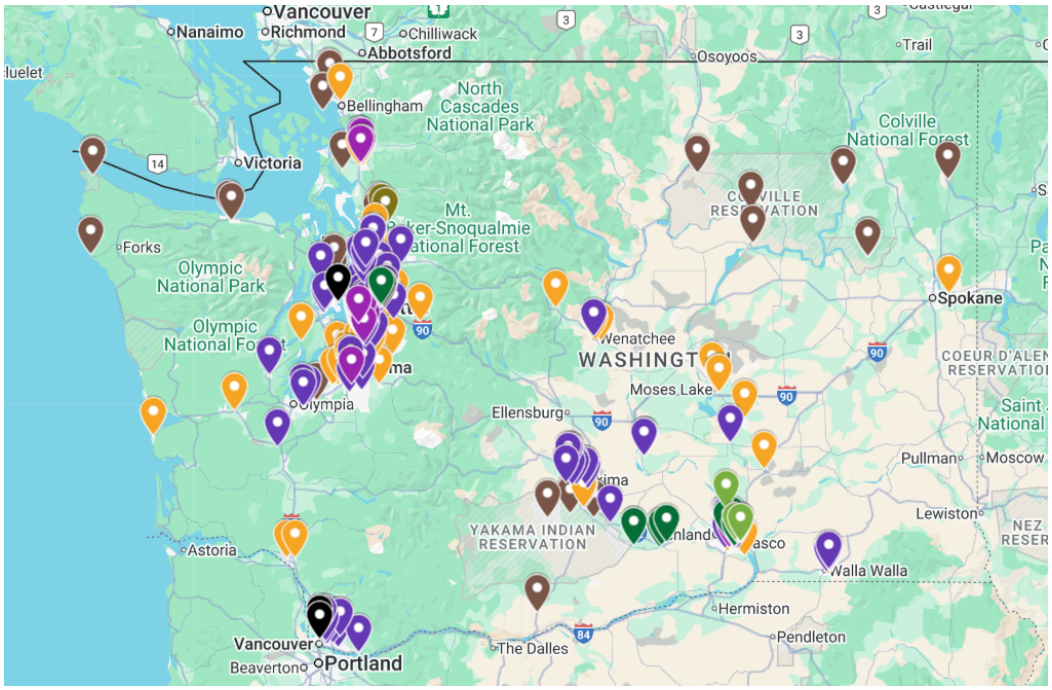
County	Program	Total County Schools with Program	Percentage

Adams	Two-Way	1	100%
Benton	Heritage	7	46.67%
Benton	One-Way	4	26.67%
Benton	Two-Way	4	26.67%
Chelan	Heritage	2	66.67%
Chelan	Two-Way	1	33.33%
Clallam	Tribal	5	100%
Clark	Two-Way	13	81.25%
Clark	World Immersion	3	18.75%
Cowlitz	Heritage	2	100%
Douglas	Heritage	2	100%
Ferry	Tribal	3	100%
Franklin	Heritage	3	9.68%
Franklin	One-Way	15	48.39%
Franklin	Two-Way	13	41.94%
Grant	Heritage	4	50%
Grant	Tribal	1	12.50%
Grant	Two-Way	3	37.50%
Grays Harbor	Heritage	2	100%
King	Heritage	47	50.54%
King	One-Way	1	1.08%
King	Tribal	1	1.08%
King	Two-Way	40	43.01%
King	World Immersion	4	4.30%
Kitsap	Tribal	3	42.86%
Kitsap	Two-Way	3	42.86%
Kitsap	World Immersion	1	14.29%
Klickitat	Tribal	1	100%
Mason	Heritage	1	50%
Mason	Two-Way	1	50%
Okanogan	Tribal	2	100%
Pend Oreille	Tribal	1	100%
Pierce	Heritage	14	60.87%
Pierce	Tribal	1	4.35%
Pierce	Two-Way	8	34.78%
Skagit	Heritage	8	57.14%
Skagit	Tribal	1	7.14%
Skagit	Two-Way	5	35.71%
Snohomish	Heritage	7	38.89%
Snohomish	Tribal	5	27.78%

Snohomish	Two-Way	6	33.33%
Spokane	Heritage	1	100%
Stevens	Tribal	3	100%
Thurston	Heritage	1	16.67%
Thurston	Tribal	1	16.67%
Thurston	Two-Way	4	66.67%
Wall Walla	Heritage	1	20%
Wall Walla	Two-Way	4	80%
Whatcom	Heritage	1	25%
Whatcom	Tribal	3	75%
Yakima	Heritage	5	14.71%
Yakima	One-Way	2	5.88%
Yakima	Tribal	10	29.41%
Yakima	Two-Way	17	50%

Figure C1

Interactive Google My Maps



Note. To access the Google Map click on this link.

Appendix D

District Supplementary Material

The following tables and scatter plots represent variables that were not found to have a statistically significant relationship with the percentage of DL programs implemented

Figure D1

Pearson's R Correlation for Percent Homeless and Percent DL Implemented (with Scatter Plot)

		PercentDLImplemented	PercentHomeless
PercentDLImplemented	Pearson Correlation	1	.097
	Sig. (2-tailed)		.085
	N	319	319
PercentHomeless	Pearson Correlation	.097	1
	Sig. (2-tailed)	.085	
	N	319	319

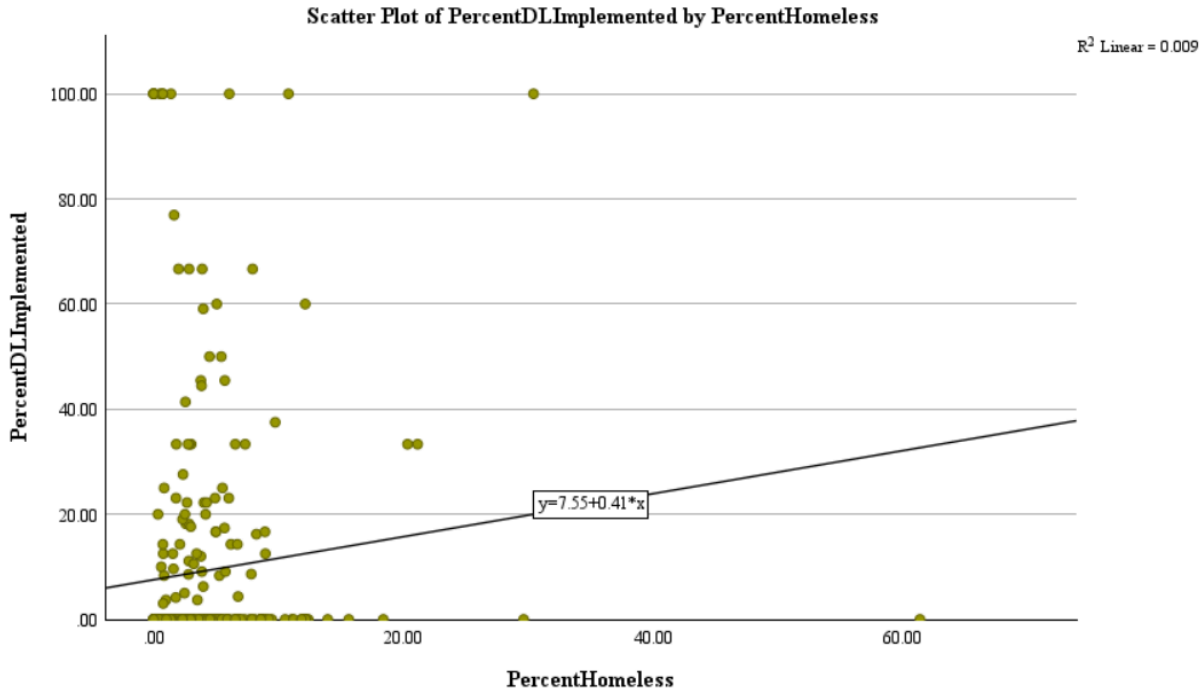


Figure1 D2

Pearson's R Correlation for Percent Hawaiian and Percent DL Implemented (with Scatter Plot)

		PercentDLImplemented	PercentHawaiian
PercentDLImplemented	Pearson Correlation	1	.051
	Sig. (2-tailed)		.364
	N	319	319
PercentHawaiian	Pearson Correlation	.051	1
	Sig. (2-tailed)	.364	
	N	319	319

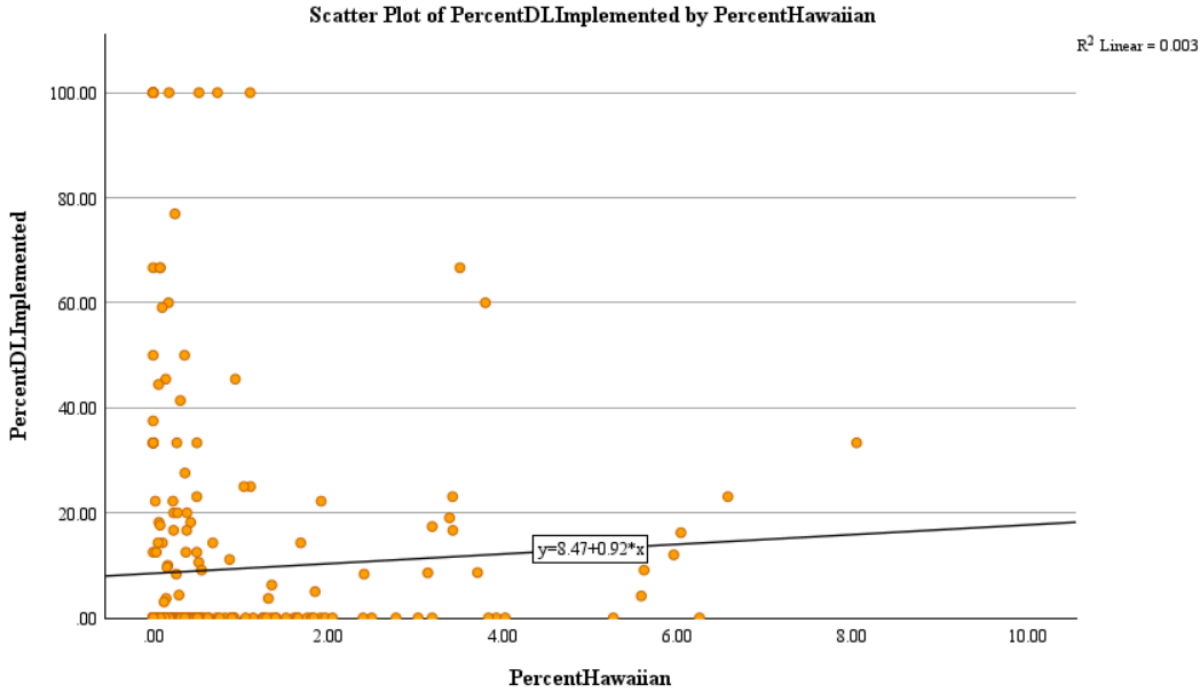


Table D1

Pearson's R Correlation for Percent Black and Percent ELL Students

Correlations

		Percent ELL	Percent Black
Percent ELL	Pearson Correlation	1	.255**
	Sig. (2-tailed)		<.001
	N	2218	2218
Percent Black	Pearson Correlation	.255**	1
	Sig. (2-tailed)	<.001	
	N	2218	2218

**. Correlation is significant at the 0.01 level (2-tailed).

Table D2

Pearson's R Correlation for Percent Asian and Percent ELL Students

Correlations

		Percent ELL	Percent Asian
Percent ELL	Pearson Correlation	1	.150**
	Sig. (2-tailed)		<.001
	N	2218	2218
Percent Asian	Pearson Correlation	.150**	1
	Sig. (2-tailed)	<.001	
	N	2218	2218

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix E

School Supplementary Material

Table E1

Descriptive Statistics of School-Level Demographics by Program Type

Report

DL Program Type		PercentWhite	PercentHispanic	PercentELL	PercentLowIncome
One-Way Dual Language Program	Mean	14.7720	79.4059	50.4146	83.5079
	N	18	18	18	18
	Std. Deviation	17.06855	20.19361	16.47106	13.45197
Two-Way Dual Language Program	Mean	26.3028	51.8887	35.3382	68.0178
	N	121	121	121	121
	Std. Deviation	16.69213	22.41949	17.65045	18.52098
World Language Immersion Program	Mean	41.6036	23.6272	11.5237	24.4530
	N	4	4	4	4
	Std. Deviation	15.70236	10.63024	6.11729	10.48757
Total	Mean	25.2794	54.5618	36.5698	68.7490
	N	143	143	143	143
	Std. Deviation	17.26096	24.23329	18.43371	19.93007

Table E2

One-Way ANOVA Test Results for School-Level Demographics by Program Type

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PercentWhite	Between Groups	3179.936	2	1589.968	5.689	.004
	Within Groups	39127.642	140	279.483		
	Total	42307.579	142			
PercentHispanic	Between Groups	15802.527	2	7901.264	16.367	<.001
	Within Groups	67587.333	140	482.767		
	Total	83389.860	142			
PercentELL	Between Groups	6142.949	2	3071.474	10.212	<.001
	Within Groups	42108.893	140	300.778		
	Total	48251.842	142			
PercentLowIncome	Between Groups	11834.086	2	5917.043	18.586	<.001
	Within Groups	44569.403	140	318.353		
	Total	56403.490	142			

Table E3

Multiple Comparisons (Turkey HSD) Test Results for School-Level Demographics by Program Type

						95% Confidence Interval	
Dependent Variable	(I) DL Program Type	(J) DL Program Type	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
PercentWhite	One-Way Dual Language Program	Two-Way Dual Language Program	-11.53077*	4.22334	.019	-21.5355	-1.5261
		World Language Immersion Program	-26.83159*	9.24108	.012	-48.7228	-4.9404
	Two-Way Dual Language Program	One-Way Dual Language Program	11.53077*	4.22334	.019	1.5261	21.5355
		World Language Immersion Program	-15.30083	8.49591	.173	-35.4268	4.8252
	World Language Immersion Program	One-Way Dual Language Program	26.83159*	9.24108	.012	4.9404	48.7228
		Two-Way Dual Language Program	15.30083	8.49591	.173	-4.8252	35.4268

PercentHispanic	One-Way Dual Language Program	Two-Way Dual Language Program	27.51722*	5.55069	<.001	14.3682	40.6663
		World Language Immersion Program	55.77865*	12.14545	<.001	27.0072	84.5501
	Two-Way Dual Language Program	One-Way Dual Language Program	-27.51722*	5.55069	<.001	-40.6663	-14.3682
		World Language Immersion Program	28.26144*	11.16609	.033	1.8101	54.7128
	World Language Immersion Program	One-Way Dual Language Program	-55.77865*	12.14545	<.001	-84.5501	-27.0072
		Two-Way Dual Language Program	-28.26144*	11.16609	.033	-54.7128	-1.8101
PercentELL	One-Way Dual Language Program	Two-Way Dual Language Program	15.07634*	4.38128	.002	4.6975	25.4552
		World Language Immersion Program	38.89084*	9.58667	<.001	16.1809	61.6007
	Two-Way Dual Language Program	One-Way Dual Language Program	-15.07634*	4.38128	.002	-25.4552	-4.6975
		World Language Immersion Program	23.81450*	8.81364	.021	2.9358	44.6932
	World Language Immersion Program	One-Way Dual Language Program	-38.89084*	9.58667	<.001	-61.6007	-16.1809
		Two-Way Dual Language Program	-23.81450*	8.81364	.021	-44.6932	-2.9358
PercentLowIncome	One-Way Dual Language Program	Two-Way Dual Language Program	15.49010*	4.50747	.002	4.8123	26.1679
		World Language Immersion Program	59.05490*	9.86278	<.001	35.6909	82.4189
	Two-Way Dual Language Program	One-Way Dual Language Program	-15.49010*	4.50747	.002	-26.1679	-4.8123
		World Language Immersion Program	43.56480*	9.06748	<.001	22.0848	65.0448
	World Language Immersion Program	One-Way Dual Language Program	-59.05490*	9.86278	<.001	-82.4189	-35.6909
		Two-Way Dual Language Program	-43.56480*	9.06748	<.001	-65.0448	-22.0848

*. The mean difference is significant at the 0.05 level.

Table E4

Homogeneous Subsets for School-Level Demographics by Program Type

PercentWhite

Tukey HSD[a,b]

DL Program Type	N	Subset for alpha = 0.05	
		1	2
One-Way Dual Language Program	18	14.7720	
Two-Way Dual Language Program	121	26.3028	26.3028
World Language Immersion Program	4		41.6036
Sig.		.290	.116

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 9.560.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

PercentHispanic

Tukey HSD[a,b]

DL Program Type	N	Subset for alpha = 0.05		
		1	2	3
World Language Immersion Program	4	23.6272		
Two-Way Dual Language Program	121		51.8887	
One-Way Dual Language Program	18			79.4059
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 9.560.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

PercentELL

Tukey HSD[a,b]

DL Program Type	N	Subset for alpha = 0.05	
		1	2
World Language Immersion Program	4	11.5237	
Two-Way Dual Language Program	121		35.3382
One-Way Dual Language Program	18		50.4146
Sig.		1.000	.142

Means for groups in homogeneous subsets are displayed.

[a]. Uses Harmonic Mean Sample Size = 9.560.

[b]. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

PercentLowIncome

Tukey HSD[a,b]

DL Program Type	N	Subset for alpha = 0.05	
		1	2
World Language Immersion Program	4	24.4530	
Two-Way Dual Language Program	121		68.0178
One-Way Dual Language Program	18		83.5079
Sig.		1.000	.143

Means for groups in homogeneous subsets are displayed.

[a]. Uses Harmonic Mean Sample Size = 9.560.

[b]. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table E5

One-Way ANOVA Effect Sizes for Demographic Variables by Program Type

ANOVA Effect Sizes[a,b]

			95% Confidence Interval	
		Point Estimate	Lower	Upper
PercentWhite	Eta-squared	.075	.008	.162
	Epsilon-squared	.062	-.006	.150
	Omega-squared Fixed-effect	.062	-.006	.149
	Omega-squared Random-effect	.032	-.003	.080
PercentHispanic	Eta-squared	.190	.080	.294
	Epsilon-squared	.178	.067	.283
	Omega-squared Fixed-effect	.177	.066	.282
	Omega-squared Random-effect	.097	.034	.164
PercentELL	Eta-squared	.127	.036	.225
	Epsilon-squared	.115	.023	.214
	Omega-squared Fixed-effect	.114	.022	.213
	Omega-squared Random-effect	.061	.011	.119
PercentLowIncome	Eta-squared	.210	.096	.315
	Epsilon-squared	.199	.083	.305
	Omega-squared Fixed-effect	.197	.083	.303
	Omega-squared Random-effect	.110	.043	.179

a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.

b. Negative but less biased estimates are retained, not rounded to zero.

Table E6

Descriptive Statistics of School-Level Demographics by Program Model

Report

Program Model		PercentWhite	PercentHispanic	PercentELL	PercentLowIncome
50-50	Mean	26.6941	48.2336	32.8072	64.2371
	N	77	77	77	77
	Std. Deviation	17.12352	22.37136	18.36502	20.58459
70-30	Mean	16.5031	41.6157	30.0594	72.0300
	N	2	2	2	2
	Std. Deviation	2.80056	4.22865	.62018	1.99961
80-20	Mean	22.0215	69.3655	42.6065	76.2005
	N	46	46	46	46
	Std. Deviation	18.96395	24.02022	19.37032	19.54116
90-10	Mean	28.5282	45.2396	37.9615	68.6426
	N	18	18	18	18
	Std. Deviation	12.93788	15.91897	12.94375	12.99181
Total	Mean	25.2794	54.5618	36.5698	68.7490
	N	143	143	143	143
	Std. Deviation	17.26096	24.23329	18.43371	19.93007

Table E7

One-Way ANOVA Test Results for School-Level Demographics by Program Model

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
PercentWhite	Between Groups	986.374	3	328.791	1.106	.349
	Within Groups	41321.205	139	297.275		
	Total	42307.579	142			
PercentHispanic	Between Groups	15063.947	3	5021.316	10.215	<.001
	Within Groups	68325.913	139	491.553		
	Total	83389.860	142			
PercentELL	Between Groups	2886.021	3	962.007	2.948	.035
	Within Groups	45365.821	139	326.373		
	Total	48251.842	142			
PercentLowIncome	Between Groups	4143.409	3	1381.136	3.674	.014
	Within Groups	52260.080	139	375.972		
	Total	56403.490	142			

Table E8

Multiple Comparisons (Turkey HSD) Test Results for School-Level Demographics by Program Model

						95% Confidence Interval	
Dependent Variable	(I) Program Model	(J) Program Model	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
PercentWhite	50-50	70-30	10.19098	12.34901	.842	-21.9212	42.3031
		80-20	4.67258	3.21298	.468	-3.6824	13.0275
		90-10	-1.83413	4.51398	.977	-13.5722	9.9039
	70-30	50-50	-10.19098	12.34901	.842	-42.3031	21.9212
		80-20	-5.51840	12.45391	.971	-37.9033	26.8665
		90-10	-12.02511	12.85117	.786	-45.4431	21.3929
	80-20	50-50	-4.67258	3.21298	.468	-13.0275	3.6824
		70-30	5.51840	12.45391	.971	-26.8665	37.9033
		90-10	-6.50671	4.79351	.528	-18.9717	5.9583
	90-10	50-50	1.83413	4.51398	.977	-9.9039	13.5722
		70-30	12.02511	12.85117	.786	-21.3929	45.4431
		80-20	6.50671	4.79351	.528	-5.9583	18.9717

PercentHispanic	50-50	70-30	6.61787	15.87956	.976	-34.6751	47.9108
		80-20	-21.13194*	4.13156	<.001	-31.8756	-10.3883
		90-10	2.99400	5.80451	.955	-12.0999	18.0879
	70-30	50-50	-6.61787	15.87956	.976	-47.9108	34.6751
		80-20	-27.74981	16.01445	.311	-69.3935	13.8939
		90-10	-3.62387	16.52529	.996	-46.5959	39.3482
	80-20	50-50	21.13194*	4.13156	<.001	10.3883	31.8756
		70-30	27.74981	16.01445	.311	-13.8939	69.3935
		90-10	24.12594*	6.16396	<.001	8.0973	40.1546
	90-10	50-50	-2.99400	5.80451	.955	-18.0879	12.0999
		70-30	3.62387	16.52529	.996	-39.3482	46.5959
		80-20	-24.12594*	6.16396	<.001	-40.1546	-8.0973
PercentELL	50-50	70-30	2.74784	12.93928	.997	-30.8992	36.3949
		80-20	-9.79924*	3.36655	.022	-18.5536	-1.0449
		90-10	-5.15431	4.72974	.696	-17.4534	7.1448
	70-30	50-50	-2.74784	12.93928	.997	-36.3949	30.8992
		80-20	-12.54708	13.04919	.771	-46.4800	21.3858
		90-10	-7.90216	13.46545	.936	-42.9175	27.1131
	80-20	50-50	9.79924*	3.36655	.022	1.0449	18.5536
		70-30	12.54708	13.04919	.771	-21.3858	46.4800
		90-10	4.64492	5.02264	.792	-8.4159	17.7057
	90-10	50-50	5.15431	4.72974	.696	-7.1448	17.4534
		70-30	7.90216	13.46545	.936	-27.1131	42.9175
		80-20	-4.64492	5.02264	.792	-17.7057	8.4159
PercentLowIncome	50-50	70-30	-7.79298	13.88772	.943	-43.9063	28.3204
		80-20	-11.96344*	3.61332	.006	-21.3594	-2.5674
		90-10	-4.40557	5.07642	.821	-17.6062	8.7951
	70-30	50-50	7.79298	13.88772	.943	-28.3204	43.9063
		80-20	-4.17046	14.00568	.991	-40.5906	32.2497
		90-10	3.38740	14.45245	.995	-34.1945	40.9693
	80-20	50-50	11.96344*	3.61332	.006	2.5674	21.3594
		70-30	4.17046	14.00568	.991	-32.2497	40.5906
		90-10	7.55786	5.39079	.500	-6.4603	21.5760
	90-10	50-50	4.40557	5.07642	.821	-8.7951	17.6062
		70-30	-3.38740	14.45245	.995	-40.9693	34.1945
		80-20	-7.55786	5.39079	.500	-21.5760	6.4603

*. The mean difference is significant at the 0.05 level.

Table E9

Homogeneous Subsets for School-Level Demographics by Program Model

PercentWhite

Tukey HSD[a,b]

Program Model	N	Subset for alpha = 0.05
		1
70-30	2	16.5031
80-20	46	22.0215
50-50	77	26.6941
90-10	18	28.5282
Sig.		.575

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.776.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

PercentHispanic

Tukey HSD[a,b]

Program Model	N	Subset for alpha = 0.05
		1
70-30	2	41.6157
90-10	18	45.2396
50-50	77	48.2336
80-20	46	69.3655
Sig.		.102

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6.776.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

PercentELL

Tukey HSD[a,b]

Program Model	N	Subset for alpha = 0.05
		1
70-30	2	30.0594
50-50	77	32.8072
90-10	18	37.9615
80-20	46	42.6065
Sig.		.578

Means for groups in homogeneous subsets are displayed.

[a]. Uses Harmonic Mean Sample Size = 6.776.

[b]. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

PercentLowIncome

Tukey HSD[a,b]

Program Model	N	Subset for alpha = 0.05
		1
50-50	77	64.2371
90-10	18	68.6426
70-30	2	72.0300
80-20	46	76.2005
Sig.		.668

Means for groups in homogeneous subsets are displayed.

[a]. Uses Harmonic Mean Sample Size = 6.776.

[b]. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table E10

One-Way ANOVA Effect Sizes for School-Level Demographics by Program Model

ANOVA Effect Sizes[a,b]

			95% Confidence Interval	
		Point Estimate	Lower	Upper
PercentWhite	Eta-squared	.023	.000	.074
	Epsilon-squared	.002	-.022	.054
	Omega-squared Fixed-effect	.002	-.021	.054
	Omega-squared Random-effect	.001	-.007	.019
PercentHispanic	Eta-squared	.181	.068	.279
	Epsilon-squared	.163	.047	.263
	Omega-squared Fixed-effect	.162	.047	.262
	Omega-squared Random-effect	.061	.016	.106
PercentELL	Eta-squared	.060	.000	.133
	Epsilon-squared	.040	-.022	.115
	Omega-squared Fixed-effect	.039	-.021	.114
	Omega-squared Random-effect	.013	-.007	.041
PercentLowIncome	Eta-squared	.073	.003	.152
	Epsilon-squared	.053	-.018	.134
	Omega-squared Fixed-effect	.053	-.018	.133
	Omega-squared Random-effect	.018	-.006	.049

a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.

b. Negative but less biased estimates are retained, not rounded to zero.