EXPLORING THE ROLE OF ENGLISH ONLY EARLY CHILDHOOD EDUCATION PARTICIPATION FOR SPANISH SPEAKING MULTILINGUAL LEARNERS' LONG-TERM ACADEMIC OUTCOMES

by

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ABSTRACT

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Under the Supervision of Professor Karen C. Stoiber

The purpose of this study was to investigate Spanish-speaking multilingual learner (MLL) students' long-term academic outcomes after participation in an early childhood education (ECE) program with English instruction. The study included 359 Spanish-speaking MLLs who qualified for Free and Reduced Lunch from Grade 1 to Grade 6. Participants entered a large suburban public school district in the Midwest in Kindergarten in the 2014-2015, 2015-2016 and 2016-2017 school years. In this study, 186 MLLs participated in an English Only Early Childhood Education (EO ECE) program and 173 MLLs did not participate in an EO ECE (No-EO ECE) program housed within the participating school district. Participants were assigned by the school district to a transitional bilingual or English only program of instruction with English as a second language support. This 9-year longitudinal study (each cohort over 7 years) explored MLLs' number of years in EL (English language) support from Kindergarten to Grade 7 and whether the EO ECE and No-EO ECE participants differed on their NWEA MAP Growth Reading scores at Grade 2, Grade 4, and Grade 6. Three analysis of covariance (ANCOVA) models were employed at each of the three timepoints, Grade 2, Grade 4, and Grade 6. A hierarchical linear regression model was employed to explore the role of EO ECE participation for Spanish-speaking MLLs' long-term second language acquisition outcomes at Grade 7. MLLs' sex at birth, Kindergarten English language proficiency, attendance and instructional program type in elementary school were considered. Results revealed that EO ECE participation did not significantly predict the number of years spent in the EL support program and was not significantly associated with MLLs' NWEA MAP Growth Reading scores. Additional results revealed NWEA MAP Growth Reading scores and participants' English language proficiency at Kindergarten entry were significantly associated at Grade 2 and Grade 6. Attendance significantly predicted NWEA MAP Growth Reading scores at Grade 4 and Grade 6. Program type significantly predicted MAP Growth Reading scores at Grade 4. Notably, 51% of MLLs remained in the EL support program in Grade 7. Implications, limitations, and future directions are discussed.

This work is dedicated to my spouse, our children, and families for their immense support as I navigated the graduate school journey. I would like to acknowledge the countless occasions in which my spouse, Leann, and my children, Sage, Kai and Nalu, gave up their time with me so that I could meet various deadlines and have been shining lights of joy and fun amidst the busy schedules and writing. I could not have reached this finish line without the tremendous support from Leann, who believed in me through all the ups and downs and encouraged me to keep going. Thank you to my mother-in-law, Lynn, and father-in-law, Dan, who kept me on track as accountability coaches, read my work, encouraged me, babysat, and fed us delicious meals. Thank you to my mom, Kathey, for teaching me the value of a strong work ethic and always encouraging me to spread my wings and move across country to attend college in San Diego, CA, where my passion for research and working with multilingual learners began.

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Cindy offered unconditional support and light for my family and me. Thank you to Kristin, who offered moral support and encouragement, connection, and conversation amidst the many hours of writing. She reminded me of the bigger purpose of this work. Finally, thank you to my advisor, Dr. Karen C. Stoiber who believed in my ability to complete this work, my professors, and my dissertation committee members for teaching, encouraging, and supporting me throughout graduate school and the writing of this dissertation. My greatest desire is to now spend as much time as possible with my partner, children, family, friends and begin my post-doctoral fellowship where I can utilize the knowledge I have learned in graduate school to support children and their families. Thank you to all who supported, encouraged, and reminded me of the importance and impact of this work.

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Background and Context

One of the biggest trends in the United States (U.S.) education system is the shift of the majority group from a homogeneous monolingual group of students to a racially-ethnically, linguistically diverse group (Nores et al., 2018). To better understand the implications of this trend, the researcher for this study focuses on multilingual learner (MLL) students who have identified Spanish as their first/native/home language (L1) and are learning English (L2) in the U.S. school system (Cummins, 1979; Takanishi & Le Menestrel, 2017). The term MLL includes a broad group of children who are learning or are proficient in two or more languages and come from a variety of linguistic and cultural backgrounds (American Psychological Association [APA] BEA Racial Disparities Task Force, 2023). The number of MLL students entering the U.S. educational system has grown rapidly (Espinosa, 2013; Gonzalez et al., 2016; C. Ryan, 2013), from 4,500,000 MLLs in 2010 to 5,100,000 MLLs in Kindergarten through Grade 12 in 2019 (Katz & Stein, 2020; National Center for Education Statistics [NCES], 2022; 2023). In 2016–2017, more than 75% of the 4,900,000 MLL students in the U.S. public school system were Spanish speaking (Irwin et al., 2021; McFarland et al., 2019), and Hispanic/Latine students formed the largest marginalized group within U.S. students, accounting for 25% of those in Kindergarten through Grade 12 (Gandara, 2017). Data collected from 2007 to 2019 have indicated that more than 30% of children attending Head Start programs were MLLs, and 80% of those children spoke Spanish at home (Office of Head Start, 2017, 2018; Katz & Stein, 2020). Only 43% of state-funded early childhood education (ECE) programs reported enrollment data by students' home language in 2017-2018, and only 63% reported these data in 2021-2022 (Friedman-Krauss et al., 2018; 2022). Due to incomplete reporting of the number of preschool-aged MLLs enrolled, the national report from 2016-2017 documented a conservative estimation of 23% of MLLs enrolled in state-funded ECE programs (Friedman-Krauss et. al, 2018).

The increase in the number of MLL students brought awareness to an urgent need for educators to more equitably serve linguistically diverse students, as increasing numbers of students developed bilingualism and biliteracy (Domke, 2019; Espinosa, 2013). This growth in MLLs in the U.S. educational system, which started with an influx of Spanish-speaking students from Cuba to Florida in 1959 (MPI, 2017), has continued to the present day (KIDS COUNT Data, 2022). Children of Color (i.e., children who identify as African American/Black; Hispanic/Latino, Asian; Native American/American Indian; Pacific Islander; Multiracial) made up 49.8% of all minors in the U.S. in 2019 (S. M. Brown, 2021), and this percentage increased to 50.6% in 2021 (KIDS COUNT Data Center, 2022). These data indicated the previous majority group—White children became the non-majority (49.4%) group in 2021 (KIDS COUNT Data Center, 2022). Therefore, policies and programs that support the growing diversity in U.S. schools are needed to support MLLs (S. M. Brown, 2021). Given the increase in Children of Color and those who are MLLs, many children attending U.S. schools would likely benefit from encouraging bilingualism and biliteracy in multiple languages (Gandara, 2018).

Systemic barriers related to race-ethnicity, language proficiency, socioeconomic status (SES), and inequitable support to access educational content in English and Spanish have perpetuated an opportunity gap and reinforced the urgent need for more equitable services for MLLs (Daniel, 2018). The term "opportunity gap" has described the disparity in access to quality resources, high-quality ECE, and high-quality school-age programming, which then can undermine important achievement outcomes, such as academic proficiency (Solano & Weyer, 2017). Disparity in opportunity among Spanish-speaking MLLs has significantly contributed to performance differences in test results and other measures of academic attainment based on racial–ethnic grouping and SES (Solano & Weyer, 2017). Preschool-aged MLLs with underdeveloped L1 and L2 skills, teacher responsiveness to effective dual-language instruction, and reduced access to high-quality resources has likely led to diminished access to educational content, which has contributed to a disparity in the development of early literacy and language skills among MLLs and monolingual students (Halle et al., 2012). Investigations are needed to explore ways schools can provide equitable services and the most effective programs to support the language acquisition of MLLs and produce successful academic outcomes aimed at reducing this opportunity gap.

Prior researchers have noted that the use of generalized descriptors for participant groups (e.g., researcher selected non-specific racial–ethnic grouping minimizing cultural differences between individual participants) can further exacerbate efforts to address the systemic barriers that contribute to the opportunity gap among MLLs (APA, 2021). Researchers also reported how biased or pejorative descriptors (e.g., researcher identified SES, comparing MLLs to a majority group using terms such as limited English proficient, or with standardized testing using White, monolingual majority scoring normative data) reinforced a deficit view of MLLs and perpetuate assimilationist programs and policies (APA, 2021). Other researchers have reported data and outcomes by linguistic proficiencies (e.g., dual-language learner or English language learner "ELL") or by participant selected racial–ethnic category (e.g., "Hispanic", "Latino/a/x/@", "Puerto Rican", "Cuban", or "White"). Furthermore, many scholars conducted educational studies on MLLs and referred to students by their racial–ethnic identities broadly to indicate L1 and country of origin (Flannery, 2009). In 2013, nearly all, 85%, of MLLs in the U.S. school system Kindergarten through Grade 5 and 62% of Grade 6 to Grade 8 students, were native-born U.S. citizens (Zhong & Batalova, 2015) and had linguistic proficiencies and racial-ethnic identities that differed from MLLs who immigrated to the U.S. (Takanishi & Le Menestrel, 2017). Although prior researchers emphasized the importance of the relationship among racial–ethnic identities and linguistic identities as factors associated with educational disparities among minoritized groups (APA, 2012), the participants in this study are grouped by linguistic identity.

A participant descriptor, MLL is being used by the researcher for this study. The determination of MLL for study participants is based on a participant being identified Spanish L1 and the World Class Instructional Design and Assessment (WIDA) Measure of Developing English Language (MODEL) for Kindergarten (referred hereafter as Kindergarten MODEL) score indicating the student is learning English and has qualified for EL support. The U.S. Department of Education (2020) has defined a student enrolled in prekindergarten–Grade 12 who speaks a native/home language other than English and is not yet proficient in English to access academic content as a MLL (Takanishi & Le Menestrel, 2017). The term MLL is being used to honor the variance in language acquisition between first and second language development across bi-and-multilingualism for preschool-aged children through elementary school and avoids researcher-based generalizations (APA, 2021; APA BEA Racial Disparities Task Force, 2023). In the interest of avoiding biased and pejorative descriptors, the researcher for this study references participants in reviewed literature by their linguistic identities when L1 and L2 is clearly specified (e.g., MLL or monolingual, to reference the historically majority group of students who spoke English), rather than referencing race-ethnicity (APA, 2021). The researcher for this study will present prior research with Hispanic or Latino/a/x /@ participants using the descriptor "Hispanic/Latine" to reference a racial–ethnic category that includes children from a wide range of racial-ethnic groups of Latin American or Spanish descent. The current researcher used the term Latine to establish gender equality/neutrality in the representation of the students of Latin American origins (Joseph & Evans, 2018; Limlingan et al., 2022). The descriptor of "White" is used to refer to a racial–ethnic category that includes children from a wide range of ethnic groups of European descent and many of whom speak English as their L1.

Children with Spanish as their L1 learning English in the U.S. public school system, hereafter referred to as multilingual learners (MLLs), are the focus of this study. This population was selected as study participants because Spanish is the most common L1 for MLLs in the U.S. The primary language of instruction in the U.S. school system is English. However, given that recent reports suggested 21% of school-aged children speak a language other than English as their L1 in 2021 (KIDS COUNT Data, 2022), a growing number of children in the U.S. are likely enrolled in English only early childhood education (EO ECE) and elementary programs where MLLs learned in a language different from that spoken at home (National Academies of Sciences, Engineering and Medicine, 2017; Organisation for Economic Co-operation and Development, 2018). EO ECE or elementary programs for MLLs who are taught in L2, while their L1 and L2 were still developing, may create a gap between their L2 instruction and comprehension (Valentino & Reardon, 2015). To more equitably serve MLLs, Takanishi and Le Menestrel (2017) have suggested the U.S. education system should prioritize engaging with the full diversity of students. However, policy makers' efforts to reduce the opportunity gap and reform educational policies have focused more on establishing goals, improving academic attainment, and promoting monolingualism (Mitchell, 2016).

Spanish-speaking MLLs may enter formal schooling with unidentified language proficiencies in L1 or L2, and their English language may not be as developed as their monolingual peers (Takanishi & Le Menestrel, 2017). Native English speakers typically enter Kindergarten knowing at least 5,000 words and the proper use of tenses. However, although MLLs often enter school knowing a similar number of words in Spanish, they may only know a few English words (Colorado, 2023). Vocabulary growth occurs mostly at the prekindergarten level (Farkas & Beron, 2004). Most MLLs who participated in EO ECE received inconsistent levels of language support across districts in the U.S. Without language supports, MLL's foundational early literacy and language skills risk being underdeveloped (Nores et al., 2018). Thus, MLLs benefit from language support to build their L2 vocabularies while also continuing to develop L1 and learn early academic skills (Colorado, 2023).

Educators must provide MLLs in Kindergarten through Grade 12 second language support, as mandated by legislation and policy changes in the U.S. school system (e.g., The Bilingual Education Act of 1968, Equal Educational Opportunities Act of 1974, Title VI of the Civil Rights Act of 1964; Office for Civil Rights, 2020; Stewner-Manzanares, 2015). Despite the inclusion of L1 supports, annual monitoring of MLLs language proficiency, and educational reform efforts, the opportunity gap has remained between MLLs and monolingual individuals (Serafini et al., 2022), which has suggested the gap is related to larger structural and social disparities (Flores & Garcia, 2017). The translation of such research findings failed to influence policy changes at the federal and state level (Serafini et al., 2022). Scholars have examined MLLs' language of instruction and dual-language program outcomes at the elementary school level, but their results are inconclusive with respect to their effect on the acquisition of L2 and the most effective way to instruct MLLs (Barrow & Markman-Pilthers, 2016, Serafini et al., 2022, Steele et al. 2017; Thomas & Collier 1997, 2002; Valentino & Reardon, 2017). Sixty years after the first dual-language program was implemented in the U.S. in Miami, Florida in 1963 (Gonzalez, 1975), linguistically diverse classrooms have become the norm, while organized multilingual classrooms are beginning to gain acceptance and implementation (Office of Head Start, 2018; Katz & Stein, 2020; Zaidi, 2020).

The study district that participated and provided extant data for this study (referred hereafter as "study district"), is a member of the WIDA consortium, which provides assessments that meet the requirement of the school to monitor MLLs English language growth annually (WIDA, 2023c). The WIDA Assessing Comprehension and Communication in English State-to-State (ACCESS) for ELLs 2.0 is an English proficiency assessment used in many states across the U.S. to monitor MLLs progress in acquiring the English language; ACCESS scores are used as one factor in the decision to exit a student from language support services (WIDA, 2023a). ECE-aged children's early literacy and language skills are strong predictors of future educational attainment and social–emotional well-being (Chetty et al., 2011). Therefore, support for MLLs language and literacy development is crucial for positive long-term academic and linguistic outcomes (Chetty et al., 2011).

Despite state-level determinations of EO ECE language support, many state policies have failed to adequately support MLLs (Halle et al., 2012; Nores et al., 2018). Unfortunately, little is known about the child outcomes associated with MLLs' participation in state-funded public ECE, the role the state-funded public ECE has in language acquisition, nor the role of elementary program of instruction with L1 supports over time (Conger et al., 2019). More research on public prekindergarten education is encouraged (Conger et al., 2019) because childrens' academic trajectory in their early school years has emerged as one of the strongest predictors of their later academic outcomes (Snow et al., 1998). Stipek (2001) for example, reported that a child’s skill attainment in ECE can predict academic attainment later in school. As another example, researchers revealed that children who entered Kindergarten with English proficiency scores below the national average continued to score below the average on standardized reading measures over time based on longitudinal studies of reading growth trajectories (Fitton et al., 2018; Kieffer, 2008).

Problem Statement

Due to a changing demographic in the U.S., MLL children are underserved by a legacy system that has contributed to an opportunity gap for MLLs (Nores et al., 2018). This legacy system refers to an established system that encompasses traditional teaching methods, curriculum approaches, and institutional structures that may not have adequate resources or specialized instruction for MLLs (e.g., limited access to qualified bilingual teachers, under access to resources for culturally responsive curriculum materials that reflect students’ rich racial and ethnic diverse backgrounds, or a lack of appropriate language development programs for MLL students). Despite prior research that investigated the time of entry into the school setting, the type of programming at the elementary level, and the use of a student’s L1 in their classroom and instruction, associations of such factors with outcomes for MLLs remain inconclusive (Takanishi & Le Menestrel, 2017). Children from low-income backgrounds are more likely to receive low-quality ECE instruction and have less exposure to print and sophisticated language at home, which can lead to later academic difficulties (Gonzalez et al., 2016). The U.S. government developed and offered high-quality, no-cost, ECE programs specifically for families of low-income, to support young children living in families with low-income and to provide a buffer against the inherent risks (Administration for Children and Families, 2010; Currie & Thomas, 1998; Gormley, 2008; Gormley et al., 2005; Yoshikawa et al., 2013). However, despite the high-quality design of these ECE programs, implementation quality varies across sites and U.S. states (Friedman-Krauss et al., 2022). Furthermore, only 19% of children from low-income backgrounds and 29% of children from high-income backgrounds have enrolled in high-quality center-based care, such as publicly-funded ECE (Nores & Barnett, 2014; Solano & Weyer, 2017). Disparities among MLLs' reading and math outcomes have prevailed among MLL and monolingual students (NAEP, 2022a).

Researchers' findings on the academic and linguistic effects of public state-funded preschool for MLLs are inconclusive (Bassok et al., 2019). A small body of research has suggested that Hispanic/Latine students experienced academic gains from participation in high-quality preschool (Bussey et al, 2014). MLLs benefitted from high-quality preschool participation (e.g., Ansari et al., 2017; Mangusen et al., 2004; Yoshikawa et al., 2013), particularly in the areas of language and literacy (Bussey et al., 2014). Gormley (2008) reported no significant associations between preschool participation and literacy and math scores. Additional researchers indicated a slightly more effective chance of attaining English proficiency associated with public preschool participation (Slama et al., 2017). However, the observed association was not large enough to have practical or meaningful implications, due to a large sample (N = 66,081) and small effect size (Slama et al., 2017). Although some researchers found MLLs' who participated in EO ECE programs showed literacy gains by the end of Kindergarten (Ansari et al., 2017; Conger et al., 2019; Winsler et al., 2008), other researchers did not find significant literacy gains (Bassok et al., 2019).

The gap between MLLs instruction in L2 and language comprehension continues into elementary school (Serafini et al., 2022). Some researchers agree that dual-language programming is beneficial for MLLs language acquisition and academic achievement (Collier & Thomas, 2004; Espinoza, 2020; Howard et al., 2018; Lindholm-Leary & Howard, 2008). Benefits of bilingual instruction are well-documented at the elementary level; however few researchers have investigated the role of EO ECE participation related to exit from EL status and academic outcomes in elementary school (Conger et al., 2019; Slama et al., 2017).

Researchers have reported mixed results on the lasting effects of ECE participation on reading test scores for MLLs and monolingual children (Ansari et al., 2017; Hill et al., 2015, Puma et al., 2015). Ansari et al. (2017) reported that some benefits extended into Grade 3 in their study population that included 81% MLLs. Other researchers have reported no significant associations for lasting effects of ECE in Grade 1 in a national sample of Head Start ECE children (Puma et al., 2012) and in Grade 3 for all participants, including the Hispanic/Latine children, who benefitted most during the ECE program (e.g., Gormley, 2008; Hill et al., 2015). Additionally, prior research examining ECE programs long-term outcomes have uncovered a phenomenon known as "fadeout", whereby the initial advantages of ECE participation have appeared to diminish as MLLs progress through elementary school, (Ansari et al., 2017; Hill et al., 2015; Lipsey et al., 2018; Magnuson et al., 2007; Puma et al., 2012; Yoshikawa et al., 2013). More research is needed to compare prekindergarten aged MLLs' language acquisition and academic outcomes of EO ECE participants, subsequent elementary participation in EO or bilingual, and L2 proficiency over time (Conger et al., 2019).

Study Purpose and Significance

The main purpose of this study is to examine whether, and to what extent, enrollment in an EO ECE program relates to L2 acquisition (i.e., number of years spent in EL support) and reading proficiency for Spanish-speaking MLLs, after controlling for L2 proficiency at

Kindergarten entry, attendance, and elementary program type. The study is expected to provide a clearer understanding of how EO ECE programming relates to MLLs' L2 acquisition and reading proficiency outcomes at three later grade timepoints. As such the study is important for identifying educational practices and factors related to closing the opportunity gap among monolinguals and MLLs in the school setting.

Researchers support the belief that language proficiency is related to academic achievement, and it is important for MLLs to achieve language proficiency to succeed academically (Ardeshava et al., 2012; WIDA, 2023c). Conger et al. (2019) found that MLLs who participated in public school prekindergarten were more likely to exit the EL support program by Grade 1. Participation in the state-funded preschool was associated with a 4-percentage point greater likelihood of exit from the EL support program by Grade 1 (Conger et al., 2019). In addition, Raikes et al. (2019) reported benefits for MLLs' participation in ECE and that bilingual/biliterate children's outcomes had improved in later grades (Raikes et al., 2019). Yet other researchers have reported inconclusive findings of the immediate and long-term benefits of EO ECE participation (Ansari et al., 2017; Bassok et al., 2019; Conger et al., 2019; Gormley, 2008). The significance of this study is to add clarity to findings regarding the role of MLLs' EO ECE participation on long-term academic outcomes. More specifically, this study extends the research of Conger et al. (2019) by examining the number of years MLLs spent in EL support through Grade 7 and extends the research of Slama et al. (2017), by lowering the grade of initial L2 proficiency for study participants upon entry to school from Grade 1 to Kindergarten.

Definition of Terms

Assessing Comprehension and Communication in English State-to-State (ACCESS): ACCESS is large-scale English language proficiency assessment given in Kindergarten through Grade 12 to students identified as MLLs (D. L. Pearson, 2015).

Bilingual program: A bilingual program is a program that offers instruction by a certified teacher in English and another primary language (Baker, 2017).

Children of Color: "Children or Students of Color" is a broad term used to refer to students of a diverse range of racial and ethnic backgrounds, that is students who identify as African American/Black; Hispanic/Latino, which is an ethnicity rather than a race and can include people of any race, but often refers to those with heritage from Spanish-speaking countries; Asian; Native American/American Indian; Pacific Islander; Multiracial (NCES, 2023). The term highlights the shared experiences of students whose experiences can include facing racial bias, having cultural backgrounds not reflected in the curriculum, or lacking role models who share their ethnicity (NCES, 2023).

Diverse: Diversity in the educational setting refers to the differences in social identities of the students and staff. A student's language ability, race/ethnicity, SES, gender identity, gender expression, sexual orientation, and nationality all comprise social identity (APA, 2021).

Dual-language learner (DLL): According to the Administration for Children and Families and U.S. Department of Health and Human Services (2013) a DLL is a young child acquiring two or more languages at the same time while developing their first language (Takanishi & Le Menestrel, 2017).

Dual-language immersion: Dual-language immersion is an inclusive educational model that promotes bilingual language and literacy development for language-minority and language-majority learners (Krashen, 2000; Shen et al., 2022). A MLL or monolingual student may enroll in a dual-language immersion program and instruction occurs in two languages. Such programs place value on bilingualism/multilingualism, biliteracy/multiliteracy, and cross-cultural understanding (Madrigal, 2020; Shen et al., 2022; Tedick et al., 2011).

English language learner (ELL): ELL students with a primary language that is not English and are in the process of learning English (National Clearinghouse for English Language Acquisition, 2006). An ELL, as defined in the Elementary and Secondary Education Act of 1965 (ESEA), Section 8101 of ESEA, as follows:

An individual—(a) who is age 3 through 21; (b) who is enrolled in or preparing to enroll in an elementary school or secondary school; (c) (i) who was not born in the United States or whose native language is a language other than English; (ii) (I) who is a Native American or Alaska Native, or a native resident of the outlying areas; and (II) who comes from an environment where a language other than English has had a significant impact on the individual's level of English language proficiency; or (iii) who is migratory, whose native language is a language other than English, and who comes from an environment where a language other than English is dominant; and (D) whose difficulties in speaking, reading, writing, or understanding the English language may be sufficient to deny the individual—(i) the ability to meet the challenging State academic standards; (ii) the ability to successfully achieve in classrooms where the language of instruction is English; or (iii) the opportunity to participate fully in society (p. 43).

English as a Second Language (ESL): According to the study district, ESL is a program model where instruction is delivered via direct instructional strategies in English by an ESL-endorsed or certified teacher.

English as a Second Language (ESL) *Pull-out*: ESL Pull-out is a variation of the ESL model (Collier & Thomas, 2004). ESL Pull-out involves direct instruction in English by an ESL-endorsed or certified teacher (Collier & Thomas, 2004) outside the general education classroom for a portion of the regular school day to receive ESL instruction (Serafini et al., 2022).

English as a Second Language (ESL) *Push-in:* ESL Push-in is a variation of the ESL model (Collier & Thomas, 2004). Push-In involves direct instruction in English by an ESL-endorsed or certified teacher (Serafini et al., 2022) in the general education classroom, and the ESL teacher spends time in the classroom supporting ESL students during instructional time (Serafini et al., 2022). An ESL Push-In classroom prioritizes direct instruction in English and English proficiency (Serafini et al., 2022).

English learner (EL): English learner (EL) is a term used when describing educational policy and the students who and are qualified to be placed in a language instructional program. Specifically, this phrase is used in reference to students who have a non-English L1 and are learning English.

English-only early childhood education (EO ECE): An EO ECE program is defined as a preschool education program with instruction in English and is funded by the state in which the study district is located. EO ECE serves children and families from impoverished areas as defined by self-reported family income levels measured by a percentage of the U.S. federal poverty level. Children aged 0–5 years are prescreened to qualify. EO ECE provides parent education services and aims to improve a child's school readiness through development of the English language, English literacy, and social-emotional skills (Takanishi & Le Menestrel, 2017).

Exited: A student who was previously eligible for English language support services, classified as an EL, and met state criteria for English proficiency (Olsen, 2014).

Head Start is a comprehensive child development program funded by the U.S. Department of Health and Human Services, Administration for Children and Families (Office of Head Start, 2023). Head Start serves families with young children living below the federal poverty level in ECE, social services, health, and family involvement (Office of Head Start, 2023).

High-quality: High-quality is used to describe the learning experiences of early childhood education and school-age programming that benefit all children enrolled and is often used when describing the program's standards, focus on school readiness goals, and family and community engagement goals. The current researcher recognizes that high-quality is a dynamic term based on who is setting the criteria. The current researcher defines high-quality as a program with criteria that meets the needs of all students enrolled, includes a foundation of culturally responsive care (Shivers et al., 2011); incorporates relationship building through culturally appropriate books with relatable themes and contexts (Goldenberg, 2008), focuses on vocabulary and literacy instruction aimed at school readiness in L1 and L2 with ongoing assessment (Halle et al., 2012), and incorporates the use of standards-based curriculum and differentiated instruction (Jenkins et al., 2018), from a qualified educator who receives ongoing professional development.

Language one (L1) is the first language a student acquires (Cummins, 1979). L1 refers to a home language other than English, although some emergent bilinguals may be developing multiple languages simultaneously (Cummins, 1979). In this study, L1 is Spanish.

Language two (L2) is the second language a student acquires (Cummins, 1979). In this study, L2 is English.

Language: Merriam-Webster (n.d.) defined language as "the words, their pronunciation, and the methods of combining them used and understood by a community" (Definition 1a).

Language acquisition is the process of "developing ability in a language by using it in natural communicative situations" (Krashen & Terrell, 1983, p. 18).

Latine: "Latine" is a term to reference a racial–ethnic category that includes people from a wide range of racial-ethnic groups of Latin American descent. The current researcher used the term Latine to establish gender equality/neutrality in the representation of the students of Latin American origins previously referred as Latino/a/x /@ (Joseph & Evans, 2018; Limlingan et al., 2022).

Measure of Developing English Language (MODEL) for Kindergarten: Kindergarten MODEL is a WIDA English language proficiency assessment administered in Kindergarten to students identified as speaking a language other than English at home (WIDA, 2020g).

Multilingual Learner (MLL): The term MLL describes a broad group of children who are learning or are proficient in two or more languages and come from a variety of linguistic and cultural backgrounds (American Psychological Association [APA] BEA Racial Disparities Task Force, 2023). This phrase values the knowledge that students already have in their L1(s) framework and holds developing multilingualism as significant and promising. Furthermore, the researchers decision to use multilingual learner has deliberate intentions of providing a positive counternarrative to historically negative connotations associated with the use of deficit based terms to describe students with an L1 other than English (Joseph & Evans, 2018).

Opportunity gap: The opportunity gap relates to a disparity in access to quality resources, and high-quality early childhood education and school-age programming (Daniel, 2018). This disparity in opportunity is a significant factor in performance differences in test results and other measures of academic attainment based on racial–ethnic grouping and SES (Solano & Weyer, 2017).

Socioeconomic status (SES): The position of a person or group on the socioeconomic scale, their SES, is determined by a combination of social and economic factors, such as income, amount and kind of education, type and prestige of occupation, place of residence, and (in some societies or parts of society) ethnic origin or religious background (American Psychological Association [APA], n.d.). In this study, SES is measured by self-reported family income level as a percentage of the U.S. federal poverty level and the student's qualification for free, reduced, or paid lunch status.

World-Class Instructional Design and Assessment (WIDA): WIDA is an educational consortium of state departments of education (WIDA, 2023a). The consortium developed the WIDA ACCESS, a suite of summative English proficiency assessments (D. L. Pearson, 2015; WIDA, 2020a) and the Kindergarten MODEL (WIDA, 2020b).

WIDA ACCESS for ELLs 2.0 (ACCESS) is an English proficiency assessment administered to students in Grade 1 t*o* 12 in January to February of each academic year (WIDA, 2023b).

Chapter Two Literature Review

The literature review covers the following key concepts and content related to the education of MLLs: (a) historical context and trends in the education of MLLs, (b) United States (U.S.) Supreme Court decisions and Federal legislation with respect to bilingual education, (c) definition and impact of the opportunity gap and impact of socioeconomic status (SES), (d) early vocabulary and literacy development, (e) English language acquisition theories, (f) assessment practices of English language acquisition, and (g) early childhood education and elementary school program types. This review was conducted specific to a U.S. population.

Historical Context and Trends in the Education of MLLs

The U.S. education system has had a long history of both embracing and ignoring linguistically diverse learners (Kloss, 1998). Education of linguistically and culturally diverse learners, in languages other than English, has dated back to the 17th and 18th centuries (Kloss, 1998). Nearly 200 languages have been present throughout the history of the United States, with at least 18 languages present during the 17th and 18th centuries in the territories that would become the United States (Nieto, 2009). Bilingual education was embraced by the colonial government, but attitudes shifted at the turn of the 20th century as the English-speaking White majority became more dominant (Crawford, 2004). By the 1920s, all bilingual programs were dismantled, and bilingualism reached its lowest level of acceptability (Crawford, 2004). Around the turn of the twentieth century, as a reaction to the influx of immigrants from eastern Europe, restrictive immigration policies were developed, schools were expected to "Americanize" students (e.g., assimilationist perspectives became prevalent where families and communities were expected to shed their culture and L1 for English), and an English-only language ideology was adopted in U.S. schools (Bybee et al., 2014). The English-only language ideology led to inequities in educational opportunities and resources available to English speaking students and MLLs (Bybee et al., 2014). As a result, an opportunity gap became apparent in schools across the U.S. This opportunity gap, defined as a disparity in access to quality resources and high-quality education, has continued into the 21st century, is ongoing, and evidenced by the significant differences in outcomes between monolinguals and MLLs (Daniel, 2018).

One of the most significant trends in the U.S. education system that has emerged recently regards the shift of White students from being the majority to minority population served in U.S. schools (KIDS COUNT Data Center, 2022; Nores et al., 2018). The evolving student demographics have challenged the education system to adapt to a more cultural and linguistically diverse student body and bridge the opportunity gap across racial, ethnic, and linguistic groups (Aydin et al., 2017; Nores et al., 2018). Brantlinger (2003) argued that diversity issues arise when a dominant group creates an outsider group. Hispanic/Latine students became such a group in early to mid-1900s. From the 1920s to the 1960s, Hispanic/Latine students were considered and categorized as disadvantaged because they were thought to lack equal education opportunities; in addition, because Hispanic/Latine students were more likely to live in urban or rural areas that experienced the negative effects of White flight from urban areas into outlying suburbs (Kozol, 1991; Stewner-Manzanares, 1988; Walker de Felix, 1992). As this migration occurred, educational funding shifted to the suburban schools (Kozol, 1991; Stewner-Manzanares, 1988; Walker de Felix, 1992).

Bybee et al. (2014) reported that a series of legislations were passed to address the inequitable funding and lack of language support for linguistically diverse learners in economically disadvantage schools (e.g., Bilingual Education Act of 1968 and the subsequent revisions). These legislations required schools to provide minimal support to help MLLs learn

English and meet academic standards. Over the past 40 years, the way in which MLLs have been described has begun to change. Early descriptions first described MLLs as using deficit-based descriptors, such as "Limited English Proficient", "non-English", and "English Language Learner" (Bybee et al., 2014). Descriptors have begun evolving toward a focus on the strengths the individual possesses to acquire a second language (Bybee et al., 2014). Research and policy have supported the use of "ELL," "DLL," and occasionally "emergent bilinguals" (APA, 2021; Bybee et al., 2014).

The goal of MLLs' mastering English fluency has held strong while teaching trends have shifted to provide stronger L1 support as a method of supporting English language acquisition (Rios & Castanello, 2018). However, "English only" pedagogical viewpoints have continued to challenge the movement towards increased implementation of dual-language programming and acceptance of linguistically diverse students despite reports of the benefits of maintaining and continuing development of academic L1 (Bybee et al., 2014). The increase in the population of bilingual students has outpaced the acceptance of bilingualism and biliteracy (Bybee et al., 2014).

Ongoing research supporting the shift towards the increased acceptance of bilingualism and biliteracy has increased in volume over time. In the past 60 years, research related to bilingual and dual-language programming has increased from an average of six documents published from 1969-1978, to an average of 20 documents per year during the period 1979–1988, to an average of 21 documents published annually during the period1989–1998 (Sanchez-Perez & Manzano-Agugliaro, 2021). From 1999–2008 an average of 42 documents were published per year (Sanchez-Perez & Manzano-Agugliaro, 2021). In the period 2009–2018, 132 documents had been published on average per year. This growth in research has indicated that the interest in bilingual education has increased (Sanchez-Perez & Manzano-Agugliaro, 2021). While research publications in this area have increased, ongoing program development unfortunately has not been informed by that research (Sanchez-Perez & Manzano-Agugliaro, 2021).

Legal Framework for Bilingual Education in the United States

Key Supreme Court decisions have influenced education in the U.S. (Bybee et al., 2014). The 1896 *Plessy v. Ferguson* case upheld the constitutionality of racial segregation in public facilities, including schools, under the doctrine of "separate but equal" (Plessy v. Ferguson, 163 U.S. 537, 1896). The 1946 *Mendez v. Westminster* case raised an awareness that racially and linguistically diverse students were being treated inequitably and ruled that racial segregation of Mexican American students in schools was unlawful (Bybee et al., 2014; Mendez v. Westminster School District of Orange County, 64 F. Supp. 544 S.D. Cal., 1946). The 1954 *Brown v. Board of Education* case overturned *Plessy v. Ferguson* and declared that separate educational facilities are inherently unequal and violated the 14th Amendment, thus paving the way for desegregation of schools and other public institutions (Brown v. Board of Education, 347 U.S. 483, 1954; Bybee et al., 2014). The 1974 *Lau v. Nichols* case involved a group of Chinese American students who sued the San Francisco Unified School District for not providing them with adequate English instruction, ruled that the district violated the Civil Rights Act of 1964 by denying them a meaningful opportunity to participate in the educational program and ordered the district to take appropriate measures to rectify the language deficiency (Lau v. Nichols, 414 U.S. 563, 1974). Although the U.S. Office of Educational Civil Rights (1975) implemented the decision, neither that office nor *Lau v. Nichols* (1974) mandated bilingual education. Yet, school districts were encouraged to implement bilingual education in Kindergarten through Grade 8 and to provide appropriate educational programs such as bilingual education for MLLs (Gonzales, 1990; Ovando & Collier, 1985). The 1981 *Castaneda v. Pickard* case established a three-part test to evaluate the adequacy of bilingual education programs (Castaneda v. Pickard, 446 U.S. 493, 1981). The test required the following: (a) that the program was based on sound educational theory, (b) that the program was implemented effectively with adequate resources and personnel, and (c) that the program was evaluated periodically and modified if necessary (Castaneda v. Pickard, 446 U.S. 493, 1981). See Table 1 for chronological summary of U.S. Supreme Court Decisions.

Table 1

U.S. Supreme Court Decisions

Supreme Court Decision	Year	Key Ruling	Citation
Plessy v. Ferguson	1896	Upheld the constitutionality of racial segregation in public facilities, including schools, under the doctrine of "separate but equal" Plessy v. Ferguson, 163 U.S. 537 (1896).	Plessy v. Ferguson, 163 U.S. 537 (1896)
Mendez v. Westminster	1946	Ruled that racial segregation of Mexican American students in schools was unlawful.	Mendez v. Westminster School District of Orange County, 64 F. Supp. 544 (S.D. Cal. 1946)
Brown v. Board of Education	1954	Overturned Plessy v. Ferguson and declared that separate educational facilities are inherently unequal and violated the 1^{4t}h Amendment, paved the way for desegregation of schools and other public institutions.	Brown v. Board of Education, 347 U.S. 483 (1954)
Lau v. Nichols	1974	Ruled that school districts must provide students with adequate English instruction, regardless of their native language.	Lau v. Nichols, 414 U.S. 563 (1974)
Castaneda v. Pickard	1981	Established a three-part test to evaluate the adequacy of bilingual education programs.	Castaneda v. Pickard, 446 U.S. 493 (1981)

Key Federal legislative acts have influenced education in the United States. The 1964 Civil Rights Act led to the development of additional legislation for non-English speaking students (Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq., 1964). The 1965 Elementary and Secondary Education Act (ESEA) allocated funding for primary and secondary education and aimed to improve student achievement and reduce inequality (Elementary and Secondary Education Act of 1965, 20 U.S.C. § 6301 et seq., 1965). The law forbade the establishment of a national curriculum (ESEA, 1965). The 1968 Bilingual Education Act (also known as Title VII of the ESEA) was the first federal legislation to recognize the lack of resources provided to students with limited English proficiency (Bilingual Education Act of 1968, 20 U.S.C. § 7401 et seq., 1968; Gandara, 2015; Stewner-Manzanares, 1988). The Bilingual Education Act provided federal funds to school districts to establish bilingual education programs, staff training, and other resources for MLLs (Gonzales, 1990; National Council of Teachers of English, 2008; Stewner-Manzanares, 1988) and aimed to increase non-English speakers' English skills, maintain, and perhaps increase their L1 skills, and support students cultural heritage in an acknowledgment that proper English as a Second Language (ESL) education was needed to improve SES disparity and reduce the cultural isolation of those who did not speak English (Leibowitz, 1980, p.24). Revisions of the Bilingual Education Act between 1968 and 1994 led to additional funding and language support for MLLs and the further development of elementary programs such as transitional bilingual education, ESL, one-way and two-way dual-language immersion to support MLLs in the school setting (Colorado, 2023). The 1974 Equal Educational Opportunities Act prohibited states from denying equal educational opportunity to any person on account of race, color, sex, or national origin and required states to take appropriate action to overcome language barriers that impeded equal participation by students in instructional programs (Equal Educational Opportunities Act of 1974, 20 U.S.C. § 1701 et seq., 1974).

More recently, the 2001 No Child Left Behind (NCLB) Act was a reauthorization and renaming of the ESEA of 1965, that included the English Language Acquisition Language Enhancement and Academic Achievement Act of 2002, also known as "Title III" (National Council of Teachers of English, 2008; No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq, 2001; U.S. Department of Education, 2016, 2017). Both acts and reauthorizations provided funding for programs (e.g., sheltered English immersion or dual-language), with the goal of facilitating positive academic results for MLLs (National Council of Teachers of English, 2008). NCLB aimed at stronger accountability, more control at the local level, increased parental choice, and implementation of proven teaching methods (U.S. Department of Education, 2002; West & Peterson, 2003). High-stakes testing became a requirement (NCLB, 2002). States had to set assessment baselines and benchmark targets each year to increase assessment scores for all students, especially for racially-ethnically and linguistically diverse student groups, to achieve 100% proficiency in reading and math by 2014 (NCLB, 2002). The 2015 Every Student Succeeds Act (ESSA) mandated that annual testing of English language proficiency standards was the responsibility of the school and placed a focus on high stakes testing to hold schools accountable while providing funding (Every Student Succeeds Act of 2015, 20 U.S.C. § 6301 et seq., 2015; U.S. Department of Education, 2016, 2017). Accountability under ESSA has involved evaluating the growth of students through standardized assessments to measure academic and language proficiency (U.S. Department of Education, 2017). Annual assessment of MLLs has allowed for the measurement and reporting of student outcomes to determine progress toward academic and language proficiency (Harrison & Lakin, 2018; Pompa, 2015). Annual measurable objectives have held states accountable under NCLB (2002) while allowing states to determine the standards students had to meet for accountability (U.S. Department of Education, 2017). Despite decades of education reform, the country has yet to close the opportunity gap between linguistically diverse students and monolingual students (Aud et al., 2011; Gonzales, 1990; NAEP, 2022b; NCES, 2011a). See Table 2 for a chronological summary of relevant federal legislative acts.

Table 2

Key Federal Legislative Acts

Federal Legislative Acts	Purpose	Citation
Civil Rights Act of 1964	Prohibited discrimination based on race, color, religion, sex, or national origin in public accommodations, employment, and education.	Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq. (1964)
Elementary and Secondary Education Act (ESEA) of 1965	Provided federal funding to improve the quality of education for all students, with a focus on low-income and disadvantaged students.	Elementary and Secondary Education Act of 1965, 20 U.S.C. § 6301 et seq. (1965)
Bilingual Education Act of 1968	Provided federal funding to school districts to establish bilingual education programs for students with limited English proficiency.	Bilingual Education Act of 1968, 20 U.S.C. § 7401 et seq. (1968)
Equal Educational Opportunities Act of 1974	Prohibited states from denying equal educational opportunity to any person on the account of race, color, sex, or national origin, and required states to take appropriate action to overcome language barriers that impede equal participation by students in instructional programs.	Equal Educational Opportunities Act of 1974, 20 U.S.C. § 1701 et seq. (1974)
No Child Left Behind (NCLB) Act of 2001	Reauthorized the Elementary and Secondary Education Act of 1965 and included the English Language Acquisition Language Enhancement and Academic Achievement Act of 2002, also known as "Title III". Both acts and reauthorizations provided funding for programs to support English language learners (ELLs), with the goal of facilitating positive academic results for ELLs.	No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq. (2001)
Every Student Succeeds Act (ESSA) of 2015	Reauthorized the Elementary and Secondary Education Act of 1965 and mandated that annual testing of English language proficiency standards was the school's responsibility and placed a focus on high stakes testing to hold schools accountable while providing funding.	Every Student Succeeds Act of 2015, 20 U.S.C. § 6301 et seq. (2015)

Definition and Outcomes Associated with the Opportunity Gap

An opportunity gap refers to the unequal or inequitable distribution of input resources that perpetuates lower educational aspirations, achievement, and attainment for minoritized groups of students (Ladson-Billings, 2014; Noguera, 2017). These lower results were driven by conditions of race, ethnicity, SES, English proficiency, community wealth, familial situations, the White, monolingual pedagogical approaches, and other factors (Anyon, 2019; Darling-Hammond, 2016). In comparison to monolingual peers, MLLs have received lower scores in academic tasks when entering Kindergarten; the gap widened as these MLL children progressed through school, especially in language and literacy (Buysse et al., 2014; Oller & Jarmulowicz, 2007; Reardon & Galindo, 2006; West et al., 2000). Examples of these lower results can be seen in language development and reading assessment scores between MLL students and monolingual students beginning in elementary school and persisting through Grade 8 (NAEP, 2022a; Takanishi & Le Menestrel, 2017). Kena et al. (2014) reported data that illustrated a persistent opportunity gap from 1998 to 2013 among Hispanic/Latine, MLL, and White/non-MLL students. The National Center for Educational Statistics (NCES) in its NAEP report evidenced that the gap continued through the most recent reading assessment in 2022 (Kena et al., 2014; NAEP, 2022a). Grade 4 national scores indicated only 44% of Hispanic/Latine Grade 4 students scored at or above a basic reading level, compared with 75% of White students (Fitton et al., 2018; NCES, 2003). A closer review of the NAEP (2022a) data revealed a striking difference in reading proficiency between Grade 4 White students and Hispanic/Latine students. Forty-two percent of White students were proficient while 21% Hispanic/Latine were proficient. Thirty-seven percent of non-MLL students were at or above proficiency, whereas only 10% of MLL Grade 4 students were at or above proficiency (NAEP, 2022a). Among all Grade 8 students the percent of students who scored above proficiency was 31%: White students were at 38%, Hispanic/Latine students were at 21%, non-MLL students were at 33%, and MLL students were at 5%. The NAEP 2022 (2022a, 2022b) data also revealed that there was no significant improvement in reducing the opportunity gap in reading scores for MLLs when compared to non-MLL from 2015 to 2022.

Socioeconomic Status and Association with Educational Outcomes

Researchers who investigated the opportunity gap focused heavily on SES (American Psychological Association [APA], n.d.; Gonzalez et al., 2016; Reardon & Portilla, 2016). They found substantial disparities in relation to literacy, print knowledge, vocabulary, and social–emotional skills between children first entering school who were living in impoverished areas or from families living below the U.S. federal poverty line (Bierman et al., 2008; Kaiser et al., 2000; Pollard-Durodola et al., 2018). Students from families with low-income began experiencing opportunity gaps early and the gaps often widened if the student continued to have trouble with reading and academics as they progressed through life (Fitton et al., 2018).

Research on the impact of SES on academic and linguistic outcomes for MLLs has yielded valuable insights into effective support strategies for MLL students (D'Angiulli et al., 2004; Kieffer, 2011). Kieffer (2011) investigated and found significant effects of SES on reading proficiency for MLL and monolingual students from Kindergarten through Grade 8. Kieffer (2011) reported more significant associations in Kindergarten between SES and word reading for MLLs than monolingual students. However, by Grade 3 this relationship had reversed, with SES being more significantly associated with reading growth for monolinguals than for MLLs (Kieffer, 2011). SES had a larger effect on reading proficiency in the earlier grades, and over time (e.g., by Grade 5) the relationship was weakened as MLLs obtained greater levels of reading instruction (Kieffer, 2011). Multiple regression models predicting language scores and accounting for poverty, sex at birth, and other protective factors indicated that poverty is a marked factor in language skills for MLL students (Winsler et al., 2014b). Data from several studies pointed to MLLs' participation in high-quality reading instruction mitigated the influence of living in impoverished areas and in communities with limited access to resources on their academic achievement outcomes (Slavin & Cheung, 2005). Disparities persisted within reading and math scores when researchers held MLLs' SES constant (Halle et al., 2012). Researchers have recognized SES as a crucial predictor that must be carefully considered during research reviews, given its significant role in influencing academic outcomes and language acquisition for MLLs (Hammer et al., 2014).

Early Vocabulary and Literacy Development

Early childhood has emerged as a crucial period for acquiring preliteracy skills and early vocabulary in both L1 and L2, as early literacy skills are fundamental pre-academic skills (Buysse et al., 2014; Paro et al., 2009). Early literacy has corresponded to the knowledge, skills, and dispositions that precede learning to read (Hanover Research, 2016. p. 13). Six early literacy skills children learn in their preschool years that have moderate to large predictive relationships with later literacy measure are alphabet knowledge, knowledge of the names and sounds associated with printed letters, phonological awareness independent of meaning, phonological memory, rapid automatic naming of letters or digits and objects or colors, writing or writing name (August & Shanahan, 2006).

MLLs in their early childhood developmental period are reported to have experienced unique challenges in developing early literacy skills (Halle et al., 2012), as schools may not be linguistically and culturally responsive and may not have a strong understanding of the language acquisition process. MLLs' L1 and L2 skills, especially those from low-income backgrounds, have varied greatly upon entering ECE (Hammer et al., 2014). Researchers have postulated that exposure to L1 early literacy skills and preacademic instruction has been limited given that nearly 75% of MLLs are born in the U.S. (Flannery, 2009). Other researchers have postulated that the varied L2 skills noted for MLLs is due to infrequent exposure to English vocabulary among MLLs, that has resulted in language barriers when accessing education (Gandara et al., 2003; Garcia, 2018; Kieffer, 2012; NCES, 2003). MLL children have often had less L2 exposure, opportunity to develop L2 vocabularies, exposure to L2 print, and familiarity with the structure of text in L2 than do monolingual children (Grabe, 2009). As a result, MLLs' vocabulary and preacademic performance upon entry to Kindergarten is significantly lower than that of their monolingual peers and peers from high-income backgrounds (Buysse et al., 2014; Oller & Jarmulowicz, 2007; Reardon & Galindo, 2006; Reardon & Portilla, 2016; West et al., 2000). Research has found that monolingual students know approximately 6,000 words by Grade 1 and understand tenses, whereas MLLs have trouble when English words are used out of context (Carlo et al., 2004; de Jong & Harper, 2005) and may not understand instructions given in English as a consequence of their L1 proficiency and stage of L2 acquisition (Halle et al., 2012). Other researchers have argued that differences in scores may be due to the risk of MLLs loss of their home language fluency in a monolingual educational environment, which could reduce academic outcomes (Genesee et al., 2004; Halle et al., 2012; Slavin & Cheung, 2005).

MLLs would likely benefit from early interventions and opportunities for developing oral language, vocabulary, and social–emotional skills in L1. MLLs have required direct vocabulary instruction with scaffolding (Carlo et al., 2004; de Jong & Harper, 2005). Teachers and teacher educators would also benefit from knowledge and professional development on responsive teaching. A significant body of research has supported MLL participation in ECE programs that emphasize early literacy and the importance of exposure to vocabulary and text (Raikes et al., 2019). Researchers have suggested that pairing support of MLL's L1 will further increase ECE benefits (Buysse et al., 2014; Hammer et al., 2014; Winsler et al., 2014). Researchers have suggested that additional rigorous research is required to understand the carryover most effectively of gains in L2 proficiency and inclusion of L1 support during ECE into higher grade levels (Lipsey et al., 2018; Raikes et al., 2019).

English Language Acquisition Theories

MLLs enter the school system with a variety of L1 and L2 abilities and have learned languages differently than monolingual students. Environmental factors, the purpose of learning each language (e.g., social and contextual or specialized and abstract), and teaching practices have affected their learning (Hammer et al., 2014; Tabors, 2008; Valdés, 2001). Multiple theories related to language acquisition of MLLs have received support in existing literature. Cummins’ threshold hypothesis, interdependence hypothesis and cross-language transfer theory, and Krashen’s language acquisition theory, have provided a conceptual framework from which inferences were drawn related to the mixed outcomes of MLLs language acquisition and academic outcomes (Ardasheva et al., 2012; Cummins, 1979, 1981; Krashen, 1987, 2003; Wong Fillmore, 1991). These theories have suggested that children’s exposure to language prior to school and during school varies widely making the many factors related to second language acquisition and associated outcomes difficult to isolate.

The threshold hypothesis (Ardasheva et al., 2012; Cummins, 1981) has suggested a minimum level of proficiency in L2 is necessary before the MLL learner can benefit from oral language learning strategies that use L2 as the instructional language. Immersing students in L2 instruction before the students reach this threshold has led to negative effects of bilingualism, such as difficulty comprehending instruction (Teement & Pinnegar, 2007). The hypothesis may explain the results of bilingual studies that have investigated the effects of bilingualism on MLL development (Teement, & Pinnegar, 2007). Once students have reached the second threshold in

L2 acquisition, the positive effects of bilingualism will emerge according to the threshold hypothesis (Teement & Pinnegar, 2007).

Research found that the interdependence hypothesis is related to the relationship between L1 and L2 (Teement & Pinnegar, 2007). Importantly, exposure to L2 did not inhibit the learning of L1 (Teement & Pinnegar, 2007). Rather, L1 and L2 were dependent on each other and a learner's cognitive or linguistic ability in either language enhanced the development of the other (Teement & Pinnegar, 2007). The interdependence hypothesis suggested that stronger skills in either language will facilitate more rapid development of the other language (Teement & Pinnegar, 2007).

The cross-language transfer theory (Cummins, 1981) suggested that language learners can use their knowledge and skills from one language (L1) to facilitate the learning of another language (L2). The theory is based on the assumption that languages share some common features and structures that can be transferred across languages. Cross-language transfer theory can also explain how bilingual speakers can use their language background to enhance their cognitive abilities and metalinguistic awareness. Cummins (1981) introduced a potential mechanism through which cross-language transfer could occur, the Common Underlying Proficiency model. Researchers have found that as proficiency in one language develops, so does language independent knowledge, or the common underlying proficiency, that will aid in development of L1 or L2 (Goodrich & Lonigan, 2017). Several findings have affirmed the cross-language transfer theory and underlying mechanism that learning a new skill set in L1 develops a child's implicit metalinguistic knowledge and then fosters development of L2 (August & Shanahan, 2006; Dickinson et al., 2004; López & Greenfield, 2004; Winsler et al., 2014). Researchers found that fostering strong L1 development in MLLs ultimately provides a solid foundation to support L2 development because as L2 strengthens more linguistic knowledge transfers from L1 to L2 (Cheung & Slavin, 2012; Goldenberg et al., 2013; Raikes et al., 2019). The cross-language theory, threshold hypothesis, and interdependence hypothesis have supported the interactions of L1 and L2 and suggested that when a child is not instructed in L1 alongside L2, the benefits of L2 instruction are diminished (Cummins, 1981).

The language acquisition theory (Krashen, 1987) has suggested that language is acquired subconsciously through natural immersion and learning is acquired through content-based instruction. The theory has distinguished between learning and acquisition in the following way: acquisition occurs when the learner is receiving comprehensible input that is slightly above the learner's current level of language proficiency and through social and academic communication; conversely, learning is a conscious process that involves explicit instruction and memorization of grammar rules and vocabulary. Krashen's theory also suggested that a learner's motivation, low anxiety, and a positive attitude will increase language acquisition.

MLLs exposed to L2 at home and in community settings before they start school have had familiarity with English sounds and may have some contextual and receptive L2 skills (Takanishi & Le Menestrel, 2017). The California Department of Education has termed MLLs with this exposure "receptive bilingual" (2008, p. 106). In the context of an ECE classroom or upon entry into elementary school, MLLs who were first exposed to English after age 3 have been referred to as "sequential" or "successive bilingual" and have had less opportunity to develop English receptive skills in L2 (Tabors, 2008).

Researchers have observed that sequential bilingualism unfolds in four stages over 6 months to 2 years, and learners can transition through multiple stages simultaneously depending on the context, available language scaffolds, communication partners, and opportunities for language use in the classroom (California Department of Education [CDE], 2008, p. 106). The first stage of sequential bilingualism is use of L1 only (CDE, 2008, p. 106; Tabors, 2008). The second stage involves a nonverbal period in which word production in both L1 and L2 decreases as the student learns that using L1 is no longer effective (Bligh & Drury, 2015; Tabors, 2008). During this stage, the sequential bilingual student engages in listening, quietly rehearses the new language, and pays close attention to gestures, facial cues, and environmental clues (CDE, 2008, p. 106). The third stage is productive use of individual words and phrases in L2, during which language used is often predictable, formulaic, and contains grammar errors typical of overgeneralization (CDE, 2008, p. 106; Tabors, 2008). In the fourth stage the sequential bilingual student begins to communicate with flexibly constructed phrases and sentences in L2, demonstrating proper grammar and an emerging ability to use non-contextualized academic language (CDE, 2008, p. 106; Tabors, 2008).

The most effective practices in supporting outcomes for a MLL obtaining English proficiency have required increasing opportunities for vocabulary learning and including L1 supports (Lesaux et al., 2014). A language-based ECE program in a dual-language format, where a child's L1 can be incorporated organically, has supported language acquisition and reading skill acquisition by providing more linguistic input than a child would encounter in regular daily conversation (Bus et al., 1995; Mol et al., 2008; Montag et al., 2015; Niklas et al., 2016; Senechal & LeFevre, 2002).

School systems have implemented programs informed by one or more of these theories (National Center for Education Statistics, 2015). Some have implemented programs that support the development of bilingualism and biliteracy by providing L1 support and instruction (Administration for Children and Families, 2017). In contrast, some states have implemented policies to support English immersion (Hoff et al., 2012) and do not require or consider L1 in screening, testing, or instruction at the early childhood level (Nores et al., 2018). At a more granular level, teacher misunderstandings of how MLLs acquire L2 may affect their beliefs regarding language acquisition and create resistance to inclusion of L1 in classrooms leading to an opportunity gap in access to instruction for MLLs (Nores et al., 2018). Teacher training in the theories of language acquisition for MLLs can guide instructional practices, policy, and programming to most effectively support MLLs (Frede & Garcia, 2010; Nores et al., 2018).

Time to Achieve Second Language Proficiency

A growing body of research has employed rigorous empirical methods and longitudinal student-level data to investigate the time required for MLLs to transition out of EL support programs (e.g., Conger, 2009; Conger et al., 2019; Hakuta et al., 2000; Slama, 2014, 2017; Umansky & Reardon, 2014). Conger (2009) and Slama (2014) longitudinally examined time to L2 proficiency using discrete time survival sample analysis. Conger's (2009) sample included MLLs from New York City schools (*n* = 8,976) and Slama's (2014) sample consisted of MLLs from Massachusetts schools (*n* = 69,014). Spanish L1 speakers acquired L2 slower than MLLs from other linguistic backgrounds, even after accounting for SES (Conger, 2009; Slama, 2014). Conger (2009) emphasized the importance of the age of entry into the school. Conger (2009) found that children entering school at age 5 could reach basic proficiency in 1 year, with 40% of MLLs reaching proficiency within an average of 1.69 years. In contrast, children entering school at age 10 took an average of 3.78 years to reach proficiency, with only 14% reaching proficiency within 1 year.

A student's experience has shown significant impacts on the rate of L2 acquisition, with input type playing a crucial role (Harklau, 2000). The time necessary for MLLs to acquire L2 has depended on two types of communication: basic interpersonal communication skills and cognitive academic language proficiency (Cummins, 1980, 1999). Cummins (1979) has stated that basic interpersonal communication skills relate to the day-to-day, face-to-face, context-embedded, and conversational language necessary for social interactions with other people (e.g., language used on the playground). The language associated with basic interpersonal communication skills was found to be cognitively undemanding, non-specialized, develops first, and usually learned within 6 months to 2 years (Cummins, 1999). Cummins (2008) found that a person learns basic interpersonal communication skills in a similar way to how they learn L1 (e.g., contextualized and social) and cognitive academic language proficiency corresponds to more formalized reading, writing, and grammar used within the academic language setting and is essential to success in school (Cummins, 2008). Cummins (2008) characterized cognitive academic language proficiency as a specialized, context-reduced, and abstract form of language that encompasses skills beyond language acquisition, such as comparing, classifying, evaluating, synthesizing, and inferring (Cummins, 2008). Research supported the finding that s MLL takes approximately 5–7 years to acquire cognitive academic language proficiency and gain a solid understanding and use of English in an academic setting (Cummins, 1979; Pettit, 2011).

Collier (1987, 1995), Cummins (1981), and D. E. Mitchell et al. (1999) reported estimates of up to 10 years before MLLs become English proficient and competitive with monolingual students in academic English. Olsen (2014) reported that MLLs who enter school with little or no English made steady progress and could achieve English proficiency within 5–7 years. MLLs without prior instruction, and no support in development of L1, take at least 7 years to reach English proficiency when provided with consistent L1 support (Collier, 1995). Hakuta et al. (2000) analyzed English proficiency as a function of length of exposure for MLLs in

Kindergarten to Grade 6. Hakuta et al. (2000) reported that it took 3–5 years for a MLL to reach proficiency in oral language and 4–7 years for English academic language proficiency in districts with successful EL programs. In one such district (*n* = 1,872, free and reduced lunch rate of 35%), most MLLs were redesignated by the end of Grade 4 and over 90% by the end of Grade 6. MLLs were redesignated through qualifying oral proficiency scores, MacMillan Informal Reading Inventory, and a district-developed writing assessment referenced to district criterion. MLLs in another district (*n* = 122, 70% free and reduced lunch) at Grade 1 and Grade 3 were 1 year behind monolinguals and in Grade 5 the difference increased to 2 years, as measured by the eight area composites from the Woodcock Language Battery and MLLs' scores were compared to English normative scores (Hakuta et al., 2000).

Some teachers have believed that EO instruction led to quicker L2 acquisition and have not considered that use of L1 may aid in the learning of L2 (Cummins, 1981; Krashen, 2003; Wong Fillmore, 1991). Other teachers who believed that L2 can be learned in 1–2 years (Pettit, 2011; Reeves, 2006), harbored misconceptions about L1 inclusion and usefulness. Reeves (2006) found that 71.7% of teachers thought students should be able to learn English within 2 years. Reeves (2006) investigated how teachers' lack of awareness of basic interpersonal communication skills, cognitive academic language proficiency, and cultural differences can impact language acquisition (Reeves, 2006). Researchers found that it is unlikely to fully acquire L2 within 1–- 2 years (C. Mitchell, 2005; Valdés, 1998).

Sex at Birth and Associated Language and Academic Outcomes

Boys and girls, defined as sex at birth in this study, often perform differently on standardized tasks of verbal and language abilities and reading achievement (Lapayese et al., 2014; Reilly et al., 2019; Serafini et al., 2022; Winsler et al., 2014b). Researchers have shown differences associated with sex at birth are present in preschool (Winsler et al., 2014a), elementary school (Lapayese et al., 2014), and through high school (Reilly et al., 2019). These differences have been observed among monolinguals and MLLs across ages (Winsler et al., 2014a).

Winsler et al. (2014a) examined whether demographic variables moderated the effects of preschool-aged MLLs' status in predicting child outcomes using extant data from the Early Childhood longitudinal Survey Birth Cohort (children aged 24 months to 65 months) to explore factors that influenced the development of MLLs and monolingual children in early childhood. Hierarchical Linear Modeling was employed to analyze two repeated measures for each language group: English-only (*n* = 7,750), Heritage-only (*n* = 450), and English and Heritage-only (*n* = 1,600, with approximately 1,200 Spanish speakers). Demographic variables such as sex at birth (female), marital status, parental education, and family income were included in the Hierarchical Linear Modeling analysis to examine the extent to which the MLL's heritage country of origin, home language group, birthplace of mother, and maternal report of language influenced their English language proficiency growth over time. Winsler et al.'s (2014a) findings revealed significant differences between girls and boys by MLL group upon Kindergarten entry, with girls outperforming boys in early cognitive skills, literacy, math, social skills, problem behaviors, and early motor skills. Sex at birth and parental engagement moderated the relationship between child outcomes and home language (Winsler et al., 2014a). Although, sex at birth and parental engagement were more strongly associated with child outcomes among English speaking households than among MLLs.

Reilly et al. (2019) examined NAEP datasets' reading and writing scores (*N* = 3.035 million) across three decades, 1988 to 2011, to determine whether sex at birth differences existed at Grade 4, Grade 8, and Grade 12. These researchers based their hypothesis on a large study of sex at birth differences in achievement scores, which found statistically significant differences between sex at birth, with girls scoring higher than boys (effect sizes ranged from d = -.18 to d = -.30). Reilly et al. (2019) hypothesized that sex at birth differences would be present in reading and writing achievement as well as that there would be a negative association between effect size and year of assessment, indicating a decline over time in sex at birth differences. Reilly et al. (2019) used a random effects model for their meta-analysis, and effect sizes were reported as the mean differences between sex at birth using standardized units (Cohen's d). Reilly et al. (2019) found differences in reading proficiency between sex at birth are small (d = .19) in Grade 4, larger in Grade 8 (d = .30) and larger in Grade 12 (d = .32), with girls scoring significantly higher across grades. Reilly et al. (2019) performed a metaregression on reading achievement using the year of assessment as the predictor. The results indicated that the sex at birth differences did not decrease over time (Reilly et al., 2019). Furthermore, the most recent NAEP data indicated that girls outperformed boys by 4 percentage points in Grade 4, and that girls outperformed boys by 7 percentage points in Grade 8 (NAEP, 2022a). In writing, Grade 4 girls scored 17 points higher than boys, and in Grade 8 the difference had increased to 20 points (NAEP, 2022a).

Other researchers also found significant sex at birth differences (Lapayese et al., 2014; Motamedi, 2015; Serafini et al., 2022). For example, Lapayese et al. (2014) explored sex at birth differences in biliteracy in a two-way immersion bilingual program using standardized assessments in Grade 1 to Grade 5. Sex at birth variations occurred across all grade levels on both English and Spanish assessments but were significant in Grade 5, where girls outperformed boys (Lapayese et al., 2014). Motamedi (2015) and Serafini et al.'s (2022) results indicated that girls obtained L2 proficiency faster than boys. Serafini et al. (2022) also reported that being male was related to lower GPAs and reading scores but positively related to math outcomes in Grade 5.

Winsler et al. (2014b) studied the language development of Hispanic/Latine MLLs from families with income levels that did not exceed 150% of the federal poverty level. The researchers’ examined the language proficiency of children in English (*n* = 997) and children in Spanish (*n* = 1,062) at age 4 who attended community-based childcare programs. Winsler and colleagues (2014b) analyzed extant data from the Miami School Readiness project to examine whether 4-year-olds’ social-emotional skills, behavior, and cognitive skills predicted L2 proficiency among MLLs who attained L2 proficiency (*n* = 304, emergent bilinguals) and MLLs who did not attain L2 proficiency (*n* = 219, predominantly Spanish speaking) in Kindergarten (*N* = 1,554). Multivariate analyses of variance, including child competence differences at age 4, indicated that girls outperformed boys in all assessments. However, there were no significant interactions for language groups (Winsler et al., 2014b). Hierarchical multiple regression models indicated that sex at birth explained 5 percent of the variance and was a significant predictor of MLL’s language proficiency at age 4 (Winsler et al., 2014b). After social-emotional skills and behavior were added into the model, 7.7 percent more variability was explained. However, sex at birth was no longer a significant predictor, suggesting that L2 proficiency may be related to sex at birth differences in social skills. Additionally, Winsler et al. (2014b) performed statistical analyses that resulted in statistically demographic differences among sex at birth, immigrant status, age, and parent marital status, all of which were significantly related to group membership in emergent bilingual or predominantly Spanish speaking. Females (55.6%) were more likely to become emergent bilinguals, indicating longitudinal trends in sex at birth differences favoring females (Winsler et al., 2014b). The female advantage of L2 proficiency at age 4 did not persist into Kindergarten when MLLs were assessed on oral L2 proficiency. Researchers have concluded that sex at birth is an important predictor that must be considered in understanding research findings, as it is a factor that plays a role in language acquisition and academic outcomes for MLLs (Lapayese et al., 2014; Reilly et al., 2014).

Assessment Practices of English Language Acquisition

U.S. school districts have implemented standardized testing to monitor and report MLLs' English proficiency progress in accordance with U.S. federal requirements under ESSA (World-Class Instructional Design and Assessment [WIDA], 2023c). The type of measure has varied between states and may consist of an entry level screener or placement tests (e.g., the Kindergarten MODEL), the WIDA-APT or the WIDA Screener) in addition to annual progress monitoring measures (e.g., WIDA *Assessing Comprehension and Communication in English State-to-State* [ACCESS] for ELLs, California English Language Development Test, State of Texas Assessments of Academic Readiness, Texas Assessment of Knowledge and Skills, Texas English Language Proficiency Assessment System). Language proficiency has also been measured using a standardized assessment (e.g., Woodcock Johnson reading/writing achievement battery) as a portion of the annual progress monitoring. Schools also have used report card grades, in combination with standardized measures and assessments to assess L2 proficiency (WIDA, 2023g).

More than 41 states and territories have belonged to the WIDA consortium and have used the ACCESS suite of standardized assessments for screening, monitoring progress, and measuring progress of English proficiency (Coulter, 2016; WIDA, 2020f). ACCESS, developed in collaboration between WIDA and the Center for Applied Linguistics, has consisted of a suite of standardized tests that measure MLLs' English proficiency in the four language domains of listening, speaking, reading, and writing (Kim et al., 2018). ACCESS has become a widely accepted measure used annually by over 2,000,000 MLLs in Kindergarten through Grade 12 annually (Coulter, 2016; WIDA, 2023d). ACCESS testing, or other standardized measures of language proficiency, has allowed schools to meet federal and state accountability requirements (WIDA, 2020a). The California English Language Development Test has served as an annual statewide assessment for measuring the English language acquisition of MLLs in California (Jepsen, 2010). However, the California English Language Development Test has not been intended to measure academic attainment (Jepsen, 2010). This assessment has measured listening and speaking, reading, and writing, and overall language proficiency and is administered in the fall of each school year (Jepsen, 2010). Like the California English Language Development Test, ACCESS was not designed to measure academic attainment. However, ACCESS was designed to suggest “can do” areas for a MLL related to academic tasks (Jepsen, 2010; WIDA, 2023e). ACCESS scores have shown validity only within a grade level and cannot be compared from grade to grade, whereas California English Language Development Test scores have shown validity within a grade span (e.g., Kindergarten to Grade 2, Grades 3–5, and Grades 6–8;Jepsen, 2010). For both ACCESS and California English Language Development Test scores, regressions were established for each year assessed (Center for Applied Linguistics, 2021; Jepsen, 2010).

Language proficiency screeners have effectively determined MLLs' L2 proficiency, facilitating placement in future ACCESS or the Kindergarten MODEL testing and guiding placement and instruction for school programming (WIDA, 2023b). The WIDA Kindergarten ACCESS Placement Test (W-APT) has gained recognition as the most widely used English proficiency screener in the country (Walker, 2019). School districts have used the W-APT since its development in 2005 to guide MLLs' initial placement in English language programs (Walker, 2019). Children have taken the test in Kindergarten after their families identified a language other than English spoken at home (Walker, 2019; WIDA, 2020b). The Kindergarten MODEL assessment has become a widely used English language proficiency assessment in many states that belong to the WIDA consortium (WIDA, 2023g). When a student has entered public school in a WIDA consortium member state, the student may have taken the Kindergarten MODEL assessment in Kindergarten during their first 4 weeks. The annual MODEL assessment in later grades have met U.S. federal requirements under ESSA for reporting MLLs' progress toward English language proficiency and the Kindergarten MODEL assessment have been used for establishing a baseline for monitoring students' future growth (WIDA, 2023b; 2023h). Kindergarten MODEL testing has measured English language proficiency in the four domains of listening, reading, speaking, and writing (WIDA, 2023g). In the state of Florida, the Oral Language Proficiency Scale–Revised (Abella et al., 2005), has screened children when parents reported speaking a language other than English at home and is a grade-normed English oral proficiency test (Ansari et al., 2017). The Oral Language Proficiency Scale– Revised has shown strong internal consistency, greater than .80 (Abella, 1997). Children score on a scale of 1 to 5 and a score of 4 or less has determined the qualification for ESL instruction (Ansari et al., 2017).

A study that compared the WIDA Screener Online and the ACCESS for ELLs 2.0 (hereafter referred as ACCESS for ELLs) online tests included data from 35,017 MLLs in Grade 1-12 in over 10,000 schools and 2,500 districts across 35 WIDA partner states (MacGregor & Sahakyan, 2020). MLLs took the WIDA Screener and ACCESS for ELLs online within a single academic year. The results of the estimated grade level correlations using the scaled scores indicated that the Screener scores were highly correlated, $p = .85$ across all grades with a low of $p = .67$ at Grade 1 and a high of $p = .86$ at Grades 7-9 and were strongly predictive of ACCESS Overall composite scores. The researchers performed a linear regression model that included student-level demographic characteristics, a variable interval that measured the time in days between the WIDA Screener and ACCESS for ELLs test administration, grade-level fixed effects, and state-, district-, and school-level random effects. Special education status, female sex at birth, and Hispanic/Latine ethnicity were identified as indicator variables. A longer time between tests and female sex at birth indicated higher ACCESS scores, whereas individual education plan (IEP) status and Hispanic/Latine ethnicity had statistically significant and negative parameter estimates. After these individual and institutional factors were accounted for, the predictive relationship between the WIDA Screener and ACCESS tests remained. The researchers' results provided support for administering WIDA Screener as a method to identify MLLs and predicted future ACCESS scores, and the importance of controlling for individual factors (e.g., sex at birth, special education status). Strong predictive data have allowed the school district to screen and support MLLs in the appropriate placement and interventions with confidence (MacGregor & Sahakyan, 2020).

Assessment Practices for Literacy

Schools in the U.S. have been mandated by the ESSA to administer annual high-stakes testing to students to meet school and state benchmarks each year for accountability (U.S. Department of Education, 2016, 2017). As part of Title III, the English Language Acquisition, Language Enhancement, and Academic Achievement Act, MLLs are required to take the same tests of academic content as those taken by monolinguals (Menken, 2010). States have determined the specific academic achievement test administered to students to track and measure academic achievement (e.g., Florida Comprehensive Assessment Test, Texas Assessment of Knowledge and Skills, Northwest Evaluation Association [NWEA] Measures of Academic Progress [MAP]) and student growth is monitored at distinct timepoints annually (e.g., Fall, Winter, Spring; MAP, 2019).

To meet the requirements of ESSA the achievement test must be fair and unbiased, aligned with the state's academic content standards, measure students' progress over time, be reliable, and be valid (NWEA, 2019). The achievement tests must be aligned with the state's academic content standards in reading and the tests must cover the same material that is being taught in the classroom (NWEA, 2019). Validity means that the tests have measured what they are intended to measure (NWEA, 2019). Reliability means that the tests have produced consistent results over time (NWEA, 2019). Many states have their own standardized assessments in reading that have met the requirements for annual high-stakes testing related to the ESSA (NWEA, 2019).

The Florida Comprehensive Assessment Test is a standardized test that has been used to measure student achievement in reading and math. The test has aligned with Florida state standards and is designed to be valid and reliable. A study by the Florida Department of Education found that the Florida Comprehensive Assessment Test was highly correlated with other measures of reading and math achievement, such as the NAEP. The correlation coefficients ranged from .70 to .85, which is considered to be high. The test had a reliability coefficient of .90 in reading and math, indicating that the test produced consistent results over time. The Florida Comprehensive Assessment Test has strong internal consistency across all populations (α = .98; Ansari et al., 2017).

Slama et al. (2017) used English language proficiency assessment, the Texas English Language Proficiency Assessment System, and academic achievement on either the Texas Assessment of Knowledge and Skills or the State of Texas Assessments of Academic Readiness, through the end of Grade 8 to measure student outcomes. Researchers from the Texas Education Agency reported that the STAAR was highly correlated with other measures of reading and math achievement, such as the NAEP and that the correlation coefficients ranged from .70 to .85, which is considered to be high. The STAAR had a reliability coefficient of .91 in reading and math, indicating the test produced consistent results over time.

The Measures of Academic Progress (MAP) standardized assessment was created by Northwest Evaluation Association (NWEA), as an adaptive computer test (NWEA, 2016). States that required MAP testing may have used MAP as a stand-alone measure to meet state mandated testing requirements or in addition to the state mandated assessments, to more equitably enable the district to make appropriate, data-driven decisions at the classroom, school, and district levels. The tests measure a student's academic achievement and growth in reading, language usage, mathematics, and science. The average correlation coefficients have ranged from .68 to .80 between scores on MAP Growth Reading and state tests, indicating strong psychometrics (NWEA, 2019). MAP test results are available immediately after testing, which allows districts to apply the results to instruction and program changes quickly in comparison to state-mandated standard reading assessments (e.g., Wisconsin Forward Exam, Illinois Assessment of Readiness).

Early Childhood Education and Elementary School Instructional Programs

In response to the U.S. Supreme Court decisions and legislative actions taken to overcome biases embedded in a majority White, English speaking school system, a variety of language and educational support programs were developed to support early childhood education and elementary school instruction (Frede & Ackerman, 2007; Office of Early Childhood Development, 2022).

ECE Program Descriptions

Head Start. Head Start has provided early intervention and school readiness skills for children aged 4 years in acknowledgement that low-income compounded a student's risk of insufficient exposure to literacy and language and impacted MLLs more than other students and has been funded by the U.S. federal government since 1964 (Kieffer, 2011). Eligibility requirements have indicated that at least 90% of enrolled children must live at or below the federal poverty level (Wong et al., 2008). A small percentage of participants may have experienced homelessness, have lived in foster care, or have lived in families receiving public assistance (Wong et al., 2008). Head Start has provided quality and nurturing childcare, parental education and involvement, facilitation and monitoring of preventative medical care, and healthy and nutritious meals and snacks (Currie, 2001; Wong et al., 2008). Head Start has used the Creative Curriculum and emphasized the teaching of early fundamental literacy skills, beginning oral language skills, social-emotional learning, and school readiness skills (Administration for Children and Families, 2021). A Head Start classroom requires a maximum size of 20 students, and no more than 30% of them may have had an IEP, not including speech-only plans. Head start programs have followed the planned language approach, which has not prescribed language use, although studies have indicated the use of Spanish in classrooms when students are MLLs, and staff is available (Administration for Children and Families, 2023). Head Start has served as a model for other ECE programs targeted to support children of families in low-income situations (Currie, 2001). Head Start programs have varied across states and have offered half-day or full-day care in monolingual or bilingual classes (Wong et al., 2008). Although programs are managed at the local level, they have been required to follow federal guidelines for quality care and admission requirements (Currie, 2001).

State-funded Early Childhood Education. State-funded ECE programs have emphasized teaching of early fundamental literacy skills and beginning oral language skills, that have been shown to be important foundational skills taught in prekindergarten to improve the effectiveness of later reading instruction (Bierman et al., 2008). Preschool programs that receive state funding must abide by state rules related to the funding requirements, and in some states, the support of MLLs (Nores et al., 2018). Variation in state policies and program guidelines has led to inconsistencies across preschool MLL support programs. The language support offered may have been low-quality or provided by a bilingual teacher or paraprofessional without proper training and credentials (Garcia, 2018). When L1 use has been left to the teacher's or program's discretion, rather than in a formal structured program model, the effects on language and literacy outcomes have been unclear (Burchinal et al., 2012; Garcia, 2018; Hindman et al., 2015). This inconsistency in language used to support MLLs has made it difficult to attribute effects on language and literacy development in Head Start programs and other ECE programs (Garcia, 2018).

Preschool-aged MLLs' peer and teacher interactions have differed from those between monolingual peers and monolingual teachers and have resulted in reduced interactive play and peer interactions (Washington-Nortey et al., 2022). This is significant because the reduction of peer interactions has led MLLs to rely more on teachers than on monolingual peers to support their play (Washington-Nortey et al., 2022). Taken together, evidence has indicated that the most beneficial experiences for MLLs in ECE have occurred when MLLs are in bilingual classrooms (Dominguez & Trawick-Smith, 2018).

According to the state board of education responsible for the EO ECE in the study, the EO ECE program was designed for children ages 3–4 years and has continued to emphasize the relationships among ECE, parenting education and involvement, and children's future success in school. The EO ECE program has received funding through U.S. Federal grants provided to the state to operate a high-quality ECE program that has brought together qualified teachers, a proven curriculum (e.g., Creative Curriculum), and parental involvement to improve school readiness. The grant that funded the EO ECE program originated in 1998 and extends into the future with no funding end dates.

The EO ECE has grant-imposed restrictions on minimum requirements for enrollment in the program. At a minimum, 80% of the children served by the program must have had a family income of less than four times the federal poverty level, updated periodically in the *Federal Register* by the U.S. Department of Health and Human Services under the authority of 42 U.S.C. § 9902(2). The EO ECE program included in this study also agreed to prioritize children from such families when making enrollment decisions. The EO ECE program has been in a school district serving a population greater than 500,000 residents. The EO ECE program has measured a child's qualification with an entrance screener and assigned the child a weighted score to determine their level of need.

School districts in the state of the study have taken specific, proactive measures, required by grant funding requirements, to ensure that families of potentially qualified students in the community are aware of the no-cost opportunity for ECE enrollment in the program. The EO ECE program grant has required that the child is offered a minimum of 12.5 hours per week of high-quality preschool. The program has effectively incorporated comprehensive developmental screening, instruction by bachelor-level teachers licensed for ECE, and a standards-aligned research-based curriculum, providing students with a solid foundation of knowledge and skills that fosters their success throughout their school experience. The program has maintained a staff-to-child ratio similar to Head Start, ensuring that each classroom has no more than 20 students with a ratio of one adult to 10 children. One of these adults may be a paraprofessional. The classroom teacher is required to have a current professional educator license with an ECE endorsement. The classroom paraprofessional is required to have held a current paraprofessional approval. MLLs who have entered the EO ECE program have been identified through the Home Language Survey completed by the family when enrolling in the program to identify students from backgrounds with languages other than English.

Private Preschool Programs. Privately-funded preschools have varied widely in philosophy, staffing, and curriculum as compared to publicly-funded preschools (Barnett & Straight, 2007). A privately funded preschool's ability to implement and support common quality elements, such as student/teacher ratios, teacher degree requirements, professional development, coaching, and record keeping, have varied widely. Unlike publicly-funded programs, private childcare centers have been restrictive in their application process; they have not been required to accept child-care subsidies and they have refused an applicant for a variety of reasons, such as behavioral or language differences (Barnett & Straight, 2007). Accepting child-care subsidies would have required privately-funded programs to operate according to guidelines set by the publicly-funded entity (Barnett & Straight, 2007). For this reason, many have not accepted such funding. As a result of private programs' high degree of variability across process and structure, research related to the outcomes produced has been minimal.

Early Childhood Education Enrollment and Outcomes

ECE enrollment rates in the U.S. have shown that nearly 20% of U.S. children aged 3–5 years did not attend any form of ECE (i.e., Head Start, state-funded, or private preschool) before entering Kindergarten (Solano & Weyer, 2017). Only 19% of children from low-income backgrounds were enrolled in high-quality ECE, compared to 29% enrollment for children from high-income backgrounds (Solano & Weyer, 2017). The percentage of children aged 3–5 years who did not enroll in ECE rose to 37% in 2021 (NCES, 2023). Enrollment rates were lower for Hispanic/Latine children than for all other racial–ethnic groups (NCES, 2023). Hispanic/Latine children had 13% lower enrollment than their White peers aged 3–4 years, and Hispanic/Latine children had 4% lower enrollment than White children aged 5 years (NCES, 2023).

The disparity in enrollment in any form of ECE among SES groups has persisted over the last 2 decades (NCES, 2023). Witte and Trowbridge (2005) stated that 45% of 3- to 5-year-olds from low-income families were enrolled in any form of ECE, compared to 75% of 3- to 5-year-olds from high-income homes. The data from 2021 have indicated a higher percentage of enrollment for 3- to 5-year-old children from high-income families enrolled in any form of preschool (79%), and lower enrollment (36%) for 3- to 5-year-old children from low-income families (NCES, 2023). Collectively, these data have shown that the disparity in access to ECE for low-income families has persisted over the past two decades.

The COVID-19 pandemic has likely had have an impact on ECE enrollment (Center for American Progress, 2021; Steans et al., 2022). The change in enrollment rates from 2017 to 2021 is likely due to the COVID-19 pandemic and is not likely to be a permanent trend in enrollment rates. However, national data have shown the pandemic most severely impacted Black, Hispanic/Latine, and communities of low-income background (Center for American Progress, 2021; Steans et al., 2022). ECE programs saw enrollment declines in the fiscal year 2021 disproportionately represented by children from lower-income households, and Black and Hispanic/Latine children (Steans et al., 2022). Preliminary national data from the 2021-2022 school year has not shown enrollment rates have rebounded (Center for American Progress, 2021).

Publicly-funded preschools have offered programs to reduce disparities in ECE accessibility and address school readiness challenges (Office of Early Childhood Development, 2022). These programs have aimed to provide high-quality ECE experiences for children aged 3-5 years, fostering school readiness by developing vocabulary, preliteracy skills, and Kindergarten preparedness (Office of Early Childhood Development, 2022). Government and publicly-funded programs have consistently evaluated school readiness as a key factor when families apply for enrollment in state- or federally-funded ECE (Administration for Children and Families, 2010). To ensure all children have access to high-quality ECE, regardless of their background or circumstances, federal and state governments have funded ECE for children aged 3-4 years in families below 200% of the federal poverty level (Garver, 2021). Publicly-funded programs such as Head Start and state-funded preschool have been offered at no cost to eligible children, yet these programs have served fewer than one in three eligible students, and the implementation of the National Institute for Early Education Research quality standards for some of these programs remains low (Garver, 2021).

Concerns regarding MLLs' social-emotional competencies and L2 communication skills upon entry to Kindergarten have persisted for over 20 years (Kaiser et al., 2000; NCES, 2019). Data from 1995 to 1998 have indicated that more than 40% of MLLs entering school demonstrated delays in social–emotional competencies and the ability to communicate in L2;

more than 20% of MLL students display high levels of undesired behaviors, causing them to have difficulty adjusting to school and learning (Kaiser et al., 2000). More than 20 years later, data from NCES (2019) have indicated 41% of MLLs are entering school with social-emotional development delays and they are also delayed in L2 communication, as compared to 25% of monolinguals (NCES, 2019). The researchers of the 2019 study by the NCES, 2019 found that 23% of Kindergarten MLL students were delayed in L2 communication, compared to 11% of monolinguals. Data related to MLLs' school readiness, social-emotional competencies, and language development have led researchers to question ECE programs' effectiveness and outcomes.

Researchers have identified many benefits for MLLs' participation in ECE (Ansari et al., 2017; Conger et al., 2019; Slama et al., 2017) and research results have shown that ECE promotes school readiness and may provide long lasting benefits (e.g., Bustamante et al., 2021; McCoy et al., 2017; Miller, 2017; Yoshikawa et al., 2013). Research has yielded mixed findings on the long-term outcomes of ECE participation in relation to L2 acquisition and academic achievement. Some studies have shown short-term benefits (Conger et al., 2019; Slama et al., 2017), while others have indicated a fading out of these benefits in elementary school (Lipsey et al., 2018). Furthermore, research has explored the impact of preschool instruction in L1 on student outcomes, and mixed findings have indicated a need for further research with rigorous methodology to fully comprehend the instructional use of L1 in ECE (Stephens et al., 2023).

A longitudinal study of 814 young adults revealed that those from low-income backgrounds who received at least 24 months of high-quality childhood education in their first 5 years had a higher likelihood of college graduation and higher salaries at age 26 (Bustamante et al., 2021). A meta-analysis of 22 high-quality studies conducted between 1960 and 2016 found that children who attended high-quality ECE programs were less likely to be placed in special education, less likely to be retained in a grade, and more likely to graduate from high school than peers who did not attend such programs (McCoy et al., 2017). McCoy et al. (2017) indicated an overall benefit to ECE participation. Furthermore, Yoshikawa et al. (2013) conducted a randomized controlled trial of 1,364 children from low-income families and incorporated strong methodology. In Yoshikawa et al.'s (2017) study, participants were randomly assigned to either a high-quality ECE program or a control group. The researchers' analysis of covariance, propensity score matching, and descriptive statistics demonstrated that the ECE group had higher cognitive and academic achievement scores at age 15, as well as higher scores on measures of social-emotional skills and fewer behavioral problems (Yoshikawa et al., 2013).

A randomized control trial of study of Tennessee's state-wide prekindergarten program investigated the effects of the program on academic achievement and behavioral outcomes (Lipsey et al., 2018). The study included 2,990 children across two cohorts from low-income families who were randomly assigned offers of admission or a wait list control. Children who attended prekindergarten scored higher than children who did not attend prekindergarten on all academic measures at the beginning of Kindergarten, with the most benefit experienced by students who did not speak English in their home with low pretest achievement scores. However, the control group caught up, and by Grade 3, the control group received higher scores on all academic measures than the prekindergarten group. Children who attended prekindergarten received lower scores than children who did not attend prekindergarten on academic and behavioral measures in Grade 3 and Grade 6, indicating long-term negative effects of the statewide prekindergarten program.

Miller (2017) researched L1 inclusion in Head Start Spanish-English MLLs (N = 550) using national data from the 2014 version of the Family and Child Experiences Survey. Miller's (2017) mixed-method approach included qualitative analysis and parent interviews. While there was no significant association between use of L1 classroom instruction on early literacy or math outcomes, MLLs with L1 instruction had significantly higher English receptive vocabulary. Teacher and parent interviews indicated benefits of L1 inclusion, that included social-emotional benefits, English language skills and Spanish language skills development.

Gormley et al. (2008) quasi-experimental research examined the effects of Oklahoma's prekindergarten program on Hispanic/Latine children's outcomes in Kindergarten. A regression discontinuity model was employed and aimed to estimate the causal effects of an intervention to compare pre-academic skills (e.g., early reading, writing, and math skills) of Hispanic/Latine students who participated in the program with those who did not participate in the program. Gormley et al.'s (2008) results evidenced greater effects for prekindergarten attendees, and even greater effects for children whose parents were born in Mexico or spoke Spanish in their home.

Grimm et al. (2018) studied the English receptive vocabulary knowledge of MLLs using data from the Early Childhood Longitudinal Study-Birth. MLLs' English receptive vocabulary at age 5 predicted reading comprehension in Grades 3 and 8 (Grimm et al., 2018). Regression analysis indicated that ECE was associated with positive benefits for children from low-income families. Grimm et al. (2018) reported the effects of participation in ECE were mediated by MLLs' cognitive and social-emotional skills.

Ansari et al.'s (2017) quasi-experimental study of Latine children who attended either a state-funded prekindergarten program (n = 6,919) or center -based care (n = 4,983) used a sequential cohort design to include 4 years of participants. Ansari and colleagues reported that state-funded prekindergarten attendees exited the program with greater pre academic and social-behavioral skills in comparison to the center-based care attendees (Ansari et al., 2017). Two sequential models using ordinary least squares regression methods revealed that the public school prekindergarten group had higher scores on math and literacy assessments at Kindergarten entry, as well as higher scores in the areas of executive function and attention skills (Ansari et al., 2017). Latine children who attended public school prekindergarten a year before Kindergarten (*n* = 9,695) entered Kindergarten with stronger L2 proficiency, scored higher on standardized math and reading tests, and earned higher grades at the end of Grade 3 (Ansari et al., 2017).

Slama et al.'s (2017) longitudinal study used data based on a single cohort of Grade 1 MLL students in Texas public schools and followed students through Grade 8 (*n* = 71,140). The researchers tracked the students' progress in L2 proficiency as measured by statewide standardized assessments and academic achievement measures. The study employed time survival analysis to examine whether and when Grade 1 MLLs first attained L2 proficiency, the time to obtain proficiency, the time to achieve satisfactory reading (*n* = 69,216) and math scores (*n* = 69,014). Slama and colleagues also examined how students' education experiences, student demographic characteristics, and district characteristics are related to L2 proficiency; for example, Slama examined a variety of factors including initial L2 proficiency level, ESL or bilingual program participation, sex at birth, eligibility for the federal school lunch program, immigrant status, and participation in a special education program. MLLs who started Grade 1 with a beginning level of L2 proficiency who were eligible for the federal school lunch program, participated in a special education program, and started Grade 1 at age 7 or older were less likely to attain L2 proficiency and meet both reading and math standards at any given grade (Slama et al., 2017). Slama et al. (2017) also examined whether the time it took students to attain these key outcomes differed by enrollment in a public prekindergarten program as compared to no enrollment in the public prekindergarten program. MLLs who participated in a public prekindergarten program (*n* = 66,081) were more likely to attain L2 proficiency by the end of Grade 2, and more likely to meet state reading and math standards. Slama et al. (2017) reported that the small effect sizes associated with enrollment in public prekindergarten and enrollment in a bilingual program were linked to a marginally more effective chance of achieving L2 proficiency and passing reading and math assessments.

Conger et al.'s (2019) longitudinal study used nationwide data collected in the Early Childhood Longitudinal Study-Birth, and examined the relationship between preschool participation, language, and literacy development for two groups of MLLs (*n* = 39,002), state-funded preschool participants and a comparison group of non-state-funded preschool participants who entered the school district in Kindergarten. Conger et al. (2019) measured early literacy skills using standardized assessments of vocabulary, grammar, and comprehension. After examining factors associated with MLLs' participation in preschool, Conger and colleagues used regression analysis to examine the impact of preschool participation on L2 development, literacy skills, and math skills in Grade 1. Conger and colleagues also examined exit rates from the EL support program among the two groups at Grade 1 (*n* = 19,449). Multiple regression analysis results indicated that MLL's who participated in state-funded preschool exited the EL support program in Grade 1 and exited earlier than MLLs who did not participate. This result was found after controlling for SES, parent education, and child's race and ethnicity (Conger et al., 2019). The researchers found that MLLs benefited from participating in the state-funded preschool and exited EL status more quickly. The benefits were particularly strong for MLLs who had been exposed to less English at home.

Elementary School Programming

In the U.S. school system, English immersion classrooms were the norm from the turn of the 20th century through the 1960s (Crawford, 2004). However, in the late 1960s the U.S. government began to recognize the need for bilingual support for MLLs. Teachers also began to recognize the need to support MLLs with more equitable resources, new teaching methodologies, and L2 materials. This led to the creation of Teachers of English to Speakers to Other Languages in 1966 (Gonzales, 1975). There are two types of programs for MLLs in the U.S. school system and they differ in their stated goals. One has a goal to achieve proficiency in English so that academic content is accessible and the other has a goal to develop proficiency in both L1 and L2 to achieve bilingualism and biliteracy.

Program Models Designed to Promote English Language Proficiency. MLLs in the following programs have been provided instruction in English. See Table 3. For the listed programs, L1 has been supported to the extent needed to promote L2 acquisition. Promoting English proficiency and assisting MLLs in content area learning emerge as central goals of ECE programs that serve MLLs (Serafini et al., 2022; Takanishi & Le Menestrel, 2017).

Table 3

Elementary Program Models to Promote English Language Proficiency

Elementary Program	Description
Sheltered immersion with ESL	Sheltered immersion provides MLLs with English academic instruction, tailoring the language to their proficiency and employing comprehension-enhancing techniques. MLLs have benefited from EO instruction complemented by ESL support. Content delivery utilizes specific strategies and adaptations to ensure accessibility. The goal is to foster both English proficiency and content area learning (Takanishi & Le Menestrel, 2017).
Transitional Program of Instruction (ESL)	ESL and L1 support are actively provided to help MLLs access instruction in L2. MLLs received instruction primarily in English, with L1 support integrated when necessary to facilitate L2 acquisition. The goal is to English proficiency and content area learning (Takanishi & Le Menestrel, 2017).
Transitional Bilingual-Early Exit	L1 instruction is incorporated as the primary instructional language for core academic subjects for a classroom of MLLs who speak the same L1. Instruction in early reading and the history and culture of the country, territory, or a geographic area which is the native land of the students or of their parents has been taught in L1. Transition to L2 instruction has occurred within 2-3 years. The program goal remains to achieve competency in L2 (Gandara et al., 2004).
English Immersion	Content is primarily taught using specific instructional strategies and adaptations to make the content accessible to MLLs in mainstream classrooms taught in English. Educators have aimed to increase English proficiency and content area learning (Serafini et al., 2022).
Home Language Instruction	Home language instruction is used to increase English proficiency and content area learning (Serafini et al., 2022).
Departmental ESL Instruction	MLLs are moved classrooms for different content area subjects, where the students have also received English language developmental instruction, content area ESL, L1 instruction or support, and EO instruction from various teachers. MLLs spend less time with monolingual peers and less time in the general education classroom (Bauler & Kang, 2020). Educators aimed to increase English proficiency and content area learning (Bauler & Kang, 2020).
Co-teaching	Two or more appropriately certified teachers (e.g., a mainstream or general education teacher and an English as a second language teacher) share classroom instructional responsibilities. Educators aimed to increase academic achievement of MLLs via side-by-side mainstream inclusion to support MLLs' inclusion in English-speaking classrooms and support access to content area learning (Bauler & Kang, 2020).
Push-in Instruction	MLLs remain in their mainstream classroom all day and an ESL/bilingual-certified teacher pushes into the classroom for a required duration to provide instruction in ESL or L1 (Serafini et al., 2022).
Pull-out Instruction	Instruction in ESL or L1 is provided by an ESL/bilingual-certified teacher outside of the mainstream classroom daily for a required duration (Serafini et al., 2022).

Sheltered Immersion Program. The sheltered immersion program provided MLLs with instruction in academic content areas (e.g., math, science, social studies) using English as the language of instruction. However, the MLL's proficiency level determined the adapted level of English used in these programs. Teachers used simplified vocabulary, slower speech rates, and visual aids to make the content more comprehensible for MLLs. Sheltered immersion programs typically provided MLLs with additional support for English language development, such as pull-out classes or tutoring.

English as a Second Language Program. In ESL programs direct English instruction is provided through an ESL-endorsed or certified teacher. Pull-out is a variation of the ESL model where the student is "pulled-out" from the classroom for services (Collier & Thomas, 2004). A MLL student in such a program leaves the general education classroom for a portion of the regular school day to receive ESL instruction (Serafini et al., 2022). Another variation of the model is referred to as Push-in. MLL students in such a program are kept in the general education classroom, with the ESL teacher providing support to ESL students during instructional time (Serafini et al., 2022). In an ESL classroom with Push-in services, direct instruction in English and English proficiency are prioritized (Serafini et al., 2022).

Transitional Program of Instruction (TPI). MLLs who are having difficulty with written or spoken English are enrolled in TPI and provided support and instruction to help them succeed in academic subjects and learn academic English. TPI has been designed to encourage MLLs' L1 maintenance. In the study district, TPI was implemented when the school has fewer than 20 students who speak the same L1. MLLs enrolled in TPI are provided either push-in or pull-out L1 and ESL support. Certified ESL teachers or bilingual teachers instruct MLLs' academic subjects in L2, or content teachers with sheltered immersion training are taught how to use a modified core curriculum to meet the MLL's language abilities.

Transitional Bilingual Education (TBE)/ Early-Exit Program. The TBE early exit program was designed to provide ESL instruction for a limited period, typically 2 –3 years, before MLLs transitioned to English language monolingual classes with monolingual peers. TBE has been designed to assist MLLs in rapidly acquiring English language skills and accessing academic content, enabling them to thrive in English-language classrooms. In the study district, TBE was implemented when the school had 20 or more students who share the same L1. TBE may have included push-in or pull-out instruction. The MLL remains in the program for 3 years or until L2 proficiency is reached.

Program Models Designed to Enhance Bilingualism and Biliteracy. Transitional Bilingual Education (TBE) Late-Exit/ Developmental Bilingual and Dual-language programs were designed as bilingual instructional programs that provide MLLs instruction in both English and their native language. See Table 4. These programs were designed to maintain native language skills while developing English language skills with the goal of achieving bilingual and biliteracy proficiency.

Table 4

Elementary Program Models to Promote Bilingualism and Biliteracy

Elementary Program	Goal	Description
Developmental / Transitional/ Bilingual Education Late-Exit	Grade level content and English Proficiency	The program includes the same components of the transitional bilingual early exit, however the Developmental Bilingual/ TBE late-exit program focuses on developing MLL's competence in two languages and literacy in two languages. The student remains in the program for many years (Gandara et al., 2004).
Dual-Language One-Way Immersion	Grade level content in two languages and Bilingualism and Biliteracy	Educators include L1 instruction in early grades, including early reading, and then decreased until equal amounts of L1 and L2 are taught through elementary school and middle school. Students continue in the program after L2 competency is reached, usually greater than 6 years (Berens et al., 2013).
Dual-Language Two-Way Immersion	Grade level content in two languages and Bilingualism and Biliteracy	English speakers and MLLs are taught in Spanish and English, with varying percentages depending on the program model. Students continue in the program after L2 competency is reached, usually greater than 6 years (Gandara et al., 2004).

Transitional Bilingual Education (TBE) Late-exit/ Developmental Bilingual. TBE includes similar components as the TBE early-exit program. However, the TBE late-exit / developmental bilingual program focuses on developing competence in two languages and literacy in two languages. The student has remained in the program after L2 proficiency is reached (Gandara et al., 2004). In the TBE program students transition from instruction in their native language into English language instruction using components of the native language and instructional support systems (Slavin & Cheung, 2005).

Dual-language One-Way and Two-Way Immersion Programs. MLLs' development of bilingualism, biliteracy, academic attainment, and cross-cultural competencies is the focus of dual-language programs. Dual-language programs have embodied the threshold hypothesis and cross-language transfer theory. The threshold hypothesis, as set forth in a study by Cummins (1976), stated that a minimum threshold in language proficiency must be passed before a second-language speaker can reap any benefits from language. It also states that, to gain proficiency in a second language, the learner must also have passed a certain age-appropriate competence in L1. The cross-language transfer theory has shed light on the role of L1 in promoting L2. In other words, a student's L2 development is dependent upon their L1 proficiency. Dual-language programming adheres to the following models described by the percent ratios of L1 to L2 instruction: 90%/10%, 80%/20%, and 50%/50% models. Programs progress toward 50%/50% instruction starting in year 4 of the program, equivalent to Grade 3, and maintain with 50%/50% instruction through Grade 6 (Berens et al., 2013).

Cummins (2005) hypothesized that establishing language and literacy first in L1, while simultaneously, yet slowly and gradually, introducing L2 over time produces optimal MLL outcomes (Berens et al., 2013). Educators have long held the implicit assumption that dedicating more time to a learning task is essential for effective human learning, leading to the perception that partial learning models, such as the 50%/50% dual-language learning approach for reading acquisition, are less effective (Berens et al., 2013). Berens et al. (2013) found that in 50%/50% models MLLs were less adept at L2 reading skills, although they showed no evidence of delay in either language.

Data from the Office of English Language Acquisition (2019) revealed that Spanish/English dual-language instructional programs have emerged as the most prevalent type of dual-language programs in the United States. Over 30 out of 45 states reported using Spanish as the partner language in their dual-language immersion programs in 2016-17 (Office of English

Language Acquisition, 2019; Shen et al., 2022). Fifteen states did not report implementing dual-language programming, and one state did not provide any data (Office of English Language Acquisition, 2019). This number has increased to 44 states reporting the use of dual-language instructional programs, with more than 80% using Spanish as a partner language for the 2021-2022 school year (Roberts, n.d.). After several years of schooling, dual-language programs have demonstrated improvements in general academic attainment, as evidenced by MLLs performing as well as or better than their peers who were not enrolled in dual-language programming (Barnett et al., 2007; Steele et al., 2017). Educators have implemented dual-language instruction for students in Kindergarten through Grade 5, and whenever feasible, they have extended it to middle and high school. Dual-language one-way immersion programs have educated L2 speakers in two languages with the goal of proficiency and mastery of curriculum in both L1 and L2 (Thomas & Collier, 2003). In the one-way dual-language program, kindergartners received 80% of instruction in Spanish and 20% in English. Educators gradually shift the language of instruction, decreasing Spanish instruction by 10 percentage points and increasing English instruction by 10 percentage points each year, until Grade 3, when each language is used equally for half of the school day. See Table 5.

Table 5

One-Way Dual-Language Instruction Allotment

Grade level	Spanish		English	
	%	Included	%	Included
Kindergarten	80	Spanish literacy, social studies, science, math	20	English language development with focus on English literacy, specials
1	70	Spanish literacy, social studies, science, math	30	English language development with focus on English literacy, math cross-language connections (approximately 30 min/week), specials
2	60	Spanish literacy, social studies, science, math	40	English language development with focus on English literacy, math cross-language connections (approximately 75 min/week), specials
3	50	Spanish language development with focus on Spanish literacy, social studies, science, math	50	English literacy, math cross-language connections (approximately 75 min/week), specials
4–8	50	Spanish language development with focus on Spanish literacy, social studies, science, math	50	English literacy, math cross-language connections, specials

In dual-language one-way immersion programs, instruction is provided in L1 and L2. The dual-language one-way model is structured to be consistent with the Literacy Squared framework (Escamilla et al., 2014). Within this framework teaching of MLLs follows an English development model that started in Kindergarten with 45 min/day of English development, following the 80% Spanish/20% English model. English language development is then increased to 60 min/day in Grades 1 and 2, and 90 min/day in Grade 3. In Grades 4–6 students are provided 2 hr/day of English language arts, with science and social studies taught in Spanish. In Grades 7 and 8, dual-language one-way MLLs participate in a class for Spanish for native speakers. The study district is committed to fostering MLLs' fluency, literacy, and academic content proficiency in both their L1 and L2. Initial instruction in literacy and academic content is provided in L1, while L2 is incorporated for oral language development. This model places an equal emphasis on the development and status of both L1 and L2. In the one-way immersion program provided by the study district, which is available from Kindergarten to Grade 8, students are not allowed to exit the program once the students achieve L2 fluency.

Dual-language two-way immersion programs embrace goals similar to the one-way immersion program (i.e.., L1 and L2 proficiency and mastery of the curriculum). However, in dual-language two-way immersion monolingual English speakers receive instructions alongside MLLs to develop L2 as their second language (Thomas & Collier, 2003). In dual-language two-way immersion programs, researchers have found that L1 instruction in two-way immersion programs has produced gains comparable to those made by children in EO instruction, supporting both concurrent and longitudinal associations of the positive effects of dual-language programming. Importantly, researchers have found that L1 inclusion does not harm or delay English development (Barnett et al., 2007; Durán et al., 2010; Raikes et al., 2019).

Forty years of research has supported the inclusion of a MLL's L1 language in instruction to teach literacy and academics, particularly in dual-language two-way immersion programs (Collier & Thomas, 2004, 2017; Green, 1998; Serafini et al., 2022; Thomas & Collier 1997, 2002; Willig 1985). However, even with the support of elementary school programs designed to improve L2 acquisition and/or programs to support access to academic content, MLLs have not achieved academic proficiency at the level of their monolingual peers (NAEP, 2022).

Literature on the Comparative Effectiveness of Program Models for MLLs

Several factors have hindered the exploration of different program models for MLLs: a scarcity of rigorous designs, inconsistencies in program implementation and quality, the racially-ethnically, culturally, and linguistically diverse MLL population, and the confounding effects of external factors like SES, parental engagement, and teacher qualifications. Many MLLs in the U.S. have received education in programs that teach only in English, even though theoretical research (Cummins, 1981) and program implementation research has shown that MLLs benefit from support in L1 as well as in L2, and that dual-language instruction is beneficial (Halle et al., 2012). A growing, but limited, body of evidence has supported the positive effects of dual-language programs on language learning and academic attainment, and that those benefits extend to MLLs from low-income backgrounds (Esposito & Baker-Ward, 2013; Genesee & Lindholm-Leary, 2013; Lindholm-Leary & Block, 2010; Serafini et al., 2022; Thomas & Collier, 2014). Shultz and Grimm (2019) investigated whether timing in native language acquisition affected child bilingualism and found that students who participated in dual-language programs scored higher than students who participated in EO programs on standardized assessments for mathematics and reading in Grade 11. Researchers investigating bilingual education have found positive associations between dual-language programs and both academic attainment and English proficiency (August & Shanahan, 2006; Green, 1998).

Despite this growing evidence, critics have argued that dual-language or bilingual programs are ineffective or harmful for MLLs because MLLs in such programs score lower on assessments of English proficiency in early grades than other MLLs. Jepsen (2010) studied language outcomes of dual-language programs and found that students in bilingual education programs had lower listening and speaking proficiency scores than other MLL students in the early grades (e.g., Kindergarten through Grade 2; Grades 3–5). Jepsen reported that the effects of bilingual education on English proficiency, relative to those of other MLL programs, were much smaller, insignificant, or even positive. In addition, Jepsen (2010) noted that bilingual programs had positive effects on L2 proficiency in English for students with high English listening/speaking proficiency at program entry, but that the programs had negative effects on MLLs with low proficiency at entry. Jepsen's conclusion regarding effect sizes indicated that while negative effects of bilingual programming were sometimes statistically significant, their small magnitudes suggested minimal concerns about the detrimental impact of bilingual education on English proficiency in older students. These findings aligned with the cross-language transfer theory. In many programs, the bilingual process has been shown to take 6 years; testing English proficiency before this period therefore may provide inaccurate English proficiency results, because in many such programs students did not reach 50% L2 instruction until Grades 3–5 (Ovando & Collier, 1998).

Valentino and Reardon’s (2015) study compared outcomes of MLLs in English immersion and dual immersion programs and found similar outcomes. Valentino and Reardon (2015) found little evidence of significant differences in program effects in Grade 2 based on MLLs' initial English proficiency. MLLs in the dual immersion program had English language arts scores at Grade 2 that were well below those of their peers in English immersion. At the same time, MLLs in transitional bilingual English language arts scores were well above MLLs in English immersion (Valentino & Reardon, 2015). However, by Grade 7, students in dual immersion and transitional bilingual programs had much higher scores in English language arts than their peers in English immersion programs (Valentino & Reardon, 2015).

Serafini et al. (2022) found that the impact of bilingual education models, such as two-way immersion programs, were associated with faster L2 acquisition, higher English proficiency gains, and higher scores in Grade 5 on academic assessments for MLLs. Their study included five cohorts of MLLs from the Miami School Readiness Project, beginning at age 4, who participated in public school prekindergarten or community-based preschool and followed students through Grade 5. Demographic data indicated that 80% of MLLs were eligible for free or reduced lunch, and 85.8% of participants were Hispanic/Latine (Serafini et al., 2022). Participants (*N* = 18,588) were enrolled in a bilingual program (e.g., one-way or two-way dual-language) or sheltered/mainstream program. Multiple regression analysis indicated that the two-way immersion program model was associated with faster L2 acquisition, which mediated the link between program type and grade point average in Grade 5 (Serafini et al., 2022).

Serafini et al. (2022) excluded participants who did not exit EL status by the end of Grade 5 (*N* = 2,040), included participants who left the study district for up to 1 year at a time (*n* = 272) and did not account for participant attendance in their analysis. Researchers agreed that student absenteeism negatively affects standardized test scores across ages and groups (e.g., Aucejo & Romano, 2016; Gershenson et al., 2017; Kearney et al., 2023; Santibañez & Guarino, 2021). Absenteeism's negative association with student outcomes has necessitated the usage of attendance during the review of research and design of future studies (Kearney et al., 2023).

Duran et al. (2015) employed an experimental-control design and systematic documentation of language fidelity in their 2-year study to investigate the differential growth in English receptive and expressive vocabulary among 31 preschool-aged MLLs enrolled in either TBE instruction or predominantly EO instruction. These MLLs were randomly assigned to two Head Start classrooms: one taught predominantly in English using a ratio of 70:30 English-to-Spanish, while the other followed a TBE format with a ratio of 70:30 Spanish-to-English. MLLs made strong gains in receptive English vocabulary in both the TBE and predominantly English group. TBE participants made stronger gains in all Spanish literacy and vocabulary measures without significant differences in English measures that favor a predominantly English instructional model. There was no evidence of similar gains by predominantly English over TBE on the results of the English measures of receptive or expressive vocabulary. MLLs gained early literacy skills after participation in the TBE condition, as evidenced by the English and Spanish letter-word identification results. Duran and colleagues (2015) findings, along with other researchers (e.g., August & Shanahan, 2006; Barnett et al., 2007; Goldenberg, 2008; Rolstad et al, 2005; Slavin & Cheung, 2005), has provided the insight that rapidly transitioning MLLs to EO ECE may not be the most effective approach to improving school readiness and long-term reading outcomes in L2.

High-Quality Teaching Practices for MLLs

Many researchers have concluded that MLLs benefit from the same high-quality instructional environments as monolinguals (Garcia, 2018; Goldenberg et al., 2013; Polanco et al., 2018; Slavin et al., 2011). Research has demonstrated the importance of adequate core instruction for both monolingual and MLL students within a robust multi-tiered system of support and response to intervention framework (LaForett et al., 2013; Orosco & Klinger, 2010). Further research has demonstrated that poor delivery in core instructional areas can help to explain why academic performance is associated with receiving preparation for school (Buysse et al., 2014). A multi-tiered system of support has evolved into a problem-solving approach that encompasses screening students, providing evidence-based interventions tailored to individual needs, monitoring student progress, and making data-driven decisions to evaluate student responsiveness (Sanetti & Collier-Meek, 2019; Stoiber & Gettinger, 2016). Additional multi-tiered methods for academic intervention (e.g., response to intervention) and behavior management (e.g., school-wide positive behavioral interventions and supports) supported students school-wide (Sanetti & Collier-Meek, 2019).

In addition to high-quality core instruction, there have been additional instructional practices that benefit MLLs. Two perspectives in literature have been instrumental in shaping high-quality learning experiences for MLLs in the classroom environment (Downer et al., 2012). The first perspective advocates for culturally responsive care (Shivers et al., 2011). The second perspective highlights the importance of frequent bilingual language interactions, enabling MLLs to leverage their L1 knowledge while gaining exposure to culturally appropriate books with relatable themes and contexts (Goldenberg, 2008).

The most effective practices and techniques used to teach language to MLLs, such as specific language-boosting techniques used in ECE classrooms, have also been linked to positive language outcomes (Buysse et al., 2014). Techniques and interventions that have supported MLLs aim to foster joint attention, build reciprocal conversation, and foster child-directed speech (Noble et al., 2019). Additional instructional supports that can improve outcomes for MLLs have included visual or contextual cueing, explicit vocabulary instruction, and supplemental instruction in L1 (Buysse et al., 2014). The size of a child's vocabulary when they enter formal schooling has predicted later academic success (Coyne et al., 2004; Senechal et al., 1998; Snow et al., 2005). The technique of asking open-ended questions has developed students' oral language and enhance vocabulary learning (Hindman et al., 2015). Teaching strategies that increase lexical and syntactic diversity in a student's speech, more than play-based methods of teaching, have proven most effective (Noble et al., 2019). Bion et al. (2013) and Fenson (1994) found that young children can learn as many as four new words a day, and children can recognize a new word after a single exposure (Flack et al., 2018). Enrollment in high-quality ECE provides opportunities for young children to develop vocabulary skills and knowledge needed to become effective elementary students.

Providing opportunities for more linguistic input (e.g., intervention teaching phonological awareness, vocabulary, and comprehension) has demonstrated importance for MLLs and students from low-income backgrounds, who are less likely to engage in conversations with caregivers that can enrich vocabulary (Senechal & LeFevre, 2002). A substantial body of research on monolingual interventions exists, while high-quality research on L2 or dual-language interventions for early literacy remains scarce (Crow et al., 2021). Dual-language books (i.e., books with the same text in two languages on the same page or across a two-page spread; Naqvi et al., 2010) have emerged as an effective method for helping MLLs learn early literacy skills and build vocabulary in L1 and L2 via cross-linguistic transfer (Semingson et al., 2015). Herrera et al. (2021) reviewed 67 interventions that included shared book reading and found significant and statistically comparable improvements in language performance when the implementer asked direct questions and when the implementer did not ask questions (weighted effects of .26 versus .09). Domke (2019) discussed using dual-language books to help MLLs develop vocabulary and transfer their knowledge and skills from L1 when reading books in L1 and L2 (Taylor et al., 2008). Dual-language books have created an ideal learning context for MLLs, because such tools can aid biliteracy development through inclusion of knowledge of L1, which then theoretically can support acquisition of language and literacy knowledge in L2 (Cummins, 1979; Goldenberg, 2011). Integrating both L1 and L2 sequentially through reading dual-language books can foster cross-linguistic connections (Domke, 2019) and promote a sense of inclusion and belonging for students in their school and classroom, where MLLs are immersed in L2 (Agosto, 1997; Domke, 2019).

The acquisition of oral language, reading, and writing skills of MLLs is a social and interactive process, including complex mutual supports and relationships across these domains and systems of language learning (Brisk & Harrington, 2007; Buysse et al., 2014). Research has shown that if MLLs are to take advantage of early literacy instructional approaches, having a grasp on L2 is important if instruction occurs in L2 (August & Shanahan, 2006). Entering ECE without a strong grasp of English because of reduced exposure to L2 creates a barrier to MLLs taking advantage of instruction offered in English immersion classrooms. Proficiency in L2 gives students an advantage of making cross-language relationships and effectively transferring skills (Buysse et al., 2014), if a dual-language program is unavailable. Students who entered the formal school setting proficient in L1 showed an advantage over MLLs acquiring L2 and literacy skills simultaneously (Buysse et al., 2014).

Herrera et al. (2021) reviewed research conducted between 1997 and 2017, evaluating its effectiveness in improving language and literacy development in children aged 36 to 71 months (about 6 years) prior to Kindergarten. Herrera et al. (2021) examined the effect sizes of 109 studies encompassing 132 interventions taught in English for at least 75% of the time. Herrera et al. (2021) excluded interventions primarily targeting specific populations and found that interventions with vocabulary and comprehension instruction significantly improved language performance (i.e., d = .19). Interventions that included direct instruction in phonological awareness resulted in a significant weighted effect size of d = .32, a 13 percentile point increase in performance in the intervention group compared to the control group (Herrera et al., 2021). Studies that taught print knowledge resulted in a significant weighted effect size of .23 (Herrera et al., 2021). Interventions that taught both print knowledge and phonological awareness improved print knowledge performance (weighted effect size of .25), but interventions that taught print knowledge without teaching phonological awareness did not.

MLLs not enrolled in high-quality ECE with access to L1 instruction have not been provided the opportunity to build their emergent literacy skills in the prekindergarten years (Hanover Research, 2016). MLLs were more likely than other students to have trouble with language and literacy measures, which may lead to later difficulty with academic attainment because literacy is a key component of academic attainment and is involved in most academic subjects (Fitton et al., 2018; Hernandez, 2012; Lesaux et al., 2014). The established relationship between early language competency and subsequent reading proficiency and academic achievement has spurred increased research into the factors influencing outcomes in these areas for MLLs (Burchinal et al., 2016; Kieffer, 2008; Senechal & LeFevre, 2002; Vernon-Feagans et al. 2019). SES, sex at birth, language of instruction in early literacy, L2 proficiency, and instructional methods are crucial considerations when evaluating the quality and effectiveness of instructional program type, teaching practices, and longitudinal outcomes (Polanco & Luft de Baker, 2018).

Support for L1 Inclusion in the Classroom

Since the 1960s, researchers have been examining the incorporation of L1 into classroom instruction, and many have advocated for its integration (Cummins, 1981; Gonzales, 1990; Krashen, 2003; Krashen & Biber, 1988; Wong Fillmore, 1991). The use of L1 in the classroom has had positive outcomes for L1 language and literacy outcomes without negatively impacting L2 learning (Barnett et al., 2007; Durán et al., 2013; Farver et al., 2009; Garcia, 2018). Language acquisition theories emphasize the long-term nature of language acquisition. However, programs stemming from Supreme Court rulings and legislative actions have been implemented in discrete, short-term blocks of time (e.g., 3- and 4-year-old preschool, transitional programs from Kindergarten to Grade 2 or Kindergarten to Grade 6, with a shift to 50% L2 instruction after

Grade 2 or Grade 3), disregarding the extended timeframe required for achieving L2 proficiency as advocated by Cummins' (1981) theories. While researchers have reported mixed findings about using L1 in the classroom, they have supported the use of L2 alongside L1 in dual-language one-way or two-way immersion models, as these programs appear to provide numerous benefits (Garcia, 2018). However, some researchers have continued to disagree with reading to, and instructing, MLLs in L1 and L2 (Cheung & Slavin, 2012; Farver et al., 2009; Fitton et al., 2018; Francis et al., 2006; Gutiérrez-Clellen, 1999).

Cross-language associations, or the transfer of vocabulary and phonological skills from one language system to the other, have occurred for MLLs when the students received instruction in L1 (August & Shanahan, 2006; Buysse et al., 2014). Bridging, embedding L1 in English instruction, has yielded positive outcomes for MLLs because it provides context for MLLs and allows them to make connections between L1 and L2 in oral language development (A. M. Ryan, 2005; Ulanoff & Pucci, 1999). Goldenberg (2008) and Rolstad et al. (2005) identified long-term academic gains related to L1 use in instruction over longer time periods. A study by Garcia (2018) investigated the impact of primarily English, Spanish, or bilingual instruction and the proportion of classroom MLLs in Head Start (*n* = 531) on preschool vocabulary outcomes. Fall-to-Spring findings revealed that bilingual instruction and a higher proportion of English-dominant peers led to L2 gains. Garcia (2018) also found that L1 inclusion improved cognition, academic attainment, and social skills for MLLs. These findings support the use of L1 alongside L2.

The inclusion of L1 and efforts toward family engagement between home and school has supported a student's language acquisition (Halle et al., 2012). Instruction in a bilingual ECE program can also increase the rate of English acquisition above that of students outside the program while maintaining MLLs' L1 and home culture (Halle et al., 2012). Including L1 and placing value on the culture and L1 of MLLs has had many cognitive benefits (Barac et al., 2014), self-esteem benefits (Fan et al., 2015; Krashen & Terrell, 1983; Lindholm-Leary, 2004), and psychosocial and academic advantages and can improve MLLs' career opportunities as bilingual workers (Espinosa, 2007; Proctor et. al., 2010; Rodriguez et al., 1995; Rumbaut, 2014; Winsler et al., 1999).

Hermanns (2010) studied a small-group reading intervention with Spanish-speaking ECE participants. Results indicated that children learned more English vocabulary when they listened to a book read in Spanish once and English once than if they listened to the book read in English twice (Hermanns, 2010). English vocabulary instruction enhanced with Spanish bridging led to a significant increase in vocabulary word learning after a 2-week intervention (Lugo-Neris et al., 2010). Researchers have also found that biliterate MLLs possessed higher skill levels in verbal and written language than monolinguals and other MLLs participating in monolingual instruction (Ramirez et al., 1991; Shultz & Grimm, 2019; Umansky & Reardon, 2014; Valentino & Reardon, 2015).

B. Pearson and colleagues (1997) conducted research on MLLs' language exposure, which indicated that children make more gains in languages in which they received exposure. Therefore, teaching vocabulary in the language of literacy instruction may have linguistic and academic benefits (Grimm et al., 2018). Researchers have focused on MLLs' academic performance for decades (August & Shanahan, 2006; Cummins, 1981; Green, 1998; Hakuta, 1986; Krashen, 1994; Lopez & Tashakkori, 2003) and identified many academic benefits of bilingualism (Collier & Thomas, 2017; Han, 2011; Shultz & Grimm, 2019; Serafini et al., 2022).

Miller’s (2017) research provided further evidence that instruction in L1 positively affected MLLs' English receptive vocabulary scores.

Garcia's (2018) findings indicated that incorporating L1 alongside L2 instruction significantly enhanced vocabulary growth in both English and Spanish. Two-way immersion and transitional bilingual programs have been found to not hinder English vocabulary acquisition, and students in these programs have achieved vocabulary scores comparable to those in EO classrooms. However, MLLs in EO classrooms exhibit lower L1 vocabulary scores (Garcia, 2018). Numerous studies have demonstrated that exposure to and use of Spanish in the classroom environment does not impede English language learning compared to EO programs (Berens et al., 2013; Barnett et al., 2007; Durán et al., 2013; Farver et al., 2009). Domke (2019) has asserted that integrating L1 alongside L2 fosters the development of bilingualism and biliteracy. Grimm et al. (2018) have found a moderate association between Spanish receptive vocabulary knowledge and Grade 3 reading comprehension in English. Reading in either L1 or L2 has yielded positive educational, social, and cultural benefits for MLLs (Cheung & Slavin, 2012; Gutiérrez-Clellen, 1999; Kohnert et al., 2005; Roberts, 2008).

The research discussed in this section supports the conclusion that incorporating L1 alongside L2 helps students develop bilingualism and biliteracy (Garcia, 2018). While MLLs benefit from core instruction and strategies effective for monolingual students (Polanco & Luft de Baker, 2018), the cross-language transfer theory and the common underlying proficiency assert that a crucial aspect of MLLs' learning is allowing students to leverage context and bridging from L1 to access instruction in L2 (Cummins, 1979).

Summary and Implications for the Study

This chapter presented a thorough review of the literature related to policies and laws aimed at supporting bilingual speakers, MLLs' outcomes, instructional programs, and language use in ECE and elementary classrooms. The theory of language acquisition and implementation of programs have not been aligned, especially with the length of time required to achieve L2 competency. The disjointed nature of program type, along with individual, family and community factors, from preschool through grade school and language use can undermine MLLs language proficiency and academic achievement. The evidence supports inclusion of L1 instruction as the quickest and most effective route to L2 literacy (Gonzales, 1990; Krashen & Biber, 1988) and the most effective method of basic interpersonal communication skills and cognitive academic language proficiency language acquisition when provided with the time necessary for adequate bilingual and biliteracy development (Cummins, 1999). MLLs who received bilingual instruction required significantly less time to achieve English proficiency and learned to read better, relative to students who participated in monolingual programs or unstructured academic programs (Gonzales, 1990). Chapter three presents the research methodology for the investigation of MLLs' outcomes after participation in an EO ECE program.

Research Questions and Hypotheses

The study has two objectives. The first objective is to research whether and to what extent EO ECE participation predicts MLLs long-term benefit from participation. To address that objective, the researcher for the study will ask a question to be answered by examining MLLs' number of years in EL support from Kindergarten through Grade 7. The researcher for the study examined whether and to what extent EO ECE participation predicted the number of years in EL support. The following question aims to investigate differences in EL support after participation in the EO ECE program:

Research question (RQ) one: Does MLLs' participation in EO ECE predict the number of years in EL support compared to No-EO ECE students after controlling for average attendance from Grade 1 to Grade 6 and Kindergarten MODEL scores? This RQ aims to examine whether and to what extent participation in the EO ECE program predicted the number of years in EL support after controlling for MLLs' average attendance from Grade 1–Grade 6 and Kindergarten MODEL score.

RQ one focused on whether MLLs' participation in EO ECE predicted MLLs' number of years in EL support after controlling for key covariates/predictor variables (e.g., L2 proficiency at Kindergarten entry and average attendance. The researcher for the study hypothesized that MLLs who participated in the EO ECE program will have received a significantly different amount of EL support than MLLs who did not attend EO ECE. Research findings have suggested that participation in EO ECE provides MLL students with more exposure to the English language prior to Kindergarten entry and has predicted an earlier exit from the EL status than non-participants (Halle et al., 2012; Slama et al., 2017; Umansky & Reardon, 2014). Additional research has supported the idea that exposure to L2 has been related to a MLL’s L2 proficiency at Kindergarten entry (August & Shanahan, 2006; Kieffer, 2011). Other researchers stated that instructional program participation has related to the amount of L1 and L2 instruction and is important to consider in L2 proficiency (Conger et al., 2019; Umansky & Reardon, 2014). In response to the mixed findings related to EL support program exit rates and the crucial role demographic and program-level factors have had in L2 acquisition, an exploratory hypothesis is investigated to explore the number of years MLLs spent in the EL support program from Kindergarten through Grade 7. The researcher for the study hypothesizes that EO ECE participants will have a statistically significant different number of years spent in the EO ECE program in the study district's elementary school EL support program compared to MLLs who did not enroll in EO ECE. Other factors that were crucial to consider in achievement of L2 proficiency are sex at birth (Lapayese et al., 2014; Reilly et al., 2014), attendance rates (Aucejo & Romano, 2016; Gershenson et al., 2017; Kearney et al., 2023; Santibañez & Guarino, 2021), and SES (Kieffer, 2011). In the current study, children outside of low-income status were excluded to control for SES. The researcher for the study focused on the MLLs' English language proficiency in association with the key factors.

The second objective for the study was to examine whether and to what extent there are differences in reading outcomes between EO ECE and No-EO ECE participation and MLLs' long-term benefit from participation in EO ECE. The researcher for the study asked three additional questions to be answered by examining MLLs' NWEA MAP Growth Reading (hereafter referred as MAP Growth Reading) assessment scores at three timepoints: Grade 2, Grade 4, and Grade 6, and test for differences at the three time points.

The following questions aimed to research differences in MAP Growth Reading scores after participation in the EO ECE program:

RQ two: Are there differences in students' Grade 2 MAP Growth Reading scores for EO ECE students compared to No-EO ECE students after controlling for MLL's average attendance from Grade 1 –Grade 2, Kindergarten MODEL score, and the number of years spent in bilingual program of instruction from Kindergarten to Grade 2? This RQ aimed to examine whether there are differences between EO ECE participants and No-EO ECE participants' MAP Growth Reading scores in the spring of Grade 2.

RQ three: Are there differences in students' Grade 4 MAP Growth Reading scores for EO ECE students compared to No-EO ECE students after controlling for MLL's average attendance from Grade 1–Grade 4, Kindergarten MODEL score, and the number of years spent in bilingual program of instruction from Kindergarten to Grade 4? This RQ aimed to examine whether there are differences between EO ECE participants and No-EO ECE participants' MAP Growth Reading scores in the spring of Grade 4.

RQ four: Are there differences in students' Grade 6 MAP Growth Reading scores for EO ECE students compared to No-EO ECE students after controlling for MLL's average attendance from Grade 1 –Grade 6, Kindergarten MODEL score, and the number of years spent in bilingual program of instruction from Kindergarten to Grade 6? This RQ aimed to examine whether there are differences between EO ECE participants and No-EO ECE participants' MAP Growth Reading scores in the spring of Grade 6. RQ two, three, and four focused on the differences in the MLLs' MAP Growth Reading scores after EO ECE participation after controlling for key covariates (e.g., L2 proficiency at Kindergarten entry, attendance, and program type in elementary school). The researcher for the study hypothesized that the EO ECE participant group will achieve statistically significant differences in MAP Growth Reading scores in Grade 2, Grade 4, and Grade 6 as compared to the No-EO ECE participant group.

Other researchers have reported EO ECE participation resulted in MLL students' gains in L2 vocabulary and literacy and promoted school readiness and English language growth at Kindergarten (Gormley & Phillips, 2005; Lipsey et al., 2018) and through Grade 1 (Conger et al., 2019); However other researchers noted early gains and preschool participation advantages may fade out as participants' scores initially associated with ECE program benefits tended to converge with non-participants as MLLs continued through grade school (Lipsey et al., 2015; Magnuson et al., 2007; Puma et al., 2012). Due to the mixed results in the literature related to long-term academic benefits of ECE participation (Ardasheva et al., 2012; Cummins, 1979, 1981; Krashen, 1987, 2003; Wong Fillmore, 1991), the current study adopted an exploratory hypothesis regarding the role of EO ECE on later academic outcomes.

Chapter Three Methods

Research Design

This study incorporated a longitudinal design using 9 years of extant student records obtained from the data services department in the participants' school district. The study was quasi-experimental because differences were explored between preschool-aged MLLs who participated in EO ECE and MLLs who did not participate in EO ECE (the No-EO ECE group); study participants could not be assigned randomly to groups (Cook & Campbell, 1979; Creswell & Creswell, 2018). Due to the need to understand potential differences in MLLs' long-term academic outcomes and explore EO ECE as a potential predictor of English language proficiency outcomes, quantitative analyses were used as the method to explore the RQs.

Participants

All the participants in the study were Spanish-speaking MLLs selected from extant student records from a large suburban school district in the Midwest. The data were provided to the current researcher from the school district data services department. All participants qualified for EL services in their Kindergarten year and have resided in families with self-reported low-income from Kindergarten through Grade 6. Specific inclusion and exclusion criteria were applied to create a more homogeneous sample for study, as described below.

Inclusion and Exclusion Criteria

Inclusion in the study was dependent on the following: (a) participants parents or guardians completed a two-question Home Language Survey upon entry to the study district in Kindergarten and identified Spanish as their home language; and (b) students were administered the Kindergarten MODEL English language proficiency assessment and obtained an overall score of 5.0 or below requiring second language support to access educational content, qualifying the student for EL support. Kindergarten MODEL qualifying scores and administration details are discussed further under the measures section of this chapter.

The study included students who entered Kindergarten in one of the following 3 years: cohort one 2014-2015 school year, cohort two 2015-2016 school year, and cohort three 2016-2017 school year. Inclusion in the study required that students must have been continuously enrolled in the study district from their respective Kindergarten year, through their respective Grade 6 school year (i.e., cohort one Grade 6 was 2020-2021, cohort two Grade 6 was 2021-2022, and cohort three Grade 6 was 2022-2023). Students who enrolled after the Kindergarten year were not included in the study.

The researcher for the study only included low-income EO ECE participants and No-EO ECE participants to create a more homogenous group of No-EO ECE participants and ease examination of group differences related to self-reported family income. Eligibility for the federal free lunch program (e.g., free and reduced lunch status) was used as a proxy for low-income status (Kieffer, 2011). The National School Lunch Program has determined a student's eligibility for free or reduced-price lunch by evaluating household income and size (U.S. Department of Agriculture, 2023). Children who qualified for paid lunch status (i.e., the families reported an annual income greater than 185% of the federal poverty level) at any time from Grade 1 to Grade 6 were excluded from the study. Out of the initial 530 participants, 166 were excluded due to their paid lunch status. Specifically, 95 participants had 1 year of paid lunch from Kindergarten through Grade 6, 20 had 2 years, 20 had 3 years, 11 had 4 years, 9 had 5 years, and 11 had 6 years.

Once those participants who did not qualify for free or reduced lunch from Grade 1 to Grade 6 were excluded, all participants from the No-EO ECE group who would have qualified for enrollment in the EO ECE program were identified and included in that group. The EO ECE in this study primarily has served children residing in families with self-reported income less than four times (i.e., 200%) the U.S. poverty level, established by the U.S. Department of Health and Human Services (Garver, 2021, Target District's State Board of Education, 2015). The EO ECE program served greater than 80% of enrolled families who met the income requirements to have qualified for full grant funding (i.e., living below 50% and/or 100% of the federal poverty level). Families enrolled in the EO ECE program qualified through a weighted screening process that identified a financial need, a need for academic school-readiness support, and/or identified academic preparedness factors (e.g., child welfare involvement, McKinney-Vento status, has an IEP for more than itinerant speech services or has been referred for special education evaluation, primary caregiver did not complete high school or GED, teen parent at birth of first child, child was born outside of the U.S. or has one or more parent or caregiver born outside of the U.S., parent or caregiver primarily speaks a language other than English at home). The number of children qualified for enrollment due to academic preparedness concerns was not greater than 20%. Furthermore, enrollment in EO ECE was optional for all MLLs because preschool enrollment was not mandated in the state.

One-hundred and eleven MLLs who have qualified for special education services at any time from Kindergarten to Grade 6 were excluded from this study to improve the homogeneity of the participant sample. MLLs with special education status (i.e., receiving special education services as part of an IEP) have had lower levels of participation in bilingual education than their general education peers (Jepsen, 2010). Additionally, research findings have supported a longer time to reclassification for students eligible for special education (Motamedi, 2015). Motamedi (2015) reported that special education students have taken an average of 5.5 years to achieve reclassification, compared with 3.7 years to reclassification for MLLs in general education. Furthermore, the exclusion of MLL special education students has been derived from the results of a longitudinal WIDA study that tracked MLLs (N ≈ 167,000) across 15 states that represented all four quadrants of the U.S. through WIDA assessment results (Sahakyan & Ryan, 2018). During the 2009–10 to 2014–15 school years, 45% of students with IEPs were identified as potential long-term MLLs and 10% of MLLs who had never received special education services were identified as potential long-term MLLs (Sahakyan & Ryan, 2018).

Demographic Background

Participants included in the study were enrolled in a large suburban prekindergarten through Grade 8 school district in a Midwest city with a population of nearly 70,000 residents. According to the state department of education responsible for the school district for which data are being provided in the study (referred hereafter as "study district"), in the 2021-22 school year the district served approximately 11,800 students with over 800 teachers in 19 schools (four junior high schools, 15 elementary schools, and a therapeutic day school for prekindergarten through Grade 8). The state board of education has provided report cards for schools that receive public funding. School accountability ratings, such as school-wide student outcomes and individual student group outcomes, fall within one of four performance designations: Exemplary, Commendable, Targeted Needs, and Comprehensive Needs. All elementary schools in the study district have received at least commendable ratings since 2019, indicating that the schools have outperformed the state average in all areas tested.

The study district had 4,268 White students (38.5%) and 3,821 Hispanic students (34.5%) in 2022. Asian American, Black, and Native American students made up 18.9%, 4.0%, and 0.3% of students, respectively, in 2022. The student mobility rate in 2022 was 8.0% for all students and 8.7% for Hispanic/Latine students. The student mobility rate increased in 2023 to 9.7% for all students and 11.6% for Hispanic/Latine students. Among all students enrolled 37.2% had less economic advantage in 2022 and 40.6% in 2023. In 2022, 41.3% were eligible for free or reduced-price lunch (Niche, 2023). The percentage of residents living in poverty in the study district in 2021 was 14.4% (5.7% for White residents and 26.3% for Hispanic/Latine residents). According to the state department of education, overall attendance for all students was 93.7% in 2022 and 93.1 in 2023, a decline from 96.9% in 2020. This decline in attendance was likely related to negative impacts from the COVID-19 pandemic (Center for American Progress, 2021; Steans et al., 2022).

Yearly data reports for 2018–2023 on the website of the state department of education indicated the MLL population in the study district increased from 26.0% to 29.6%, whereas the MLL population in the state increased from 10.7% to 14.6% of the overall Kindergarten through Grade 8 population. The study district served nearly 3,300 active MLLs, 29.4% of the districts' students in 2022. Approximately 185 of the study districts' active MLLs had been categorized as MLLs for more than 7 years in 2022, and 165 in 2023, indicating that nearly all MLLs obtained English proficiency, as measured by the ACCESS Overall score, within 7 years. The study district had an ACCESS participation rate of 100% in 2022 and 2023 for MLLs receiving EL support.

Sample Size, Power, and Precision

An a priori power analysis using G*Power (Version 3.1.9; Cohen, 2013) was conducted to determine the appropriate sample size needed to answer RQs one, two, three, and four. According to Cohen (2013), the parameters that are suggested to interpret a small effect size (f^2) of .3 were selected, with an alpha level (α) of .05, and with adequate power (i.e., .8), for all four of the RQs. For RQ one, two predictors were entered. The power analysis for this study suggested the total sample must include at least 36 participants. For RQ two, three, and four, two separate groups of participants with three covariates were entered. The power analysis suggested the total sample must include at least 90 participants. Based on the 3-year sequential cohort design, the sample of participants included in the database were expected to provide sufficient power to answer RQs one, two, three, and four.

Measures/Instrumentation

The MAP Growth Reading spring overall composite RIT scores at Grade 2, Grade 4, and Grade 6 were used as the outcome measure. The MAP Growth Reading provided an RIT to be used to interpret student skill level. The RIT scores from the MAP Growth Reading were used as a primary outcome measure of literacy development. The number of years in EL support were used as the other primary outcome measure. EL classification was determined by the MLL's ACCESS for ELLs standardized assessment scores annually. Additional data collected for this study consisted of preschool enrollment (i.e., EO ECE enrollment), used as the predictor or independent variable, demographic information used as the covariate measures and outcome measures associated with literacy development and second language proficiency at the three timepoints. The following sections provide a more detailed description of the assessment instruments and how they relate to this study.

Predictor Measures

EO ECE and No-EO ECE. The predictors in this study were identified using data from the 2 years prior to Kindergarten enrollment for each of the three cohorts. MLL's participation in EO ECE and non-participants', No-EO ECE, enrollment data were collected from the study district's database. For the No-EO ECE student group, data were not available on exactly what ECE the children experienced. However, these participants did not participate in the EO ECE program housed in the study district buildings. For families with low-income the options may have included: (a) a private or faith-based center-based preschool, with or without childcare subsidies for low-income families; (b) Head Start; (c) family childcare (with or without subsidies); (d) public school ECE in another county or state; (e) preschool delivered in another country; or (f) no out-of-home care. A conservative estimation of 23% of preschool-aged MLLs had enrolled in state-funded ECE programs documented by a national report from 2016-2017 (Friedman-Krauss et. al, 2018). Nationally, 30% of 3-to-5-year-old Hispanic/Latine children enrolled in preschool in 2015 (NCES, 2017). Thus, there is some likelihood that 20 to 30 percent of the No-EO ECE participants may have experienced some type of ECE programming, which may have been EO in nature. Because there is no way of determining whether and what type of ECE experience occurred for the No-EO ECE group, this is a study limitation.

Covariate Measures

Demographic. Participants' demographic information was collected from the study district's database. Sex at birth, age, grade, free and reduced lunch status (a proxy for participant's family income), special education status, EL status, standardized test scores, student annual average attendance rate from Grade 1 to Grade 6, the participants' program type in elementary Grade 1 to Grade 6 (i.e., provided to calculate the number of years English only or bilingual instruction), and the student's home language (L1) were included in the extant data provided to the researcher for the study. The participants' EL status and home language formed inclusion criteria for the study. The participants' free and reduced lunch status and special education status formed exclusion criteria for the study. The participants' sex at birth was examined as a potential covariate in the study to determine if group differences were indicated after preliminary data analysis. The participants' average attendance rate from Grade 1 to Grade 6 was used as a covariate in the study.

Home Language Survey. The Home Language Survey is a two-question survey that the state has required parents or guardians of students to complete upon enrollment. Refer to Appendix A for an exemplary Home Language Survey. The results of the Home Language Survey determined whether a student spoke another language at home. Home Language Survey information, specifically participant's L1, formed an inclusion criterion for the study. According to the state board of education of the study district, if a language other than English was identified, the incoming student was screened for L2 proficiency.

WIDA Kindergarten MODEL. In the study, the Kindergarten MODEL overall score was included as a covariate to account for the range of English proficiency at school entrance. L2 proficiency scores have varied greatly because some children enter school with little to no exposure to English, but other children may be bilingual or multilingual (Hoff et al., 2021). The Kindergarten MODEL was used for initial assessment of a student's dominant language and was administered during the first 4 weeks of a student's entrance to the study district. The Kindergarten MODEL assessment has identified the dominant language a student speaks and understands, as measured by a listening proficiency and a speaking proficiency score and an overall proficiency score (WIDA, 2023c). The overall proficiency score from the screener determined whether a student qualified for an L2 program supporting their language and academic skills (WIDA, 2023c). Proficiency level scores ranged from 1.0 to 6.0, where a score of 1 corresponded to entering, 2 reflected emerging proficiency, 3 reflected development, 4 corresponded to expanding, 5 corresponded to bridging, and 6 corresponded to reaching English proficiency (WIDA, 2023c). Any student who scored *not proficient*, an overall score below 5.0, was identified as an EL, according to the study district's state board of education.

Students were administered the assessment in Kindergarten to determine eligibility for English language support (i.e., the student qualifies for EL status). The WIDA consortium and member states determined the English language screener to be administered in each state. In the state of the study district, the WIDA Kindergarten ACCESS Placement Test or Kindergarten MODEL was used during the study years (WIDA, 2023g). The WIDA Kindergarten ACCESS Placement Test is an English proficiency screener that has been in constant and rapidly expanding use by states since its development in 2005. All students identified by the WIDA Kindergarten ACCESS Placement Test or the Kindergarten MODEL as qualifying for EL support received the EL label in the student information system and were tracked by the state board of education to monitor progress, as mandated by the ESSA (Every Student Succeeds Act of 2015, 20 U.S.C. § 6301 et seq., 2015). Participants in this study who were administered the WIDA Kindergarten ACCESS Placement Test or whose score was missing in the database for the Kindergarten MODEL were treated as missing data.

Elementary Program/Number of Years in Bilingual Instruction. The study district's multilingual department recommended an elementary program for a student based on their home language, Kindergarten MODEL assessment scores or WIDA Kindergarten ACCESS placement test score. If a student's family refused the study district's bilingual program offered (e.g., transitional bilingual education-early exit) then the student was enrolled in English instruction and provided L2 support to the extent needed to access instructional content. The number of years the MLL received bilingual programming was included as a covariate for the study.

Outcome Measures

ACCESS for ELLs 2.0 /EL Exit Status. The WIDA ACCESS for ELLs is a suite of standardized tests that measured MLLs' academic English language proficiency in the four language domains of listening, speaking, reading, and writing (Kim et al., 2018, WIDA, 2023a). ACCESS has provided student scores in eight different categories (WIDA, 2023c). The language domains of listening, speaking, reading, and writing were combined to create four additional scores and were: (a) three of these factors are oral language, which is a combination of listening and speaking scores; (b) literacy, which is a combination of reading and writing scores; (c) comprehension, which is a combination of listening and reading scores weighted toward reading; (d) and finally, the overall score which combined all four language domain scores, with more emphasis on reading and writing scores than on listening and speaking scores (WIDA, 2020a).

The state in which the study district is located was a member of the WIDA consortium and had adopted the 2020 WIDA English Language Development Standards Framework, the WIDA Spanish Language Development Standards, and the state's Spanish Language Arts Standards (WIDA, 2023b). ACCESS has aligned with the previously mentioned standards and the six WIDA English language proficiency levels (WIDA, 2020a). The proficiency levels provided interpretations of scale scores (WIDA, 2023c). MLLs have received overall scores from 1 to 6, with a score of 1 as entering English proficiency score and a score of 6 as reaching English proficiency (WIDA, 2023b). A higher score on ACCESS indicated more developed English proficiency and followed the same proficiency levels as the Kindergarten MODEL

(WIDA, 2023c). MLLs continue to qualify for EL services until an overall score on the ACCESS assessment greater than 4.8 out of 6.0 is obtained (Bunch, 2011; Thomson, 2015; WIDA, 2023c).

In the study district, ACCESS monitored progress toward proficiency by testing annually in January to February, as required by NCLB. An MLL's score was used to determine whether to exit a student from EL support services at the start of the following school year (WIDA, 2023a). ACCESS scores determined whether the student achieved English language proficiency, although the assessment did not measure students' academic attainment or content knowledge (WIDA, 2023c). ACCESS for ELLs 2.0 was introduced in 2016, which phased out ACCESS for ELLs 1.0 (WIDA, 2023b).

ACCESS scores in Grades 1 through Grade 6 were the only assessment data used by the study district to determine an MLL's qualification for EL support or qualification to exit from EL support. Due to the nature of the ACCESS scores data and the non-random pattern of missing ACCESS scores that emerged after the MLL exited the program and no longer was required to take the ACCESS for ELLs, the non-random missing data would have led to biased results if ACCESS scores were used as the outcome measurement (Little et al., 2014). Thus, the number of years of participation in EL support was a more reliable measure of MLL second language proficiency outcomes because it was not affected by missing data. The number of years in EL support was a more direct measure of whether a MLL successfully achieved English proficiency and how many years until proficiency was achieved.

To ensure the reliability and validity of ACCESS for ELLs and the previously described Kindergarten MODEL, the assessments were annually field-tested to validate their ability to equitably assess English proficiency. Reliability was defined as the accuracy, consistency, and dependability of assessment scores (Gall et al., 2007). Validity was defined as a measure to ensure that the test measures what it was designed to measure (Gall et al., 2007). ACCESS for ELL's tested reliability and validity were noted in the annually released technical WIDA manual (WIDA, 2015).

The Center for Applied Linguistics' (n.d.) psychometrics and quantitative research team conducted psychometric research to meet the federal requirements for Title III and to fulfil the federal Peer Review requirements for the ACCESS assessment. Fox and Fairbairn (2011) reviewed the reliability of the ACCESS assessment and discussed strong evidence of reliability, including details of the conceptualization of the ACCESS assessment and the thresholds for the six language proficiency levels. Internal consistency reliabilities were quite high for composite scores and are as follows: .937 for Kindergarten; .955 for Grades 1–2, .935 for Grades 3–5, and .937 for Grades 6–8 (Author, 2007, p. iv). For example, the reliability of the ACCESS Grade 3 reading subtest using Cronbach's alpha provided an overall weighted reliability of $\alpha = .764$, which identified the test as reliable (WIDA, 2016). WIDA employed an Assessment Use Argument (AUA) to determine validity in the use of test design and administration on the intended and actual score use and consequences (AUA, 2016; WIDA, 2016). Per the framework guidelines established by the American Educational Research Association (AERA), all issues of the validity argument were addressed (WIDA, 2016).

NWEA MAP Growth Reading. The assessment included in this study as an outcome measure was the MAP Growth Reading assessment. The MAP Growth Reading assessment is an interim adaptive computer assessment that may be administered up to four times per year (e.g., fall, winter, spring, and an optional summer administration). NWEA (2019) reported that the MAP testing system aligned with states' content standards and concepts to measure student performance over time in each domain (e.g., reading, math). MAP Growth Reading assessment was used in the study district to measure students' growth in reading ability. Three domains in the reading assessment were measured using approximately 40 questions. The three domains were as follows: Literature, Informational Text, and Vocabulary Acquisition and Use (NWEA, 2016). The assessment was untimed, although most students finish the test in a 60-minute session. As students answered questions correctly, the questions adapted to the student level, and became more difficult. As students answered questions incorrectly, the questions became slightly easier. Therefore, every student was administered a unique set of test questions based on their responses to previous questions.

In the study district, MAP testing occurred in addition to the state-mandated standards achievement tests and provided additional reliable and valid data that allowed teachers to make rapid adjustments in instruction to respond to identified student abilities. Students in Grade 2 through Grade 8 participated in the MAP Growth Reading assessment in the fall and spring of each school year, except for spring 2020 when the study district cancelled the MAP Growth Reading assessment due to the COVID-19 school closure. The score reported at the end of the assessment was used to measure a student's achievement level computed growth. The score was linked to a set of content standards at the student's instructional level (NWEA, 2016). Specifically, the MAP assessment used a Rasch Unit scale, (RIT) to interpret test scores (NWEA, 2019). The RIT scale is an equal-interval scale with scores ranging from 100 to 350. The RIT scale score allowed for a student's proficiency status to be compared across time, interpreted as growth, across each test administration and across multiple years (NWEA, 2019). Higher RIT scores indicated a higher level of skills a student is ready to learn, whereas lower RIT scores indicated a lower skill set or readiness level. Each study participant received an overall composite RIT score and sub-scale RIT scores. The score received was used to measure a student's achievement level at different times of the school year (e.g., fall and spring) and to compute growth (NWEA, 2016). The RIT score was used as the outcome measure for the study. However, year-to-year growth comparisons were not made for individuals or among students.

MAP has shown strong reliability and validity (NWEA, 2019). The test-retest reliabilities for MAP Growth Mathematics and MAP Growth Reading in Grade 6 through Grade 8 were in the low .90s and mid .80s (NWEA, 2019). Specifically, MAP Growth Reading test obtained validity scores in the upper .70s for concurrent validity and scores in the low .80s for classification accuracy for Grade 6 through Grade 8 (NWEA, 2019). Thomas and January (2021) used MAP and Strategic Teaching Evaluation of Progress test scores to identify students in Grade 2 through Grade 5 with suspected low performance on high-stakes assessments. Thomas and January (2021) conducted hierarchical regression analysis to assess the criterion validity of MAP and Strategic Teaching Evaluation of Progress scores. The researchers' results found that MAP was a stronger predictor of high-stakes performance than Strategic Teaching Evaluation of Progress. The results indicated that Grade 2 MAP scores and Grade 3 high-stakes assessments scores had statistically significant associations ($p < .01$) and the highest predictive correlation ($r = .82$) among the cohorts sampled (Thomas & January, 2021). Ultimately, the MAP assessment had a greater association to high-stakes assessments than the STEP assessment with moderate to large associations, ranging from $r = .66$ to $r = .82$ (Thomas & January, 2021). All sources of data, study variables, and related measures for the current study are listed in Table 6.

Table 6

Sources of Data, Study Variables, Related Measures

Variable	Type	RQ	Measure	Source
Attendance Average (Grade 1 to Grade 2)	Covariate	2	School records	Data Services District-level student database (2023)
Attendance Average (Grade 1 to Grade 4)	Covariate	3	School records	Data Services District-level student database (2023)
Attendance Average (Grade 1 to Grade 6)	Covariate	1, 4	School records	Data Services District-level student database (2023)
Kindergarten MODEL Overall score	Covariate	1-4	Kindergarten MODEL English proficiency assessment	WIDA (2023g)
Elementary Program Type (Years in bilingual program, Kindergarten to Grade 2)	Covariate	2	School Records	Data Services District-level student database (2023)
Elementary Program Type (Years in bilingual program, Kindergarten to Grade 4)	Covariate	3	School Records	Data Services District-level student database (2023)
Elementary Program Type (Years in bilingual program, Kindergarten to Grade 6)	Covariate	4	School Records	Data Services District-level student database (2023)
EO ECE or No-EO ECE	Independent Variable	1-4	School Records	Data Services District-level student database (2023)
Number of Years in EL Support Kindergarten – Grade 7	Dependent Variable	1	WIDA ACCESS for MLLs' Overall score	WIDA (2023b)
MAP Growth Reading Spring Grade 2 RIT Score	Dependent Variable	2	MAP Growth Reading Assessment	NWEA (2016)
MAP Growth Reading Spring Grade 4 RIT Score	Dependent Variable	3	MAP Growth Reading Assessment	NWEA (2016)
MAP Growth Reading Spring Grade 6 RIT Score	Dependent Variable	4	MAP Growth Reading Assessment	NWEA (2016)

Procedures/Data Collection

Participants' demographic data for the study period were collected in the 2012 - 2013 through 2022 -2023 school years as required records on student language proficiency and academic progress. The extant data (e.g., number of years in EL support, MAP Growth Reading RIT scores, attendance, and program participation in elementary school) were collected by the study district in the school years 2014 – 2015 through 2022 – 2023 school years and included in the extant data request to the study district data services department in May 2023. EL support program qualification status was also collected for cohort three for the fall 2023 semester.

The study was informally approved by the study district in February 2023. The study district was selected based on the district's willingness to provide the extant data, the population of MLLs, and the district's connection with the EO ECE program. The target extant student data provided by the study district data services department were selected based on the inclusion and exclusion criteria and a 3-year sequential cohort design to answer the RQs. See Table 7 for the 3-year sequential cohort design.

Table 7

Three-year Sequential Cohort Design

School Year	Cohort 1 *n* = 161	Cohort 2 *n* = 95	Cohort 3 *n* = 103
2012-13	3-year-old EO ECE		
2013-14	4-year-old EO ECE	3-year-old EO ECE	
2014-15	Kindergarten (Home Language Survey; MODEL; EL Status)	4-year-old EO ECE	3-year-old EO ECE
2015-16	Grade 1	Kindergarten (Home Language Survey; MODEL; EL Status)	4-year-old EO ECE
2016-17	Grade 2 (EL status, MAP)	Grade 1	Kindergarten (Home Language Survey; MODEL; EL Status)
2017-18	Grade 3	Grade 2 (EL status, MAP)	Grade 1
2018-19	Grade 4 (EL status, MAP)	Grade 3	Grade 2 (EL status, MAP)
2019-20	Grade 5	Grade 4 (EL status, MAP)	Grade 3
2020-21	Grade 6 (EL status, MAP)	Grade 5	Grade 4 (EL status, MAP)
2021-22	Grade 7 (EL Status)	Grade 6 (EL status, MAP)	Grade 5
2022-23		Grade 7 (EL Status)	Grade 6 (EL Status)
Fall 2023			Grade 7 (EL Status)

To maximize the sample size for EO ECE and No-EO ECE groups, a 3-year sequential cohort design was selected. Participant data were examined beginning from the 2012–2013 school year (i.e., EO ECE enrollment or No-EO ECE enrollment) and continued through the fall semester of 2023. Three cohorts of Kindergarten students' extant data were selected over 3 years of school entry points into the study district and were as follows: Cohort one entered Kindergarten in the 2014-15 school year, cohort two entered Kindergarten in 2015-16 school year, and cohort three entered Kindergarten in the 2016-2017 school year. The participants' records were selected through their respective Grade 6 as follows: cohort one was the 2020–2021 school year, cohort two was the 2021-2022 school year, and cohort three was the 2022-23 school year. The COVID-19 pandemic occurred during the study years. In spring of 2020 the study district transitioned students to virtual instruction and the spring MAP Growth Reading assessment was cancelled. Students were instructed virtually for the remainder of the 2019-2020 school year. Additionally, during the 2020-2021 school year students were instructed virtually or a combination of virtual and in-person. The extant data were used to perform analyses related to student academic and language proficiency outcomes. No additional interventions were performed, and no original data were collected in relation to the study. The study was approved by the Institutional Review Board (IRB) at the University of Wisconsin-Milwaukee.

Analytic Strategy

The statistical analyses in the study were conducted through the software IBM SPSS Statistical software package (Version 29). Descriptive and inferential analysis were conducted to answer the RQs. Specifically, RQ one was answered using hierarchical linear regression. RQs two, three, and four were answered using three analysis of covariance (ANCOVA) models.

Data Diagnostics

Various assumptions were checked and determined to be met prior to running the analyses. The assumptions for linear regression analysis were as follows: a dependent variable measured on a continuous scale; two or more independent variables; independence of the residuals (i.e., no multicollinearity); correct identification of the form of the relationship between the predictors and outcome variables (i.e., the relationship between continuous independent variables and the dependent variable must be linear); no measurement error in the predictors; constant variance of the residuals (homoscedasticity); no significant outliers; and normality of the residuals (Cohen et al., 2003; Field, 2013; McHugh, 2013). For ANCOVA, two additional assumptions were important: independence of the covariate and dependent variable and homogeneity of regression slopes (Field, 2013). To test for the strength of any resulting significant associations between variables, Pearson's *r* was examined.

Data Analysis Plan

Considering the many variables that have influenced academic outcomes and the degree to which literacy outcomes may differ among MLLs, three analysis of covariance (ANCOVA) models were conducted for the three timepoints, Grade 2, Grade 4, and Grade 6 to explore the role of EO ECE participation for Spanish-speaking MLLs' long-term outcomes. Additionally, a hierarchical linear regression was conducted to examine Kindergarten through Grade 7 long-term language acquisition outcomes. EO ECE program enrollment was used as the categorical independent variable for all four RQs. The current researcher for the study conducted preliminary analyses to assess potential group differences in sex at birth between EO ECE and No-EO ECE participants. Independent *t*-tests preceded ANCOVA models and multiple regression analysis related to the number of years in EL support, MAP Growth Reading RIT scores at Grade 2, Grade 4, or Grade 6 and sex at birth. The MLLs' Kindergarten MODEL overall score and average attendance from Grade 1 to Grade 6 were included as continuous variables in the multiple regression model. The MLLs' Kindergarten MODEL overall score, average attendance, and the number of years in bilingual programming in elementary school were included as continuous variables to be controlled for in all three ANCOVA statistical analysis models.

The MAP Growth Reading RIT score was used as the continuous dependent variable to answer the three RQs examining whether and to what extent there are differences in reading outcomes between EO ECE and No-ECE participation and MLLs' long-term benefit from participation in EO ECE. The use of ANCOVA analysis allowed the mean scores to be adjusted on the covariate data; this procedure yields adjusted means, also referred to as estimated marginal means, on the MAP Growth Reading RIT scores "as if" the groups had equivalent average attendance, bilingual program participation, and Kindergarten MODEL overall scores. The use of hierarchical linear regression analysis allowed for the analysis of a continuous outcome (i.e., "number of years spent in EL support"). Hierarchical linear regression was used to identify factors (e.g., average attendance, and L2 proficiency at Kindergarten entry as measured by Kindergarten MODEL scores) related with a particular outcome (e.g., achieving L2 proficiency for a group of MLL students; Cohen et al., 2003).

The goal of data analysis for RQ one was to research whether and to what extent EO ECE participation predicts MLLs' long-term benefit from participation. Hierarchical linear regression analysis was used to answer RQ one to explore whether and to what extent participation in EO ECE predicted the number of years in EL support from Kindergarten through Grade 7. Multiple regression allowed analyses estimates for how much variance in the continuous dependent variable (i.e., number of years in EL support) was explained by EO ECE participation as well as the predictor variables' (i.e., average attendance from Grade 1 to Grade 6 and the Kindergarten MODEL score) unique contributions that the variable had on the number of years in EL support (Cohen et al., 2003). The standardized betas were examined to determine the natural effect sizes for the individual predictors (Cohen et al., 2003). The R^2 was examined to determine the amount of unique contribution that the variable had on the number of years in EL support and reported for model effect size. The R^2 and the significance level (p<.05) from a F-test were examined for the model.

An example data structure for the hierarchical linear regression model is depicted below in Table 8.

Table 8

Variables Included in the Hierarchical Linear Regression Model

Variable	Type	Role	Values
Number of Years in EL Support	Continuous	Dependent variable	2-8
EO ECE participation	Categorical	Independent Variable	0 (No-EO ECE) 1 (EO ECE)
Attendance Average Grade 1 to 6	Continuous	Covariate	80.39-99.9%
Kindergarten MODEL overall score	Continuous	Covariate	1.0-4.5

The MAP Growth Reading RIT score was used as the continuous dependent variable to answer the three RQs examining whether and to what extent there are differences in reading outcomes between EO ECE participation and No-EO ECE participation and MLLs' long-term benefit from participation in EO ECE (i.e., RQs two, three and four). The use of ANCOVA analysis allowed the mean scores to be adjusted on the covariate data; this procedure yields adjusted means, also referred to as estimated marginal means, on the MAP Growth Reading RIT scores "as if" the groups had equivalent average attendance, bilingual program participation, and Kindergarten MODEL overall scores. The goal of data analysis for RQ two, three, and four was to research whether and to what extent there is a difference in reading scores between the EO ECE and No-EO ECE participants. ANCOVA was used to answer each RQ. Frequencies, means, medians, modes, standard deviations, variances, and ranges were used to determine whether there are statistically significant differences in MAP Growth Reading RIT scores at Grade 2, Grade 4, and Grade 6. The researcher for the current study proceeded by conducting preliminary analyses, such as checking for correlations between variables, co-linearity, and testing assumptions.

Analysis of covariance (ANCOVA) was conducted for RQs two, three, and four. ANCOVA models allowed for the ability to investigate the effect of a between-subjects factor (i.e., EO ECE) after controlling for variables (e.g., attendance, Kindergarten MODEL overall score, program type in elementary school/number of years in bilingual program) that may otherwise impacted an outcome variable (i.e., MAP Growth Reading RIT score). ANCOVA model one, two, and three involved examining whether and to what extent EO ECE participation predicted differences in MLLs' academic outcomes in literacy as measured by the MAP Growth Reading assessment. As a preliminary analysis, the current researcher for the study tested ANCOVA model assumptions (e.g., the assumptions of adequate sample size, independence, normality, linearity, and the assumption of homogeneity of regression) prior to interpretation of the ANCOVA model (Field, 2013). To test for the homogeneity of regression, the full ANCOVA model (i.e., unequal slopes) was compared to a reduced ANCOVA model (i.e., all groups have the same slopes; Field, 2013).

An example data structure for ANCOVA models is depicted below in Table 11. Model one included the dependent variable at Grade 2, Model two included the dependent variable at Grade 4, and Model three included the dependent variable at Grade 6. The participant data from the three sequential cohorts were combined by grade (i.e., MAP Growth Reading RIT score from cohort one, cohort two, and cohort three at Grade 2 were combined and analyzed together as the variable "MAP Growth Reading RIT score Grade 2" prior to analysis. Due to missing extant data, list wise deletion was used for participants with missing MAP Growth Reading RIT scores. Due to the COVID-19 pandemic and the associated school closure, the study district did not administer the MAP Growth Reading RIT scores in the spring of 2020. Participants with missing data during the spring of 2020 and at other data collection timepoints were removed from the analysis. ANCOVA model one had 16 participants with missing MAP Growth Reading Grade 2 RIT scores, ANCOVA model two had 112 participants with missing MAP Growth Reading Grade 4 RIT scores (96 of the missing scores were in spring 2020 due to limitations of the COVID-19 pandemic), and ANCOVA model three had 33 participants with missing MAP Growth Reading Grade 6 RIT scores. The MAP Growth Reading testing that was cancelled in spring 2020 was administered in the 2020-2021 school year.

The Center for American Progress (2021) and Santibanez and Guarino (2021) found that conditions of the pandemic have impacted students' attendance, participation, and grades after spring 2020 (e.g., MAP Growth Reading assessment scores for cohort two in Grade 6 and cohort three in Grade 4 and in Grade 6) and this should be taken into consideration when examining the extant data. The current researcher for the study proceeded with the analysis to include preliminary n = 347 for ANCOVA model one (RQ two), n = 251 for ANCOVA model two (RQ two), and n = 330 for ANCOVA model three (RQ three). Table 9 summarizes the variables included in the analysis for the three ANCOVA models to answer RQs two, three, and four.

Table 9

Variables Included in ANCOVA Models 1, 2, & 3

Variable name	ANCOVA Model	Type	Place within model	Values
MAP Growth Reading Grade 2	1	Continuous	Dependent variable	149 -213
MAP Growth Reading Grade 4	2	Continuous	Dependent variable	159 -230
MAP Growth Reading Grade 6	3	Continuous	Dependent variable	174 -238
Attendance Average Grade 1 to Grade 2	1	Continuous	Covariate	81.2-100%
Attendance Average Grade 1 to Grade 4	2	Continuous	Covariate	85.5-99.9%
Attendance Average Grade 1 to Grade 6	3	Continuous	Covariate	80.4-99.9%
Kindergarten MODEL Overall Score	1, 2, 3	Continuous	Covariate	1.0–4.5
EO ECE participation	1, 2, 3	Categorical	Between-subjects factor	0 (No-EO ECE) 1 (EO ECE)
Years in Bilingual Program type (Kindergarten–Grade 2)	1	Continuous	Covariate	0-3
Years in Bilingual Program type (Kindergarten–Grade 4)	2	Continuous	Covariate	0-5
Years in Bilingual Program type (Kindergarten–Grade 6)	3	Continuous	Covariate	0-6

Chapter Four Results

The following section presents the results for the current study. The results are organized in the following order: (a) Post-hoc power analyses; (b) preliminary analyses (i.e., descriptives, independent *t*-tests, and correlations); (c) hierarchical linear regression for RQ one; (d) one-way ANCOVA for RQ two; (e) one-way ANCOVA for RQ three; and (f) one-way ANCOVA for RQ four. Assumptions for all analyses were checked prior to running. See Appendix C for hierarchical linear regression assumptions results. See Appendix D for one-way ANCOVA assumptions results. The results of this study are presented in accordance with the research questions established during the study's design phase.

Post Hoc Power Analyses

Post hoc power analyses for the hierarchical linear regression model and one-way ANCOVA models were completed using the G*Power software package. Post hoc power analysis for the hierarchical linear regression model indicated an achieved of power of 1.00 to estimate small to medium effects (i.e., Cohen's d = .30). The parameters were entered in the G*Power software as follows: a total sample size of n = 355, three total predictors, and an alpha of .05. Post hoc power analyses for the following three one-way ANCOVA models were calculated with the following parameters entered in the G*Power software: an effect size of .3, an alpha of .05, two groups, three covariates, and the numerator degrees of freedom of one. Results indicated an achieved power of 1.00 to estimate small to medium effects (i.e., Cohen's d = .30) for the one-way ANCOVA model in RQ two with a total sample size n = 342. Results indicated an achieved power of 1.00 to estimate small to medium effects (i.e., Cohen's d = .30) for the one-way ANCOVA model in RQ three with a total sample size of n = 250. Results indicated an achieved power of 1.00 to estimate small to medium effects (i.e., Cohen's d = .30) for the one-way ANCOVA model in RQ four with a total sample size n = 324.

Preliminary and Covariate Analysis

The researcher for the study performed preliminary analyses (i.e., measures of association between the variables and covariate analysis) on the de-identified data. Descriptive analyses investigated the data for outliers. Correlational analysis investigated the relationships between the dependent variables and outcome variables for each RQ. Independent t-tests were employed to compare the difference in each dependent variable to determine if significant differences are indicated related to sex at birth.

Descriptive Analyses

Of the 363 participants included for the study preliminary analysis 51.1% were female. Slightly more than half, 51.4% (*n* = 187), were enrolled in the EO ECE program prior to Kindergarten and 48.6% (*n* = 176) were not enrolled in the EO ECE program (No-EO ECE). Participants had a mean age of 65.19 months (about 5 and a half years) old at Kindergarten entry and a mean average attendance rate of 94.76% (i.e., reported as an annual average attendance from Grade 1 to Grade 6). Participants who were enrolled in EO ECE were 52.9% female. No-EO ECE participants were 49.2% female. See Table 10 for demographic information for the EO ECE and No-EO ECE participant groups. The researcher for the study coordinated with the study district's research team to obtain the extant student data.

Table 10

Preliminary Participant Demographic Information by EO ECE Participation

	Participants		
Spanish-speaking MLLs	EO ECE *n* = 187	No-EO ECE *n* = 176	Total *n* = 363
Sex			
Male	88	90	178
Female	99	86	186
Age (months) at Kindergarten entry			
M	65.32	65.05	65.19
SD	3.37	3.46	3.42
Attendance Average Grade 1-Grade 6			
M	95.03	94.48	94.76
SD	4.21	4.12	4.18

Descriptive data analysis indicated significant outliers on the average attendance data for Grade 1 to Grade 2 and on the average attendance data for Grade 1 to Grade 4, after visual inspection of boxplots. One extreme outlier in the EO ECE group was removed and three extreme outliers in the No-EO ECE group were removed. Visual inspection of boxplots indicated five extreme outliers for average attendance from Grade 1 to Grade 6. Four of the extreme outliers were the same participants in RQ two and RQ three, and an additional extreme outlier from the EO ECE group was identified and removed from the average attendance Grade 1 to Grade 6 data. After removing the extreme outliers for average attendance at Grade 1 to Grade 2, a visual inspection of a boxplot indicated two remaining outliers in the EO ECE group and two in the No-EO ECE group. See Appendix E for visual images of the outlier analyses. Table 11 depicts the total *N*, mean and standard deviation for the study variables.

The number of years in a bilingual program type variable describes the type of instruction received from Kindergarten through Grade 6. Of the 359 participants, 9.5%, or 34 students, received 7 years of EO instruction. The mean number of years in a bilingual program type from Kindergarten to Grade 4 was 3.69 years and the mean number of years in a bilingual program type from Kindergarten to Grade 6 was 3.67 years. The means are displayed are reported in Table 11 are 3.7 years due to rounding. Furthermore, by the start of Grade 5 only 2.2% of the MLLs who received bilingual instruction remained in the bilingual program type. The percentage in the number of students in the bilingual instructional program after Grade 4 resulted in a minimal change in the mean from the number years in a bilingual program type from Kindergarten to Grade 4 and the mean for the number years in a bilingual program type from Kindergarten to Grade 6.

Table 11

Descriptives for Covariates and Outcome Variables

Variable	*N*	Minimum	Maximum	*M*	*SD*
Number of Years in EL Support Program Kindergarten to Grade 7	359	2	8	6.6	1.62
Attendance Average Grade 1-Grade 2	359	81.22	100.00	95.2	3.27
Attendance Average Grade 1-Grade 4	359	85.47	99.86	95.4	2.89
Attendance Average Grade 1-Grade 6	358	80.39	99.99	95.2	3.19
Number of Years in Bilingual Program Type Kindergarten to Grade 2	359	0	3	2.7	.95
Number of Years in Bilingual Program Type Kindergarten to Grade 4	359	0	5	3.7	1.51
Number of Years in Bilingual Program Type Kindergarten to Grade 6	359	0	6	3.7	1.54
Kindergarten MODEL Overall Score	358	1.0	4.5	1.8	1.06
MAP Growth Reading RIT Score Grade 2	343	149	213	176.5	13.32
MAP Growth Reading RIT Score Grade 4	248	159	230	194.1	12.87
MAP Growth Reading RIT Score Grade 6	326	174	238	206.1	11.98

Correlational Analysis

Correlations between the continuous predictors and outcome variables were explored to provide information about the association among the variables and to verify that multicollinearity was not present among the variables in the data. Associations between variables are presented using the Pearson product-moment coefficients. Low ($.10 < r < .29$) to moderate ($.30 < r < .49$) relationships were identified between variables. There were no relationships identified between independent variables > .70 that indicated multicollinearity (Cohen, 2003). Relationships identified as moderately correlated at the $p < .05$ level provides evidence for a possible association between the independent variable and the outcome variable. During the study's design phase, the Kindergarten MODEL overall score and average attendance were identified as variables to be included in the regression model.

Pearson's product-moment correlation assessed the relationship between the number of years in EL support program Kindergarten to Grade 7, the dependent variable for RQ one, and the covariates, Kindergarten MODEL overall L2 proficiency score and the average attendance from Grade 1 to Grade 6. There was a statistically significant negative correlation between the number of years in the EL support program and average attendance from Grade 1 to Grade 6 for MLL students, $r = -.14$, $p = .007$. There was a small negative correlation between the number of years in the EL support program and Kindergarten MODEL overall proficiency score, $r = -.27$, $p = < .001$. Table 12 displays the results of the correlations for the predictors and outcome variables for RQ one.

Table 12

Correlations for Predictors and Outcome Variable RQ One

Variable	Number of Years in EL Support Kindergarten – Grade 7	Attendance Average Grade 1 – Grade 6	Kindergarten MODEL Overall Score
Number of Years in EL Support Program Kindergarten – Grade 7	–		
Attendance Average Grade 1-Grade 6	-.14*	–	
Kindergarten MODEL Overall Score	-.27*	.07	–

Note. **p* < .01; *n* = 358; *p* < .05, *n* = 359.

Pearson's product-moment correlation was run to assess the relationship between the MAP Growth Reading RIT Score Grade 2, the dependent variable for RQ two, and the covariates, Kindergarten MODEL overall proficiency score, the number of years in a bilingual program type from Kindergarten to Grade 2, and the average attendance from Grade 1 to Grade 2. There was no statistically significant correlation between MAP Growth Reading RIT Score Grade 2 and average attendance from Grade 1 to Grade 2 for MLL students, $r = .04$, $p = .426$. There was a small correlation between MAP Growth Reading RIT Score Grade 2 and number of years in bilingual program type for MLL students, $r = -.24$, $p = <.001$. There was a moderate correlation between MAP Growth Reading RIT Score Grade 2 and Kindergarten MODEL overall proficiency score, $r = .34$, $p = < .001$. There was a moderate correlation between Kindergarten MODEL overall proficiency score and the number of years in a bilingual program type from Kindergarten to Grade 2, $r = -.55$, $p = < .001$. Table 13 displays the results of the correlations for the covariates and outcome variables for RQ two.

Table 13

Correlations for Covariates and Outcome Variable RQ Two

Variable	MAP Growth Reading RIT Scores Grade 2	Attendance Average Grade 1 – Grade 2	Kindergarten MODEL Overall Score	Number of Years in Bilingual Program Type Kindergarten – Grade 2
MAP Growth Reading RIT Scores Grade 2	–			
Attendance Average Grade 1-Grade 2	.07	–		
Kindergarten MODEL Overall Score	.34*	.04	–	
Number of Years in Bilingual Program Type Kindergarten – Grade 2	-.24**	-.05	-.55***	–

Note. *$p < .01$; $n = 342$; **$p < .01$; $n = 343$, ***$p < .01$, $n = 358$.

Pearson's product-moment correlation was run to assess the relationship between the MAP Growth Reading RIT Score Grade 4, the dependent variable for RQ three, and the covariates, Kindergarten MODEL overall proficiency score, the number of years in a bilingual program type from Kindergarten to Grade 4, and the average attendance from Grade 1 to Grade 4. There was a small statistically significant correlation between MAP Growth Reading RIT Score Grade 4 and average attendance from Grade 1 to Grade 4 for MLL students, $r = .21$, $p = .001$. There was a small statistically significant negative correlation between MAP Growth Reading RIT Score Grade 4 and number of years in bilingual program type for MLL students, $r = -.19$, $p = .002$. There was a small statistically significant correlation between MAP Growth Reading RIT Score Grade 4 and Kindergarten MODEL overall proficiency score, $r = .20$, $p = .001$. There was a moderate correlation between Kindergarten MODEL overall proficiency score and the number of years in a bilingual program type from Kindergarten to Grade 4, $r = -.45$, $p = < .001$. Table 14 displays the results of the correlations for the covariates and outcome variables for RQ three.

Table 14

Correlations for Covariates and Outcome Variable RQ Three

Variable	MAP Growth Reading RIT Scores Grade 4	Attendance Average Grade 1 – Grade 4	Kindergarten MODEL Overall Score	Number of Years in Bilingual Program Type Kindergarten – Grade 4
MAP Growth Reading RIT Scores Grade 4	–			
Attendance Average Grade 1-Grade 4	.21*	–		
Kindergarten MODEL Overall Score	.20**	.04	–	
Number of Years in Bilingual Program Type Kindergarten – Grade 4	-.19*	.01	-.45***	–

Note. *$p < .01$; $n = 248$; **$p < .01$; $n = 247$, *** $p < .01$; $n = 358$

Pearson's product-moment correlation was run to assess the relationship between the MAP Growth Reading RIT score Grade 6, the dependent variable for RQ four, and the covariates, Kindergarten MODEL overall proficiency score, the number of years in a bilingual program type from Kindergarten to Grade 6, and the average attendance from Grade 1 to Grade 6. There was a small statistically significant correlation between MAP Growth Reading RIT score at Grade 6 and average attendance from Grade 1 to Grade 6 for MLL students, $r = .13$, $p = .019$. There was no statistically significant correlation between MAP Growth Reading RIT score Grade 6 and the number of years in a bilingual program type for MLL students, $r = -.10$, $p = .063$. There was a small correlation between MAP Growth Reading RIT score Grade 6 and Kindergarten MODEL overall proficiency score, $r = .24$, $p = < .001$. There was a moderate statistically significant correlation between the Kindergarten MODEL and the number of years in a bilingual program type for MLL students, $r = -.45$, $p = < .001$. Table 15 displays the results of the correlations for the covariates and outcome variables for RQ four.

Table 15

Correlations for Covariates and Outcome Variable RQ Four

Variable	MAP Growth Reading RIT Scores Grade 6	Attendance Average Grade 1 – Grade 6	Kindergarten MODEL Overall Score	Number of Years in Bilingual Program Type Kindergarten – Grade 6
MAP Growth Reading RIT Scores Grade	–			
Attendance Average Grade 1-Grade 6	.13*	–		
Kindergarten MODEL Overall Score	.24**	.073	–	
Number of Years in Bilingual Program Type Kindergarten – Grade 6	-.10	-.01	-.45***	–

Note. *$p < .05$; $n = 325$; *$p < .01$; $n = 325$; $p < .0,1$ $n = 358$.

Independent T-Test Results for Sex at Birth

Independent *t*-tests compared the difference in number of years spent in the EL support program to determine if significant differences are indicated related to sex at birth. Independent *t*-tests also compared the difference in MAP Growth Reading scores at Grade 2, Grade 4, and Grade 6 to determine if significant differences on the dependent variable are indicated related to sex at birth. Assumptions were checked prior to running the independent *t*-tests. Independent *t*-test assumptions included: (a) a continuous dependent variable; (b) independent variable is categorical with two groups; (c) independence of observations; (d) no significant outliers in the two groups of independent variables in terms of the dependent variable; (e) dependent variable should be approximately normally distributed for each group of the independent variable; and (f) homogeneity of variances (i.e., the variance is equal in each group of the independent variable).

Research Question One (RQ One) Independent *T*-test Results. There were no outliers in the number of years spent in the EL support program for sex at birth, as assessed by inspection of a boxplot. The number of years in EL support for males and females violated the normal distribution assumption, as assessed by Shapiro-Wilk's test ($p < .001$), visual inspection of Normal Q-Q plots and assessed by visual inspection of their histograms. A histogram revealed negative skewness (-3.52). There was homogeneity of variances for the number of years in the EL support program for males and females, as assessed by Levene's test for equality of variances ($p > .05$). The difference in mean number of years in the EL support program between males and females was not statistically significant, with males participating 6.7 years compared to females participating 6.4 years, $t(361) = 1.53$, $p = .128$. Differences in the number of years spent in the EL support program based on sex at birth did not contribute to a meaningful difference in the number of years in the EL support program, providing evidence that sex at birth may not be appropriate to include as a predictor into the hierarchical linear regression model.

Research Question Two (RQ Two) Independent *T*-test Results. There were no outliers in the MAP Growth Reading Grade 2 RIT scores for sex at birth as assessed by inspection of a boxplot. The MAP Growth Reading Grade 2 RIT scores for males were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). The MAP Growth Reading Grade 2 RIT scores for females violated the normal distribution assumption, as assessed by Shapiro-Wilk's test ($p = .007$). There was homogeneity of variances for MAP Growth Reading Grade 2 RIT scores for males and females, as assessed by Levene's test for equality of variances ($p > .05$). The difference in mean MAP Growth Reading Grade 2 RIT scores between males and females was not statistically significant, with males scoring 175.8 compared to females scoring 177.1, $t(345) = -.92$, $p = .360$. Differences in score based on sex at birth did not contribute to a meaningful difference in MAP Growth Reading RIT scores at Grade 2, providing evidence that sex at birth may not be appropriate to include as a covariate in the ANCOVA model for RQ two.

Research Question Three (RQ Three) Independent *T*-test Results. There were outliers in the data for males and females on the MAP Growth Reading RIT scores, one outlier for males scoring 1.5 box lengths higher and two outliers scoring 1.5 box lengths lower for females, as assessed by inspection of a boxplot. The MAP Growth Reading Grade 4 RIT scores were normally distributed for males and females, as assessed by Shapiro-Wilk's test ($p > .05$). There was homogeneity of variances for MAP Growth Reading Grade 4 RIT scores for males and females, as assessed by Levene's test for equality of variances ($p > .05$). The difference in mean MAP Growth Reading Grade 4 RIT scores between males and females was not statistically significant, with males scoring 192.9 compared to females scoring 195.3, $t(249) = 1.45$, $p = .148$.

Differences in score based on sex at birth did not contribute to a meaningful difference in MAP Growth Reading RIT scores at Grade 4, providing evidence that sex at birth may not be appropriate to include as a covariate in the ANCOVA model for RQ three.

Research Question Four (RQ Four) Independent *T*-test Results. There was one extreme outlier present in the MAP Growth Reading RIT Grade 6 data for females and no outliers in the data for males, as assessed by inspection of a boxplot. The single extreme outlier in the data for females caused a positive skew in the data (.711) upon examination of descriptives for extreme values and visual inspection of a histogram. The extreme outlier was removed from the analysis for RQ four, and the following assumptions were examined. The MAP Growth Reading RIT scores at Grade 6 for males and females were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). There was homogeneity of variances for MAP Growth Reading Grade 6 RIT scores for males and females, as assessed by Levene's test for equality of variances ($p >.05$). The difference in mean MAP Growth Reading Grade 6 RIT scores between males and females was not statistically significant, with males scoring 205.1 compared to females scoring 207.1, $t(327) = 1.51$, $p = .131$. Differences in score based on sex at birth did not contribute to a meaningful difference in MAP Growth Reading RIT scores at Grade 6, providing evidence that sex at birth may not be appropriate to include as a covariate in the ANCOVA model for RQ four Table 16 displays the results from the independent *t*-test analyses, revealing that no significant differences were found between males and females on the dependent variable for RQ one, RQ two, RQ three, or RQ four.

Table 16

Results of Independent T-Test Sex at Birth and RQ One, RQ Two, RQ Three and RQ Four Outcome Variables

Outcome Variable	Sex at Birth Groups	*n*	*M*	*SD*	*df*	*T*	*p*
Number of Years in EL Support Program Kindergarten to Grade 7	Female	185	6.4	1.6	361	1.53	.128
	Male	178	6.7	1.6			
MAP Growth Reading RIT Score Grade 2	Female	179	177.1	13.2	345	.92	.360
	Male	168	175.8	13.4			
MAP Growth Reading RIT Score Grade 4	Female	132	195.3	12.4	249	1.45	.148
	Male	119	192.9	13.3			
MAP Growth Reading RIT Score Grade 6	Female	164	207.1	11.1	327	1.51	.131
	Male	165	205.1	12.7			

Note. Two-tailed test, equal variances assumed.

Hierarchical Linear Regression Results

Research Question One (RQ One)

RQ one examined whether and to what extent participation in the EO ECE program predicted the number of years in EL support after controlling for MLLs' average attendance from Grade 1–Grade 6 and Kindergarten MODEL overall score. Hierarchical linear regression was selected because the researcher for the study aimed to isolate a specific effect separate from the predictor (independent) variables (i.e., Kindergarten MODEL overall score and average attendance) to determine how much variance the predictors explained in a single continuous dependent variable (i.e., EO ECE participation). In hierarchical linear regression, the predictor variable can be controlled for to isolate a specified effect, separate from covariates. See Table 17 for full details on each regression model.

Assumptions were checked prior to running the hierarchical multiple regression. The assumption of linearity was assessed by a visual inspection of a scatterplot of the studentized residuals against the unstandardized predicted values. The assumption of a normally distributed dependent variable was violated. The Shapiro-Wilk statistic was significant ($p < .001$). A visual inspection of a Q-Q Plot determined the data to be somewhat normally distributed. The F statistic is considered to be robust against non-normality and the researcher proceeded with the assumption check. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.06. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. Multicollinearity was checked between the predictors using Pearson's-product moment correlation and tolerance values. P values > .70 between the predictors would have indicated multicollinearity. However, none of the values between the predictors were > .70. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1 To verify that the predictors correlated with the outcome, correlations were checked for p values > .3. Kindergarten MODEL was the strongest predictor in the covariate analysis, $r = 34$. Table 11 displays the correlations between the study variables. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values > .2, and no values for Cook's distance above 1. Residuals were confirmed using Cook's distance and were not > 1.00. Tolerance was verified to be > .1 and Variance Inflation Factor < 10, indicating that the assumption for homogeneity of variances was met.

In a step-by-step manner the covariates, Kindergarten MODEL overall score and average attendance Grade 1 to Grade 6, were entered into the multiple regression models in model 1 and model 2, and then EO ECE participation was entered in model 3. Entering the predictors in this manner isolated the amount of variance on the number of years spent in the EL support program explained by each covariate and then isolated the effects of EO ECE participation on the number of years spent in the EL support program. The results indicated how much R^2 is explained by the

Kindergarten MODEL overall scores and how much R^2 is explained by attendance average from Grade 1 to Grade 6.

The initial model, or step one, of the Kindergarten MODEL overall score was statistically significant, $R^2 = .07$, $F(1, 353) = 27.58$, $p < .001$. The second model (i.e., step 2), the addition of average attendance Grade 1 to Grade 6, was statistically significant, R^2 of .089, $F(1, 352) = 6.44$, $p = .012$. In the third step, model three, the addition of EO ECE was not statistically significant. The full model of average attendance Grade 1 to Grade 6, Kindergarten MODEL score, and EO ECE was not statistically significant, $R^2 =.097$, $F(1, 351) = 3.11$, $p = .079$; adjusted $R^2 = .089$. Model 3 R^2 indicated that 9.7% of the variance in the number of years in the EL support program is explained by participation in the EO ECE program, Kindergarten MODEL overall score, and average attendance from Grade 1 to Grade 6 altogether. The Kindergarten MODEL overall score and attendance average from Grade 1 to Grade 6 together explain 8.9% of the variance in the number of years in the EL support program. Addition of the participants' EO ECE participation to the hierarchical linear regression model was non-significant in explaining the variance in the number of years spent in the EL support program.

Table 17

Hierarchical Linear Regression Results for the Number of Years in the EL Support Program

	Unstandardized *B*	*SE*	*Β*	R^2	ΔR^2	*t*	*p*
Model 1							
Constant	7.34	.17		.072	.072	43.99	< .001*
Kindergarten MODEL Overall Score	-.41	.08	-.27			-5.25	< .001*
Model 2							
Constant	14.00	2.6		.089	.017	5.32	<.001*
Kindergarten MODEL Overall Score	-.40	.08	-.26			-5.12	< .001*
Attendance Average Grade 1 to Grade 6	-.07	.03	-.13			-2.54	.012**
Model 3							
Constant	14.10	2.62		.097	.008	5.38	<.001*
Kindergarten MODEL Overall Score	-.39	.08	-.25			-4.95	< .001*
Attendance Average Grade 1 to Grade 6	-.07	.03	-.14			-2.65	.009*
EO ECE	.29	.17	.09			1.76	.079

Note: *Significant at $p < .01$; **Significant at $p < .05$.

One-Way Analysis of Covariance Results

The remaining three research questions were answered using ANCOVA. Prior to conducting the ANCOVA models, assumptions of the one-way ANCOVA were checked. Assumptions for ANCOVA are as follows: (a) continuous dependent variable, (b) categorical independent variable with two or more independent groups, (c) continuous covariate variable, (d) independence of observations, (e) linear relationship between the covariate and the dependent variable for each level of the independent variable, and (f) homogeneity of the regression slopes.

Research Question Two (RQ Two)

RQ two examined whether there were differences between EO ECE participants' and No-EO ECE participants' MAP Growth Reading RIT scores in the spring of Grade 2. An ANCOVA was run to determine the differences in MAP Growth Reading Grade 2 RIT scores after controlling for Kindergarten MODEL overall score, average attendance Grade 1 to Grade 2, and the number of years in bilingual program from Kindergarten to Grade 2. There was a linear relationship between Kindergarten MODEL overall scores and MAP Growth Reading Grade 2 RIT scores, average attendance Grade 1 to Grade 2 and MAP Growth Reading Grade 2 RIT scores, and the number of years in bilingual program type and MAP Growth Reading Grade 2 RIT scores as assessed by visual inspection of a scatterplot.

There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and Kindergarten MODEL overall scores, $F(1,334) = .06$, $p = .812$. There was homogeneity of regression slopes as the interaction term was not statistically significant, $F(1,334) = .18$, $p = .672$ for EO ECE participation and the number of years in a bilingual program from Kindergarten to Grade 2. There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and average attendance Grade 1 to Grade 2, $F(1,334) = 1.50$, $p = .137$. Standardized residuals for the interventions and for the overall model were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). There was homoscedasticity and homogeneity of variances, as assessed by visual inspection of a scatterplot and Levene's test of homogeneity of variance ($p = .664$), respectively. There were no outliers in the data, as assessed by no cases with standardized residuals greater than ±3 standard deviations.

After adjustment for Kindergarten MODEL overall score, average attendance Grade 1 to Grade 2, and the number of years in bilingual program type from Kindergarten to Grade 2, results revealed no significant difference in MAP Growth Reading Grade 2 RIT scores for EO ECE participants when compared to the No-EO ECE participants, $F(1, 337) = 1.23$, $p = .269$, partial η^2

= .004. At Grade 2 the Kindergarten MODEL overall score significantly contributed to differences in MAP Growth Reading RIT scores, F = 22.88, p = < .001, partial η^2 = .064. At Grade 2, the number of years in a bilingual program type and the average attendance Grade 1 to Grade 2 did not contribute to significant differences in MAP Growth Reading RIT scores. See Table 18 for one-way ANCOVA results.

Table 18

One-Way ANCOVA Results of NWEA MAP Growth Reading RIT Scores in Grade 2

Variable	*df*	*F*	*p*	η^2
Corrected Model	1, 337	12.02	< .001*	.125
Kindergarten MODEL Overall Score	1, 337	22.88	< .001*	.064
Attendance Average Grade 1 to Grade 2	1, 337	1.04	.309	.003
Number of Years in Bilingual Program Type Kindergarten to Grade 2	1, 337	1.24	.267	.004
EO ECE	1, 337	1.23	.269	.004

Note: N = 342; Significant at p < .01.

Research Question Three (RQ Three)

RQ three examined whether there were differences between EO ECE participants and No-EO ECE participants' MAP Growth Reading RIT scores in the spring of Grade 4. An ANCOVA was run to determine the differences in MAP Growth Reading Grade 4 RIT scores after controlling for Kindergarten MODEL overall score, average attendance Grade 1 to Grade 4, and the number of years in bilingual program from Kindergarten to Grade 4. There was a linear relationship between Kindergarten MODEL overall scores and MAP Growth Reading Grade 4 RIT scores, average attendance Grade 1 to Grade 4 and MAP Growth Reading Grade 4 RIT scores, and the number of years in bilingual program type and MAP Growth Reading Grade 4 RIT scores as assessed by visual inspection of a scatterplot. There was homogeneity of regression slopes as the interaction term was not statistically significant, $F(1, 239) = 2.63$, p = .106 for EO

ECE participation and Kindergarten MODEL overall scores. There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and the number of years in a bilingual program type from Kindergarten to Grade 4, $F(1, 239) = .95$, $p = .331$. There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and average attendance Grade 1 to Grade 4, $F(1, 239) = 1.64$, $p = .202$. Standardized residuals for the interventions and for the overall model were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). There was homoscedasticity and homogeneity of variances, as assessed by visual inspection of a scatterplot and Levene's test of homogeneity of variance ($p = .363$), respectively. There were no outliers in the data, as assessed by no cases with standardized residuals greater than ±3 standard deviations.

After adjustment for participants' Kindergarten MODEL overall score, average attendance Grade 1 to Grade 4, and the number of years in bilingual program type from Kindergarten to Grade 4, results revealed no significant difference in MAP Growth Reading Grade 4 RIT scores for EO ECE participants when compared to the No-EO ECE participants, $F(1, 242) = .09$, $p = .770$, partial $\eta^2 = .000$. At Grade 4 the Kindergarten MODEL overall score did not reveal significant differences in MAP Growth Reading RIT scores, $F = 3.82$, $p = .052$, partial $\eta^2 = .016$. At Grade 4, the number of years in a bilingual program type significantly contributed to differences in MAP Growth Reading RIT scores, $F = 4.64$, $p = .032$, partial $\eta^2 = .019$. Average attendance Grade 1 to Grade 4 significantly contributed to differences in MAP Growth Reading RIT Grade 4 scores, $F = 10.80$, $p = .001$, partial $\eta^2 = .043$. See Table 19 for one-way ANCOVA results.

Table 19

One-Way ANCOVA Results of NWEA MAP Growth Reading RIT Scores in Grade 4

Variable	*df*	*F*	*p*	η^2
Corrected Model	4, 246	6.55	< .001*	.098
Kindergarten MODEL Overall Score	1, 242	3.82	.052	.016
Attendance Average Grade 1 to Grade 4	1, 242	10.80	.001*	.043
Number of Years in Bilingual Program Type Kindergarten to Grade 4	1, 242	4.64	.032**	.019
EO ECE	1, 242	.09	.770	.000

Note: N = 247. Significant at $p < .01$; **Significant at $p < .05$.

Research Question Four (RQ Four)

RQ four examined whether there were differences between EO ECE participants and No-EO ECE participants' MAP Growth Reading RIT scores in the spring of Grade 6. An ANCOVA was run to determine the differences in MAP Growth Reading Grade 6 RIT scores after controlling for Kindergarten MODEL overall score, average attendance Grade 1 to Grade 6, and the number of years in a bilingual program from Kindergarten to Grade 6. There was a linear relationship between Kindergarten MODEL overall scores and MAP Growth Reading Grade 6 RIT scores, average attendance Grade 1 to Grade 6 and MAP Growth Reading Grade 6 RIT scores, and the number of years in a bilingual program type and MAP Growth Reading Grade 6 RIT scores as assessed by visual inspection of a scatterplot. There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and Kindergarten MODEL overall scores, $F(1,316) = .15$, $p = .703$. There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and the number of years in a bilingual program type from Kindergarten to Grade 6, $F(1,316) = .26$, $p = .612$. There was homogeneity of regression slopes as the interaction term was not statistically significant for EO ECE participation and average attendance Grade 1 to Grade 6, $F(1,316) = .27$, $p = .331$.

Standardized residuals for the interventions and for the overall model were normally distributed, as assessed by Shapiro-Wilk's test (p > .05). There was homoscedasticity and homogeneity of variances, as assessed by visual inspection of a scatterplot, Levene's test of homogeneity of variance (p = .906), respectively. There were no outliers in the data, as assessed by no cases with standardized residuals greater than ±3 standard deviations.

After adjusting for Kindergarten MODEL overall score, average attendance Grade 1 to Grade 6, and program type number of years in bilingual program from Kindergarten to Grade 6, results revealed no significant difference in MAP Growth Reading Grade 6 RIT scores for EO ECE participants, $F(1, 317) = .21$, $p = .647$, partial $\eta^2 = .001$. Average attendance from Grade 1 to Grade 6 revealed significant differences in MAP Growth Reading Grade 6 RIT scores, F = 5.23, p = .023, partial η^2 = .016. At Grade 6, the number of years in a bilingual program type did not contribute to significant differences in MAP Growth Reading Grade 6 RIT scores. The Kindergarten MODEL overall score revealed significant differences in MAP Growth Reading Grade 6 RIT scores, F = 14.02, p = < .001, partial η^2 = .042. See Table 20 for one-way ANCOVA results.

Table 20

One-Way ANCOVA Results for NWEA MAP Growth Reading Grade 6 RIT Scores

Variable	*df*	*F*	*P*	η^2
Corrected Model	4	6.17	<.001*	0.72
Kindergarten MODEL Overall Score	1	14.02	< .001*	.042
Attendance Average Grade 1 to Grade 6	1	5.23	.023**	.016
Number of Years in Bilingual Program Type Kindergarten to Grade 6	1	.00	.984	.000
EO ECE	1	.21	.647	.001

Note: N = 322; *Significant at p < .01; **Significant at p < .05.

Chapter Five Discussion

This present study examines the long-term reading achievement and L2 proficiency among Spanish-speaking students who are learning English. The core hypotheses are that MLLs who took part in an EO ECE program have a statistically significant different duration of participation in the study district's elementary school EL support program and statistically significant differences in MAP Growth Reading scores at Grade 2, Grade 4, and Grade 6 compared to MLLs who did not enroll in EO ECE. Prior to examining the outcomes, the researcher considered several factors: SES, consistent enrollment in the study district from Kindergarten to Grade 6, special education status, attendance records, L2 proficiency at the start of Kindergarten, and the type of instructional program (i.e., EO or bilingual) that students were involved in throughout their elementary education. The role of the duration of MLLs participation in the EL support program from Kindergarten to Grade 7 is examined and emerges as a primary research goal. The researcher hypothesizes that the EO ECE participant group will demonstrate statistically significant differences in reading scores. The MAP Growth Reading RIT scores at Grade 2, Grade 4, and Grade 6 are assessed in relation to enrollment in the EO ECE program. The length of time MLLs spend in an EL support program is assessed for long-term language acquisition outcome in relation to enrollment in the EO ECE program. Results suggest that EO ECE participation does not show statistically significant differences in their MAP Growth Reading RIT scores at Grade 2, Grade 4, or Grade 6, or in predicting the length of time spent in the EL support program.

Research Question One

RQ one investigates whether and to what extent differences emerge in the number of years students qualify for the EL support program after participating in the EO ECE program. To explore differences due to participation in the EO ECE program for MLL participants, findings from a three-step hierarchical linear regression model are provided.

The first step of the hierarchical linear regression isolates the predictive variance of the MLLs' second language proficiency upon Kindergarten (i.e., Kindergarten MODEL overall score) on the number of years MLLs spend in the EL support program. The results indicate that MLLs' second language proficiency upon Kindergarten entry significantly predicts 7.2% of the variance in the number of years the MLL student spends in the EL support program. The existing research of Conger et al., (2019) reports that higher initial L2 proficiency scores lead to an earlier exit from the EL support program in Grade 1. The current findings reveal that L2 proficiency at Kindergarten entry significantly predicts the variance in the number of years MLLs spent in EL support. Isolating the second language proficiency upon Kindergarten entry allows the current researcher to show if Kindergarten L2 proficiency explains language upon Kindergarten entry. The current findings extend the results of Conger et al.'s (2019) and Halle et al.'s (2012) initial L2 proficiency predicting improved L2 proficiency outcomes to Grade 7.

The second step of the hierarchical linear regression isolates the predictive variance of average attendance in Grade 1 to Grade 6 after accounting for the proportion of variance found in the first step. Average attendance is added in the second step separately due to existing research suggesting that attendance is predictive of longitudinal outcomes (Aucejo & Romano, 2018; Kearney et al., 2023). The result of the second step is that average attendance from Grade 1 to Grade 6 is a significant predictor and explains an additional 1.7% of the variance in years spent in the EL support program. These results provide evidence that school attendance is a significant predictor of the number of years MLLs spent acquiring L2 proficiency. The current researcher's review of prior research does not reveal research that investigates attendance rate as it relates to time spent in the EL support program or time to reclassification for MLLs (e.g.,. Motamedi, 2015; Serafini et al., 2022; Slama, 2012; Slama et al., 2017). Existing research indicates a negative association of attendance on academic outcomes and grades, especially with low-income, mobile families, and greater absences related to spring semester and at higher grades (Aucejo & Romano, 2018; Kearney et al., 2023).

The third step of the hierarchical linear regression isolates the predictive variance of EO ECE participation after accounting for the variance found in step one and step two. The results indicate that EO ECE participation does not show a significant improvement in the proportion of variance in the number of years MLLs spend in the EL support program above and beyond accounting for the Kindergarten MODEL score and average attendance from Grade 1 to Grade 6. Results indicated an additional 0.8% variation in the number of years students spend in the EL support program is not a significant predictor over and above the student's L2 proficiency upon entry into Kindergarten and being present at school as measured by attendance. After accounting for the Kindergarten MODEL score and accounting for average attendance, EO ECE participation does not make a significant difference in the number of years MLLs spend in the EL support program. Current findings indicate corroboration with existing research that shows no long-term benefit related to ECE participation (Gormley, 2008; Lipsey et al., 2018). Consistent with other research results, 52% of the MLLs in the study did not exit the EL support program at the start of Grade 7. These results align with Slama's (2014) findings that many MLL students entering high school spend 9 or more years in U.S. schools without developing L2 proficiency and Umansky and Reardon's (2014) results that it takes 8 years in school for 50% of the MLL population to achieve proficiency.

Research Question Two

RQ two investigates the variance in MAP Growth Reading RIT scores at Grade 2 between MLLs who participated in EO ECE preschool and MLLs who did not (the No-EO ECE group). Results of the one-way ANCOVA analysis show that, EO ECE participation did not contribute to a significant difference in the MAP Growth Reading RIT score after accounting for average attendance from Grade 1 to Grade 2, the number of years in a bilingual program from Kindergarten through Grade 2, and Kindergarten MODEL scores. The No-EO ECE MLL students have higher mean reading scores than MLLs who participated in EO ECE. The mean difference between the two groups is 2 points and not statistically significant. This finding is surprising because existing research reports ECE benefits for MLL students in reading, with some benefits extending into Grade 3 (Ansari et al., 2017; Conger et al., 2019; Halle et al., 2012; Weiland & Yoshikawa, 2013). The unexpected findings may be non-significant due to the data not having a sufficient distribution of scores to detect differences between the EO ECE and No-EO ECE participant groups. The current findings concur with existing research that reports no significant associations between EO ECE over time through Grade 2 (e.g., Bassok et al., 2019; Gormley, 2008).

Results of the current study indicate Kindergarten MODEL scores are significantly associated with MLL's reading scores at Grade 2. These results concur with findings of other researchers who note that language upon entry into the school setting is a robust predictor of later academic outcomes (Ansari et al., 2017; Conger et al., 2019; Slama et al., 2017). Furthermore, existing research shows MLLs who enter Kindergarten with stronger L2 proficiency score higher on standardized reading tests at the end of Grade 3 (Ansari et al., 2017).

The results indicate that the number of years in a bilingual program is not significantly associated with MAP Growth Reading RIT scores at Grade 2. This finding is surprising as it does not corroborate with the growing body of previous research supporting the positive impact of bilingual program models on long-term academic and L2 proficiency outcomes (Serafini et al., 2022; Steele et al., 2017; Thomas & Collier 1997, 2002; Watzinger-Tharp et al., 2016). This non-significant finding may be related to the type of bilingual instruction provided in the study district (e.g., TBE), or the variability in program language supports among the TBE participants, and program implementation and fidelity (Duran et al., 2015). Jepson's (2010) results found that bilingual programs may lead to lower scores or insignificantly different scores.

In addition, the results indicate average attendance from Grade 1 to Grade 2 is not a significant predictor of Grade 2 reading outcomes. It is well established in the literature that absenteeism negatively affects academic outcomes and standardized test scores, particularly in spring semesters (Aucejo & Romano, 2016; Gershenson et al., 2017; Kearney et al., 2023; Santibañez & Guarino, 2021). It is not surprising that the current findings do not show a statistically significant association in the early grades. Existing research concurs that insignificant or small associations of attendance on academic scores are seen at earlier grades, and the harmful effects of absences affect later grades more than earlier grades (Aucejo & Romano, 2016). Absences in the early grades may cause students to miss schoolwork and it is more difficult for students with lower scores to catch up, further widening the differences in academic scores in later grades (Aucejo & Romano, 2016).

Research Question Three

RQ three investigates the variance in MAP Growth Reading RIT scores at Grade 4 between MLLs who participated in EO ECE preschool and MLLs who did not (the No-EO ECE group). Results of the one-way ANCOVA analysis show that EO ECE participation did not contribute to a significant difference in the MAP Growth Reading RIT score after accounting for average attendance from Grade 1 to Grade 4, the number of years in a bilingual program from Kindergarten through Grade 4, and Kindergarten MODEL scores. The No-EO ECE MLL students have higher mean reading scores than MLLs who participated in EO ECE. The mean difference between the EO ECE and No-EO ECE MLL groups is less than 1 point, and that difference is not statistically significant. This finding is surprising because existing research reports ECE benefits for MLL students in reading (Ansari et al., 2017; Conger et al., 2019; Halle et al., 2012; Weiland & Yoshikawa, 2013). This non-significant finding corroborates with Lipsey et al.'s (2018) existing research reporting children who attend the Tennessee state-wide prekindergarten program received lower scores than children who did not in Grade 3.

Results of the current study indicate Kindergarten MODEL scores are not significantly associated with MLLs' MAP Growth Reading RIT scores at Grade 4 (p = .052). The current results do not concur with findings of other researchers who note that language upon entry into the school setting is a robust predictor of later academic outcomes (August & Shanahan, 2006; Chetty et al., 2011; Fitton et al., 2018; Kieffer, 2008). The non-significance of this finding is surprising as MLLs L2 upon entry to Kindergarten as measured by the Kindergarten MODEL scores are significantly positively associated with MLLs MAP Growth Reading RIT scores at Grade 2 and Grade 6. The results of this non-significant association of language upon entry into the school setting and later academic outcomes at Grade 4 may be due to the lower sample size in RQ three due to the cancellation of MAP Growth Reading testing due to the COVID-19 pandemic during the spring testing period for Grade 4 in spring of 2020. The unexpected Grade 4 findings may also be related to impacts related to the COVID-19 pandemic, including virtual instruction, inconsistent participation in instruction, and variation in language supports during the school closure, virtual instruction, and the transition back to pre-COVID instructional practices (Center for American Progress, 2021).

The results indicate that the number of years in a bilingual program is significantly associated with MAP Growth Reading RIT scores at Grade 4. A notable significant finding suggests a negative association between the number of years MLLs spend in a bilingual program from Kindergarten to Grade 4 and MAP Growth Reading scores at Grade 4. This finding indicates that spending more years in a bilingual program type is associated with lower reading scores at Grade 4. This finding is surprising as it does not corroborate with language acquisition theories and research supporting MLLs participation in bilingual instruction and the inclusion of MLLs' L1 in the classroom (Collier & Thomas, 2004, 2017; Espinoza, 2020; Gonzales, 1990; Green, 1998; Howard et al., 2018; Krashen & Biber, 1988; Lindholm-Leary & Howard, 2008; Serafini et al., 2022; Thomas & Collier 1997, 2002; Willig, 1985). This finding may suggest a misalignment of bilingual program type and time needed to acquire L2 reading skills for MLLs in the study district. In the study district, by Grade 5, 89% of MLLs transition from the bilingual program to EO instruction with EL support. MLLs with a higher number of years in the bilingual program may not have reached the threshold to of L2 proficiency to effectively learn or take assessments in L2, resulting in lower scores on the MAP Growth Reading RIT scores at Grade 4.

In addition, the results indicate average attendance from Grade 1 to Grade 4 is significantly associated with MAP Growth Reading RIT scores at Grade 4. The observed association between attendance and achievement corroborates earlier studies, indicating that attendance average percentage from Grade 1 to Grade 4 is associated with higher reading scores at Grade 4. Prior researchers report that the impact of absences on academic performance is two to three times more pronounced in Grades 4 and 5 compared to Kindergarten and Grade 1, and it is more significant in Grades 4 and 5 than in Grade 3 (Gershenson et al., 2017; Santibanez & Guarino, 2021).

Research Question Four

RQ four investigates the variance in MAP Growth Reading RIT scores at Grade 6 between MLLs who participated in EO ECE preschool and MLLs who did not (the No-EO ECE group). Results of the one-way ANCOVA analysis show that EO ECE participation did not contribute to a significant difference in the MAP Growth Reading RIT score after accounting for average attendance from Grade 1 to Grade 6, the number of years in a bilingual program from Kindergarten through Grade 6, and Kindergarten MODEL scores. The EO ECE MLL students mean reading scores than MLLs that did not participate in EO ECE (the No-EO ECE group). The mean difference between the two groups is less than 1 point and that difference is not statistically significant. This non-significant finding is surprising because existing research reports statistically significant outcomes associated with ECE for MLL students in reading (Ansari et al., 2017; Conger et al., 2019; Halle et al., 2012; Weiland & Yoshikawa, 2013). This current finding corroborates with existing research suggesting differences associated with EO ECE participation are not seen longitudinally (Gormley, 2008; Lipsey et al., 2018). Additionally, this current finding suggests research continues to yield mixed results on the long-term outcomes of ECE participation in relation to academic achievement.. The current and existing findings indicate a need for further research with rigorous methodology to fully comprehend the longitudinal academic and linguistic outcomes after EO ECE participation.

Results of the current study indicate Kindergarten MODEL scores are significantly associated with MLLs MAP Growth Reading scores at Grade 6. A higher score on the

Kindergarten MODEL is associated with higher Grade 6 reading scores. These results concur with findings of other researchers who note that language upon entry into the school setting is a robust predictor of later academic outcomes through middle school (Halle et al., 2012; Slama et al., 2017). Serafini et al. (2022) found that earlier acquisition of L2 predicts better academic outcomes. This finding suggests the inclusion of entry language measures for L1 and L2 in future studies (Halle et al., 2012).

The results indicate that the number of years in a bilingual program type is not significantly associated with MAP Growth Reading RIT scores at Grade 6. This finding is surprising as it does not corroborate with the growing body of previous research supporting the positive impact of bilingual program models on long-term academic and L2 proficiency outcomes (Serafini et al., 2022; Steele et al., 2017; Thomas & Collier 1997, 2002; Watzinger-Tharp et al., 2016). Additionally, this finding does not corroborate with Valentino and Reardon's (2015) existing research that indicates MLLs in dual-language immersion and transitional bilingual programs have higher reading scores in later grades (e.g., Grade 7) than their peers in EO programs. Additionally, existing research shows dual-language programs demonstrate improvements in general academic attainment, as evidenced by MLLs performing as well as or better than their peers who are not enrolled in dual-language programming (Barnett et al., 2007; Steele et al., 2017). The current study results do not concur with existing research, suggesting policy, programming, or program implementation differences in the study district and existing research (e.g., bilingual program type, L1 and L2 dosage).

In addition, the results indicate average attendance from Grade 1 to Grade 6 is significantly associated with MAP Growth Reading scores at Grade 6. The finding of a significant positive association between MAP Growth Reading RIT scores and average attendance from Grade 1 to Grade 6 indicates that higher average attendance percentages are associated with higher reading scores at Grade 6. This finding is not surprising as it corroborates with existing research that indicates the adverse effects of absenteeism on academic scores at Grade 4, Grade 5, and Grade 6 (Aucejo & Romano, 2016; Santibanez & Guarino, 2021). The findings of the current study align with Aucejo and Romano's (2016) report of a significant relationship in the later grades and into middle school, indicating the need for early identification of MLLs with attendance concerns in the earlier grades.

The results indicate that the Kindergarten MODEL score is the significant and consistent predictor at Grade 6 and may encourage program and policy changes that lead to early intervention for L2 acquisition. Kindergarten MODEL score predicts nearly 8% of the variance in the number of years an MLL student spends in the EL support program. Statistically, the Kindergarten MODEL score also significantly predicts Grade 2 and Grade 6 MAP Growth Reading RIT scores and is approaching significance in predicting MAP Growth Reading RIT scores at Grade 4. The weaker relationship between Kindergarten MODEL and Grade 4 reading scores may be due to the Kindergarten MODEL analyses at Grade 4 and the reduced sample size in RQ three due to the COVID-19 spring school closure and impacts related to the spring school closure.

Research investigating the long-term L2 acquisition and reading outcomes for MLLs has resulted in mixed outcomes (Ansari et al., 2017; Conger et al., 2019; Gormley, 2008). EO ECE participation has provided MLL students with vocabulary and literacy gains in L2 and promotes school readiness and English language growth observed in Kindergarten (Gormley & Phillips, 2005; Lipsey et al., 2018) and through Grade 1 (Conger et al., 2019). The current study results do not align with prior studies showing benefits at Grade 2, Grade 4, or Grade 6. The current study results may align with other research indicating a fade out of early gains and preschool participation advantages initially associated with ECE program benefits and a tendency to converge with non-participants as MLLs continue through elementary school (Lipsey et al., 2015; Magnuson et al., 2007; Puma et al., 2012). Without linguistic and academic pre-and post-scores of EO ECE participants, or Kindergarten entry pre-academic measures, this interpretation of fade out for early gains cannot be confirmed.

This study adds to the research base and supports findings that confirm the importance and predictive strength of a robust L1 or L2 proficiency prior to elementary school (Cummins, 1981), as well as consistent attendance in school, beginning in Kindergarten and increasing in importance through elementary and middle school (Santibanez & Guarino, 2021), and, finally, the effects of providing bilingual support at the elementary level to support L1 development and L2 acquisition. The results support the cross-language transfer theory (Cummins, 1989) and the threshold hypothesis (Ardasheva et al., 2012; Cummins, 1981), as the number of years in a bilingual program type is significantly associated with lower MAP Growth Reading scores at Grade 4 and this association is no longer significant in Grade 6, indicating the child's language skills may have strengthened in one or both languages. MLLs can draw upon L1 to comprehend instruction most effectively in L2.

Implications

This research reveals non-significant findings on EO ECE participation and the number of years MLLs spend in the EL support program, indicating that EO ECE participants and No-EO ECE participants do not spend a different number of years in the EL support program. This research also reveals non-significant findings indicating that EO ECE participants and No-EO ECE participants do not score differently on MAP Growth Reading test in Grade 2, Grade 4, and

Grade 6. Additional results also reveal significant findings that MLLs' L2 proficiency at Kindergarten entry and average attendance are predictive and associated with later academic and language proficiency outcomes. The results also reveal a significant relationship between the number of years in a bilingual program type and associations with reading outcomes. Specifically, the results and meaning are presented, and implications are discussed.

The implications of the inconsistent results across grades and the need to support MLLs and enhance language skills at Kindergarten entry or ECE have implications for practitioners (e.g., school psychologists), teachers, and administrators. Identifying MLL students upon Kindergarten entry or ECE and providing evidence-based L2 support throughout MLLs’ participation in the U.S. school system until L2 proficiency is achieved is crucial to MLLs' success in reading outcomes and L2 proficiency. School psychologists should offer guidance to inform practice with empirical research and act as advocates for identifying and supporting MLLs early and encourage administrators and teachers to bridge the research-to-practice gap and aim to align the L2 support MLLs are offered with evidence-based language acquisition theories (e.g., Cummins, 1981), given the significant results that L2 at Kindergarten entry is predictive of the number of years MLLs spend in the EL support program and reading scores in Grade 2 and Grade 6.

Results of research on MLL students' L2 development and language acquisition theory have not yet led to policy and program changes across the U.S. to support MLLs (Serafini et al., 2022). Collier (1987, 1995), Cummins (1981), and D.E. Mitchell et al. (1999) report estimates of up to 10 years before MLLs become proficient in English and competitive with monolingual students in academic English. In this study, 52% of participants did not acquire L2 proficiency by the start of Grade 7, after eight consecutive years in a U.S. school setting receiving EL support services as mandated by NCLB (No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq., 2001). This current finding of over half of the MLLs not acquiring proficiency aligns with prior research that indicates MLLs may require nine or more years to acquire proficiency (Conger et al., 2009; Slama, 2012).

Current programs and policies state that students must receive L2 support in Kindergarten through Grade 12. However, the programs and level of support vary widely across states and districts (Conger et al., 2019; Slama, 2014). The program types in the study district transition students from bilingual instruction to English content instruction that includes bilingual support (e.g., Transitional Bilingual Education-Early Exit includes bilingual instruction through the completion of Grade 2; one-way dual-language program includes bilingual instruction through the completion of Grade 4 or Grade 5); or English only instruction with L2 support (e.g., ESL, push-in, or pull-out) beginning in Kindergarten (Collier & Thomas, 2004; Serafini et al., 2022) These short-term elementary EL support programs shift to EO instruction after 3 to 4 years of bilingual instruction or less (Gandara et al., 2004).

This failure of research to inform school programs for MLL students is apparent, especially at the preschool level, where early intervention is most likely to lead to an increase in early vocabulary growth (Farkas & Beron, 2004), L2 acquisition (Raikes et al., 2019), and higher language proficiency scores in L2 at Kindergarten entry, leading to long-term benefits for MLLs (Ansari et al., 2017). However, the study district EO ECE participants received similar scores in reading and acquired English proficiency at a rate similar to No-EO ECE participants, as participation in the EO ECE was not significant. Efforts for policy and program changes primarily focus on elementary school-aged children by mandating EL support programs beginning in Kindergarten (e.g., NCLB, 2001). Implications of the current study results indicate a need to address a gap in the EO ECE program where MLLs are taught in L2 while their L1 and L2 are still developing, which contributes to a gap between MLLs' L2 instruction and comprehension if L1 supports are not provided (Valentino & Reardon, 2015).

Although the current findings are descriptive rather than causal, they align with prior studies indicating that L2 abilities at Kindergarten are robust predictors of later language proficiency and academic scores (Halle et al., 2012; Conger et al., 2019). The L1 and L2 benefits of preschool participation are widely supported (Espinosa, 2013; Raikes et al., 2019). However, the disjointed nature of program type from preschool through elementary school, and language of instruction can undermine MLL's language proficiency and academic achievement. The findings of this study reveal that MLLs' Kindergarten MODEL score is significantly predictive of the number of years MLLs spend in the EL support program from Kindergarten to Grade 7 and is significantly associated with academic reading outcomes at Grade 2 and Grade 6. Interventions and instruction in early childhood to develop MLLs L2 would likely benefit students long-term outcomes. Specifically, the meaning of the current findings suggests that MLLs with higher L2 proficiency upon entry to Kindergarten will spend fewer years in the EL support program and have higher Grade 2 and Grade 6 academic reading performance.

A nonsignificant finding is observed in Grade 4 and suggests that L2 proficiency at Kindergarten entry does not predict Grade 4 reading scores. Existing research shows that L2 proficiency at Kindergarten is predictive of academic outcome in Grade 5 and Grade 7 (Serafini et al., 2022). Additionally, the relationship between entry L2 and reading outcomes is statistically significant at Grade 2 and Grade 6, and non-significant at Grade 4, suggesting additional factors are involved at Grade 4 (e.g., virtual instruction due to the COVID-19 pandemic). This difference in findings at Grade 4 may be due to a smaller participant size for RQ three. Due to the COVID-19 pandemic, the MAP Growth Reading test was not administered in the spring of 2020. Additionally, approximately half of the participants in Grade 4 in spring 2021 were administered the MAP Growth Reading test during the COVID-19 pandemic, after virtual schooling and disruptions to attendance (Santibanez & Guarino, 2021). MLLs tested after a period of virtual learning have reduced attendance and inconsistent engagement in instruction due to COVID-19, which may impact MLLs' test performance (Santibanez & Guarino, 2021). The Center for American Progress (2021) discusses Hispanic/Latine populations and the disproportionate impact of the COVID-19 pandemic (e.g., adverse economic, housing, and health impacts.

Additional results show that MLLs' average attendance from Grade 1 to Grade 4 is significantly associated with academic reading performance in Grade 4. MLLs' average attendance from Grade 1 to Grade 6 is significantly associated with Grade 6 reading scores. The findings suggest that a higher attendance average from Grade 1 to Grade 4 is associated with higher literacy scores at Grade 4, and a higher attendance average from Grade 1 to Grade 6 is associated with higher literacy scores at Grade 6. The study results at Grade 2 were insignificant, suggesting that at Grade 2, there is no significant difference in MAP Growth Reading scores related to average attendance. As expected, a higher average attendance percentage in school is predictive of reading outcomes at Grade 4 and Grade 6, which concurs with Santibanez and Guarino's (2021) findings that the adverse effects of absenteeism on academic scores are more significant in upper elementary grades (i.e., Grade 4; Grade 5), and into Grade 6 middle school. The positive association of higher attendance with better academic outcomes supports the notion that attendance for MLLs may play a role in MLLs reading and language outcomes. This result suggests important implications for school administration to monitor attendance and provide early support for students with low attendance or unexcused absences. School social workers and school counselors may work closely with administration and families to support families due to impacts from the COVID-19 pandemic or MLLs from families of low-income.

The significant role of attendance on long-term outcomes suggests the importance of furthering attendance research that explores the early warning signals and factors related to school absenteeism (Santibanez & Guarino, 2021). Existing research identifies the impacts of the COVID-19 pandemic that cause increased absenteeism for MLLs (Kearney et al., 2023; Santibanez & Guarino, 2021). Early identification of factors that lead to an increase in absenteeism (e.g., financial instability, such as loss of work, frequent relocation or school transitions, or family illness) may lead to an increase in absenteeism. Practitioners' awareness of the disproportionate impacts of the COVID-19 pandemic and systemic racism can impact MLLs' attendance. Aucejo & Romano (2016) suggest the school staff identify students as early as Kindergarten who may have attendance concerns and help students to increase time in school so the MLLs catch up on missed schoolwork or instruction before they reach middle school when the adverse effects of absenteeism are evident as lower academic scores.

Lastly, the number of years MLLs spend in a bilingual program type from Kindergarten to Grade 4 is significantly associated with reading scores at Grade 4. This finding indicates that more years of bilingual instruction for MLLs from Kindergarten to Grade 4, the lower the MAP Growth Reading score. This finding suggests a need for reevaluating the duration and implementation of language support programs to ensure the instructional programs and supports align with the realities of time required for second language acquisition. Existing research at the EO ECE and elementary level notes that rapidly transitioning MLLs to EO instruction after a short time may not be the most effective approach to improving school readiness and long-term reading outcomes in L2 (August & Shanahan, 2006; Barnett et al., 2007; Duran et al., 2015; Goldenberg, 2008; Rolstad et al., 2005; Slavin & Cheung, 2005). The expected time frames for English proficiency acquisition and related EL supports require ongoing examination of longitudinal empirical research about MLLs, and the results must be integral to the policy-making process. The significant association with participation in a bilingual program and lower reading scores has implications for school psychologists and teachers. The school psychologist may provide progress monitoring or make recommendations to the teacher for the most effective interventions to support MLLs and support the teacher with ongoing data collection to provide frequent information about MLLs' progress.

The results of the study hold important implications for practitioners and researchers to continue to explore the associations with preschool and elementary school (e.g., program quality and fidelity of instructional implementation, language of instruction use in ECE and L2 support available), the role of attendance (e.g., ensuring a measure to account for attendance in preschool and Kindergarten and the cultural competency of the staff and teachers that are not accounted for in the current study). The significant finding of L2 proficiency at Kindergarten entry suggests a need for early screening and identification of students in need of L1 or L2 support in the school setting. Furthermore, the current study shows inconsistent results at Grade 2, Grade 4, and Grade 6. Future research could clarify the current study results and differences found to provide an understanding of the differences across grades. School staff (e.g., administration and school psychologists) should participate in ongoing examination of longitudinal empirical data about MLLs to advocate for systems-level changes to inform ECE policy-making process and practice, increase participation in high-quality preschool programs in students' L1 or dual-language, and align the supports and interventions between short-term programs (e.g., EO ECE and EL support programs) for a more continuous educational experience for the child.

Limitations

The current study findings offer potential contributions for understanding the long-term academic and language acquisition outcomes for MLLs in the U.S. school setting. Notably, the results of this study suggest MLL's L2 proficiency upon entry in Kindergarten and average attendance from Grade 1 to Grade 6 are significant predictors of the number of years MLLs spend in the EL support program. Additional notable results of the current study suggest that higher L2 proficiency at Kindergarten entry is associated with higher MAP Growth reading scores at Grade 2 and Grade 6, higher average attendance from Grade 1 to Grade 4 is associated with higher MAP Growth reading scores at Grade 4, higher average attendance from Grade 1 to Grade 6 is associated with higher MAP Growth reading scores at Grade 6, and the more number of years MLLs spend in a bilingual program type from Kindergarten to Grade 4 is associated with lower MAP Growth reading scores at Grade 4. Nonetheless, the current study has limitations that include: the reliance on extant data collected from a single school district in the Midwest, the non-random selection of participants, the use of longitudinal data that inherently leads to limitations in participant selection and completeness of data tracking over the 9 years of the study, and ability to examine cultural and environmental factors over the study period. The above mentioned limitations are described in more detail to improve future studies related to MLLs and longitudinal outcomes.

A limitation of the study is related to the use of extant data from a single school district that has a connection to the EO ECE program. The sorting of children into EO ECE and No-EO ECE groups did not occur randomly, and thus the results examining the association between the independent and dependent variables are not causal. The study district provided data that indicate whether MLL students engage in EO ECE or No-EO ECE participation. The current researcher could not determine whether or what types of ECE programs the No-EO ECE children had experienced prior to Kindergarten. This data limitation prevents the researcher from determining whether the child participated in another form of ECE (e.g., privately funded ECE or another form of ECE) and whether the program may outperform EO ECE. The extant data lack information on ECE arrangements for the No-EO ECE group (e.g., publicly funded preschool, privately funded preschool, or home-based care).

The limitation of extant data from a single study district has implications for participant eligibility. Because only students who are in and remain in the district continuously from Kindergarten through Grade 6 are included as study participants, this reduces the pool of eligible participants. Children who left the district at any point are excluded, even if they return to the district and complete Grade 6. As a result, the higher the grade level, the more selective the sample, eliminating the more mobile segment of the population who may learn English more slowly, creating a possible distortion of the sample from results in "reality" and suggesting an earlier exit from the L2 support program than the larger sample of MLLs who relocate frequently (Hakuta et al., 2000). Additionally, the statistical analyses have varying total numbers of participants due to the smaller sample size for RQ three due to the COVID-19 pandemic. Cohort two did not take the MAP Growth Reading assessment in the spring 2020 semester due to the limitations of the pandemic and cohort three had reduced participation in the Grade 4 MAP Growth Reading assessment in spring 2021 due to limitations of the pandemic.

While the study district and the EO ECE program have a connection in sharing building space, the databases in which each organization keep data are separate, creating a limitation in data completeness. When students enter the study district in Kindergarten, EO ECE participation is shared with the district. The district obtains participation details, including the school calendar year(s) attended. However, the limitation of this data is that children are eligible to participate in EO ECE on their third birthday, which varies during the school calendar year. Inclusion of the amount of participation in EO ECE (e.g., the number of months of participation) is essential to strengthening the study and the exact number of months attended was not obtainable. The extant EO ECE program data obtainable for the current study are limited to the information that is shared with the study district, and important confounds related to EO ECE participation are not included (e.g., EO ECE attendance rates, L1 and L2 language ability at EO ECE entry and exit, preacademic progress reports, and family income).

The longitudinal extant data is limited due to incomplete data tracking, technology upgrades, changes in tracking requirements, or errors in merging data management systems over 9 years. Half-day or full-day Kindergarten is noted in the study district's database, although inconsistent between schools in the study district. Attendance in Kindergarten amount cannot be accurately accounted for when attendance tracking was not required in Kindergarten. EO ECE participation data should include the length of time in the EO ECE program and language scores upon entry into the program. Information related to the EO ECE program participants that would increase the study participant numbers and strengthen the study is unavailable. For example, the Kindergarten MODEL scores are missing in the database for 26 additional students, who could not be included in the study, and thus restricted the participant pool. Lastly, detecting significant predictors of the student's language proficiency and reading outcomes is challenging due to program variations. The study district's database includes multiple EO or bilingual program types. However, the bilingual program type may have included transitional bilingual early-exit, a modified one-way dual-language program, or a modified version of transitional bilingual early-exit that includes regularly scheduled support and a certified bilingual teacher. The EO program type includes various forms of EL support programs, such as push-in or pull-out, and details are not included in the data provided. Including the accurate dose of L2 instruction and the type of L1 or L2 language support offered to participants could strengthen the study results of future studies. Despite these limitations, this study still provides valuable insights into MLLs' academic and language acquisition outcomes and serves as a steppingstone for future research in this area.

Future Directions

Future research employing a mixed-methods approach should explore language acquisition and academic outcomes from preschool through high school for Spanish-speaking children. Some of the findings from the current study (e.g., stronger L2 proficiency in Kindergarten entry is associated with higher Grade 2 and Grade 6 reading scores and is predictive of less time a MLL spends in the EL support program, the negative association for the number of years in a bilingual program and lower reading scores at Grade 4, higher average attendance is predictive of higher reading scores at Grade 4 and Grade 6, and 52% of MLLs spend 8 or more years in the EL support program) concur with other researchers' findings (Halle et al., 2012; Slama, 2012; Umansky & Reardon, 2014). Existing research that concurs with the current findings are: L2 proficiency upon Kindergarten entry is predictive of an earlier exit from the EL support program and is associated with higher Grade 3 and Grade 5 academic outcomes (Halle et al., 2012), the number of years in a bilingual program has negative associations with L2 proficiency and lower test scores at early grades (Umansky & Reardon, 2014) and over half of the MLLs spend 9 or more years in the EL support program (Slama, 2012). However, the current study results do not account for the variation in program type (i.e., the type of EO or bilingual instruction and dosage of L1 or L2 support provided), L1 proficiency upon preschool entry and later associations on academic and language proficiency outcomes. Additional predictors that aim to improve future research should include other potential environmental and cultural factors (e.g., a measure of program quality, number of guardians in the home, parental level of education, family engagement, number of siblings). In addition, a more precise measure to account for attendance, program type, and length of participation in a preschool or Kindergarten program would provide a clearer picture of MLLs prior exposure to L2.

Based on a comprehensive literature review, future researchers should ascertain preschool participation status and account for the type of care if not EO ECE (e.g., the language of instruction in preschool and elementary school, bilingual support available and implemented by a teacher who speaks the student's L1, measures of program quality, fidelity checks of the program implementation, pre-and post-test controls to examine language scores in English and Spanish at the start of preschool, the exit from preschool, and the entrance to Kindergarten). The examination of the language of instruction in ECE programs and elementary school, alongside measures of fidelity of implementation, would enhance future research by more accurately accounting for L1 and L2 dosage, quantify the amount of instruction in L1 or L2 in each academic content area, and ensure program guidelines and language supports are followed (e.g., is the MLL student learning in the language specified by the program, at the percent prescribed, by a teacher with qualifications described). A closer examination of the type and amount of bilingual support will provide a clearer understanding of current program benefits in ECE and elementary school. Pre and post-measures of MLLs academic and linguistic abilities in L1 and L2 are essential to the identification of MLLs language abilities related to short-term program outcomes, longitudinal outcomes, and the maintenance of program benefits observed over time.

Finally, the inclusion of measures of language ability allows research and data to support language acquisition theories and inform program and policy changes. Program research to explore the long-term language acquisition and academic outcomes of MLLs is needed to understand the outcomes of each unique program as well as the continuity between programs (i.e., the extension of benefits found after preschool participation and the most effective practices to minimize fadeout and understand the factors leading to fade out in elementary school).

Accurate record-keeping of relevant covariates to most accurately account for family income, attendance records in preschool through Grade 12, and program participation language of instruction in preschool and elementary school would provide more precise controls in future research. In future studies, the variation among districts related to attendance tracking policies should be accounted for, (e.g., enrollment / unenrollment if a family travels out of the country for an extended period or leaves the district in a calendar year and then returns to the district later that same school year), as attendance data may not be accurately accounted for, creating incomplete student records and inaccurate covariate data (e.g., the number of days the student has attended school may be fewer than their peers, though the percentage of attendance may not reflect the difference in instructional days). Consideration of program quality and the inclusion of a measure to account for the programs inclusion and characteristics of a high-quality program (e.g., teaching practices, differentiated instruction, the time devoted to academic subjects -- practicing letters and sounds; Gormley, 2008; Jenkins et al., 2018).

Continued research to explore elementary program type outcomes in association with MLLs participation in EO ECE or bilingual ECE, with larger datasets, would allow for data tracking from preschool through high school and long-term outcomes. Relatedly, it would also be interesting for future research to more precisely account for MLLs L1 and L2 language abilities (e.g., the dosage for L1 and L2 exposure, L2 abilities, while simultaneously accounting for MLL's L1 abilities and exposure longitudinally from the entry into the preschool programs, include measures post-preschool/Kindergarten entry, as well as through high school. Further research is also recommended to ascertain the impact of the various programs available within the study district's Kindergarten program (i.e., half-day versus full-day program), including a measure for attendance at the Kindergarten level. EO ECE participants may have enrolled in one or two years of the EO ECE program and, in rare cases, three years. Attendance is collected at this level and is not provided to the study district. The effect of half-day EO ECE compared to full-day EO ECE and 1 year of EO ECE versus 2 or more years should be examined. Studies measuring Kindergarten readiness after EO ECE participation or another form of preschool participation, particularly in L1 and L2 proficiency, would allow the district to measure student growth and compare the academic growth rate of students participating in the EO ECE program with their peers.

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Appendix A

Home Language Survey

English

Home Language Survey

The state requires the district to collect a Home Language Survey for every new student. This information is used to count the students whose families speak a language other than English at home. It also helps to identify the students who need to be assessed for English language proficiency.

Please answer the questions below and return this survey to your child's school.

Student's Name: ______________________________

1. Is a language other than English spoken in your home?

    Yes _____ No _____

    Which language? ________________________

2. Does your child speak a language other than English?

    Yes _____ No _____

    Which language? ________________________

If the answer to either question is yes, the law requires the school to assess your child's English language proficiency.

________________________________ ______________________________

Parent/Legal Guardian Signature Date

Appendix B

List of Abbreviations

ACCESS	Assessing Comprehension and Communication in English State-to-State
APA	American Psychological Association
DLL	Dual-language learner
ECE	Early childhood education
ELL	English language learner
EO	English-only
ESEA	Elementary and Secondary Education Act
ESL	English as a Second Language
ESSA	Every Student Succeeds Act
IRB	Institutional review board
L1	First/native language
L2	Second language
MODEL	Measure of Developing English Language
MLL	Multilingual learner
NAEP	National Assessment of Educational Progress
NCES	National Center for Education Statistics
NCLB	No Child Left Behind Act
RQ	Research question
SES	Socioeconomic status
TBE	Transitional Bilingual Education
W-APT	WIDA Kindergarten ACCESS Placement Test
WIDA	World-Class Instructional Design and Assessment

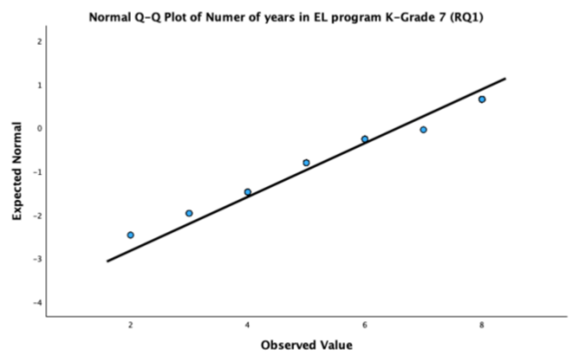
Appendix C

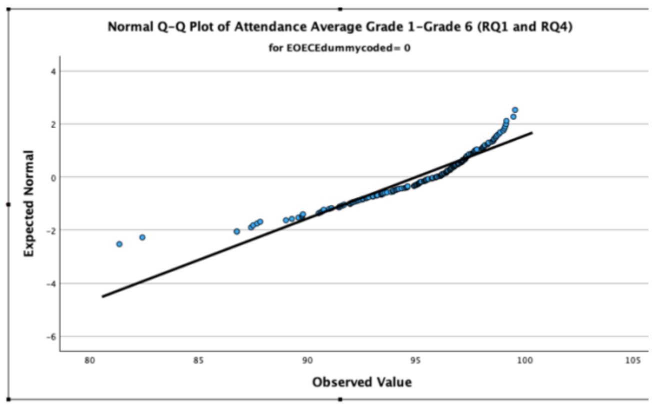
Hierarchical Linear Regression Assumptions

The following presents data for visual inspection of the multiple regression assumptions of normality and homoscedasticity. A discussion of multicollinearity is presented in the results section.

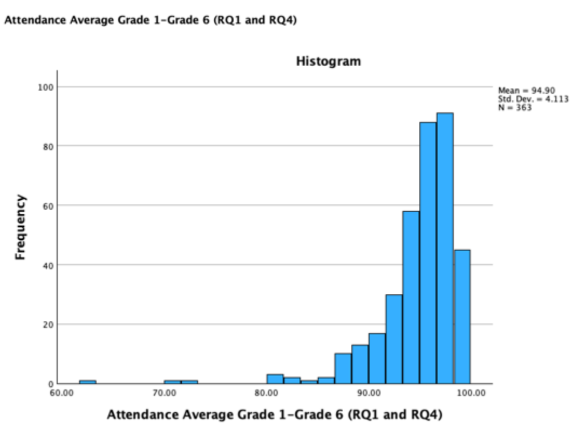
Research Question One

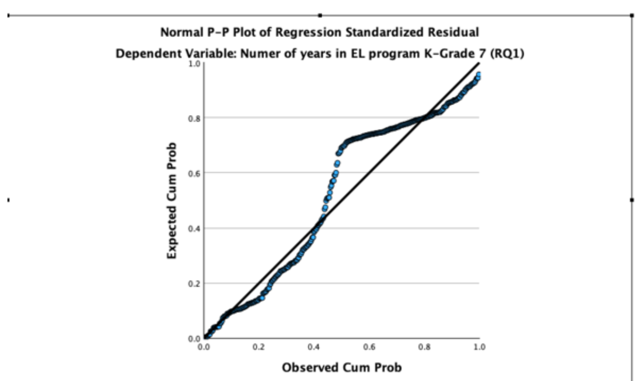
Normality and Normal P-P plot





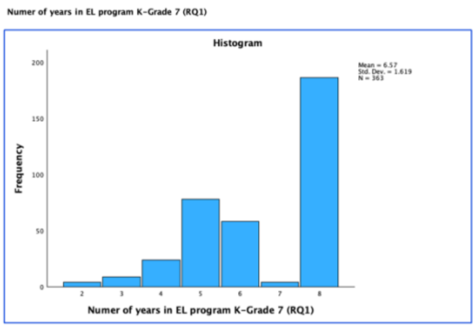
Observed Value

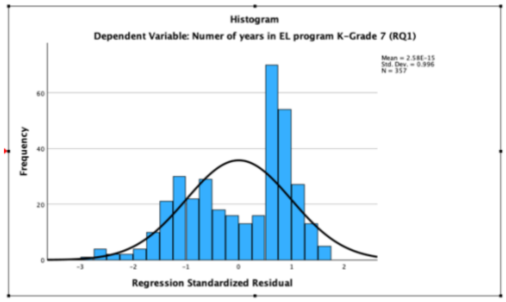


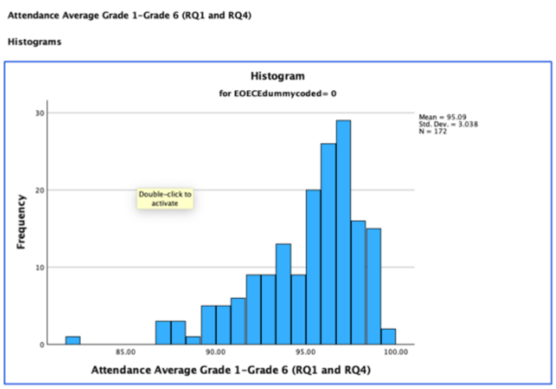


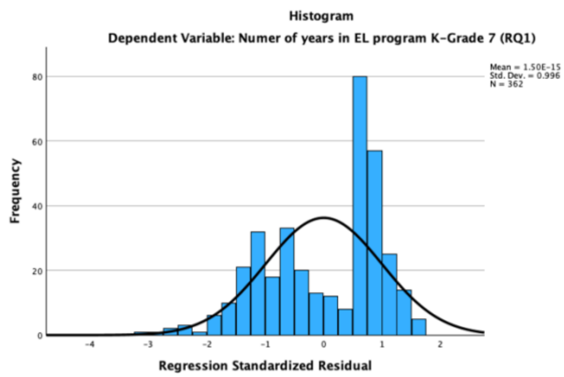
Before outlier removal

After outlier removal

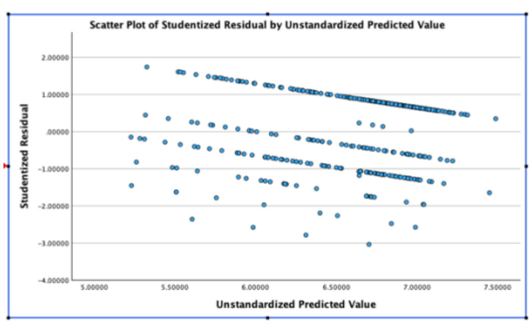


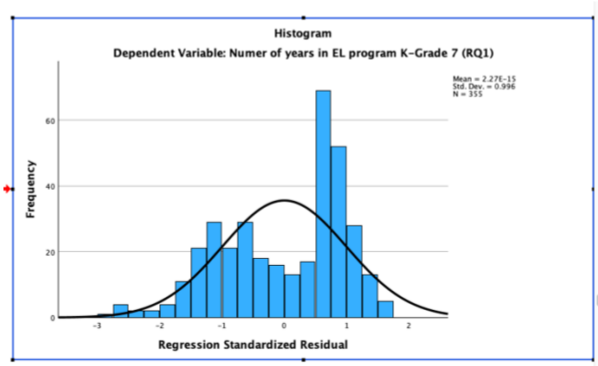






Heteroscedasticity



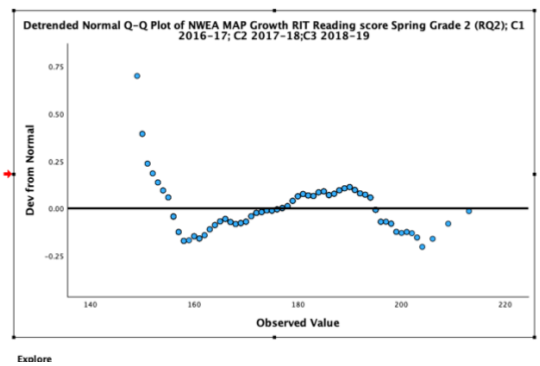


Appendix D

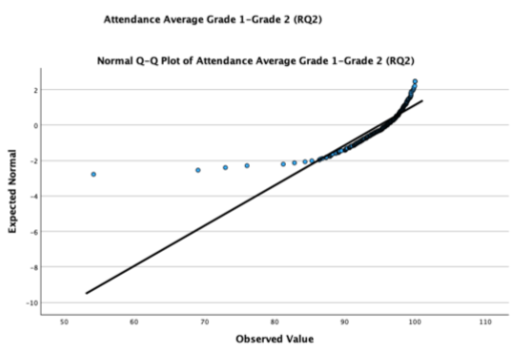
One-way ANCOVA Assumptions

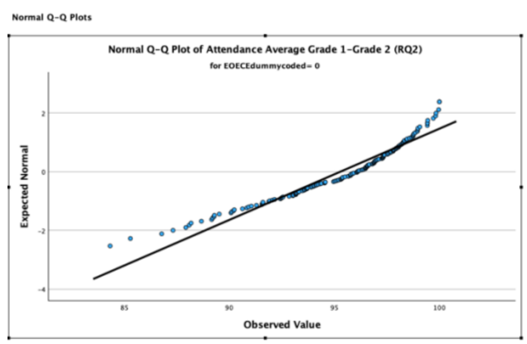
The following presents data for visual inspection of the ANCOVA assumptions of normality and homoscedasticity.

Research Question 2



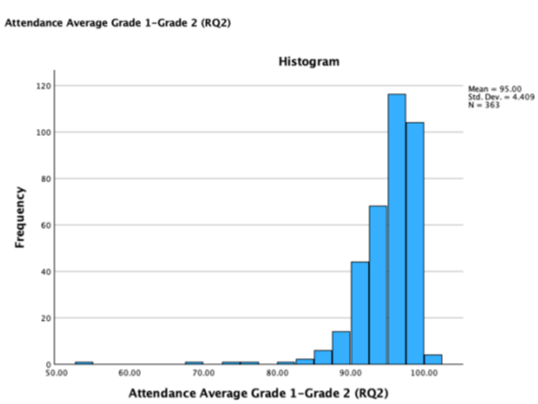
Normality Normal P-P plot

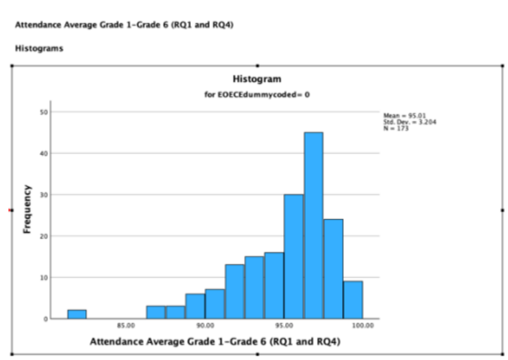




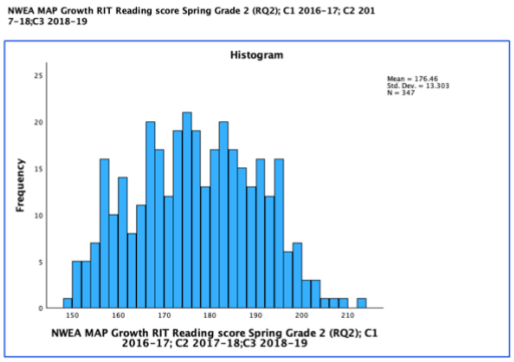
Before outlier removal

After outlier removal

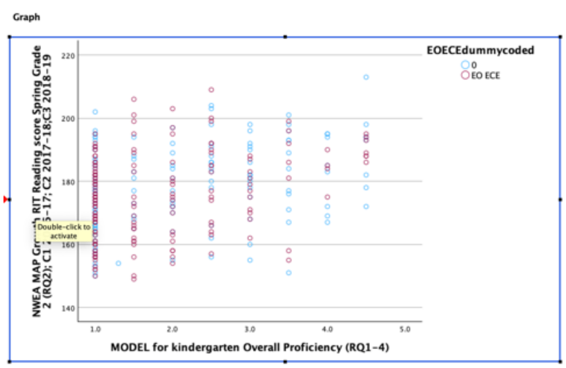


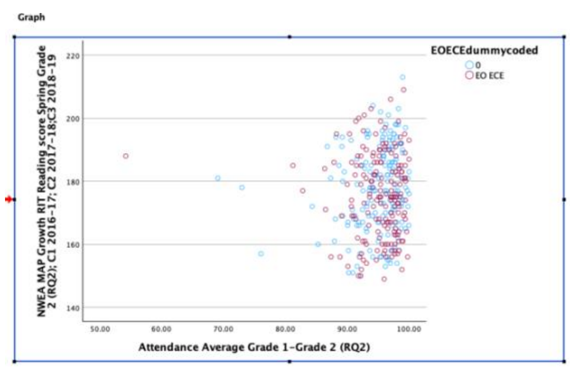


Before Outlier Removal After Outlier Removal



Scatterplot
NWEA MAP Growth Reading Scores Grade 2

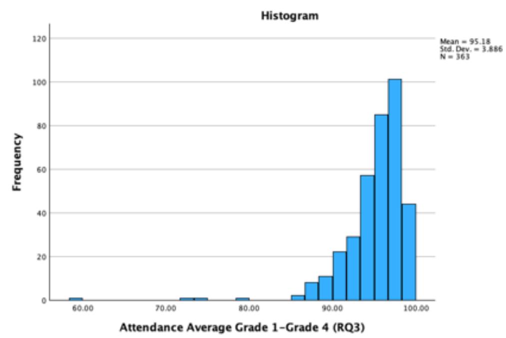




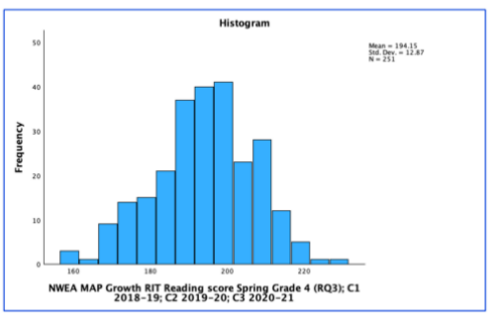
Research Question 3

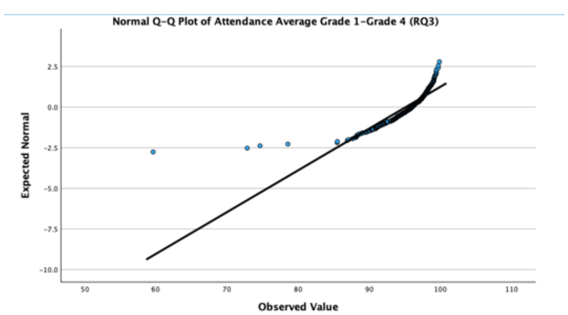
Normality

Attendance Average Grade 1-Grade 4 (RQ3)

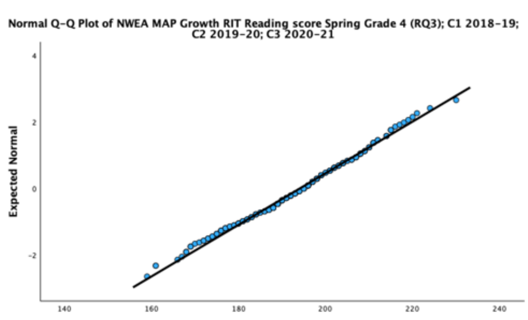


NWEA MAP Growth RIT Reading score Spring Grade 4 (RQ3); C1 2018-19; C2 2019-20; C3 2020-21

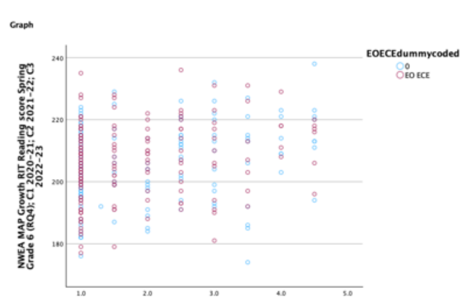




Normal P-P plot



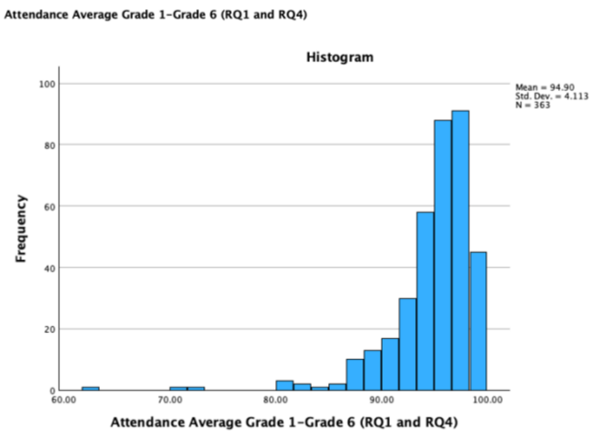
Attendance Average Grade 1-Grade 4 (RQ3)

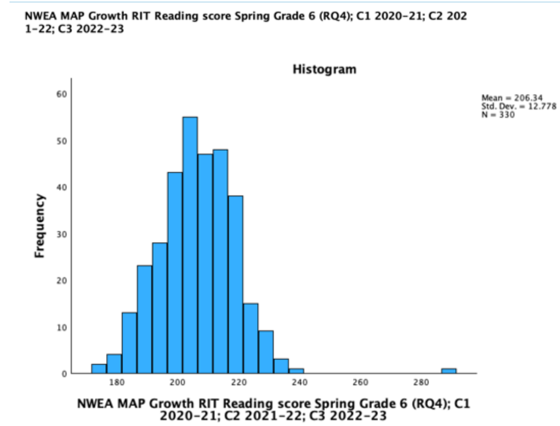


Research Question 4

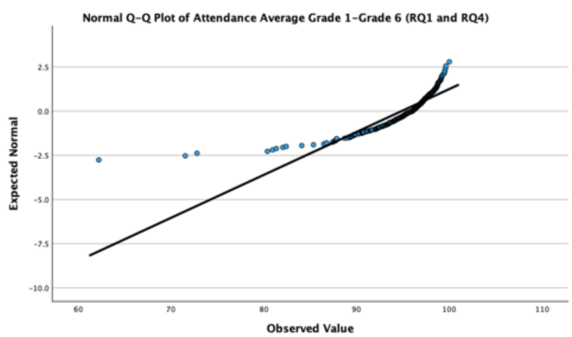
Normality

Observed Value

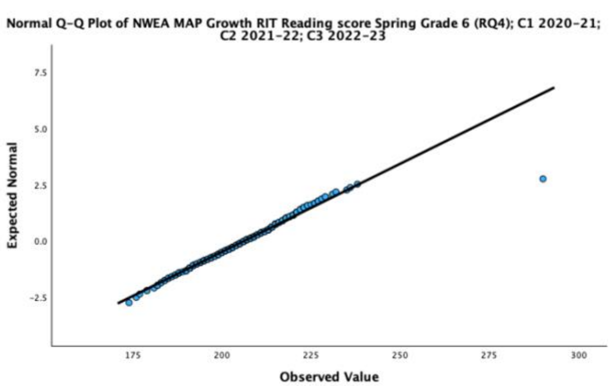




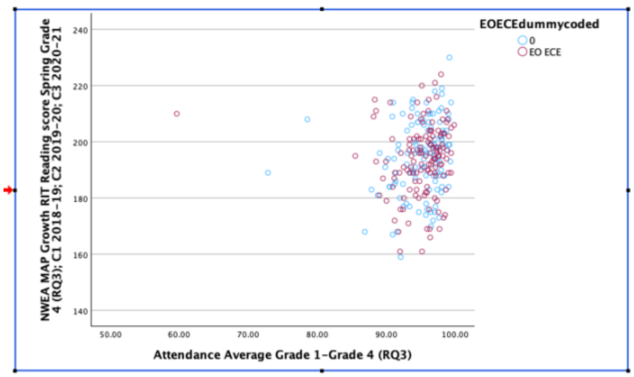
NORMAL P-P PLOT

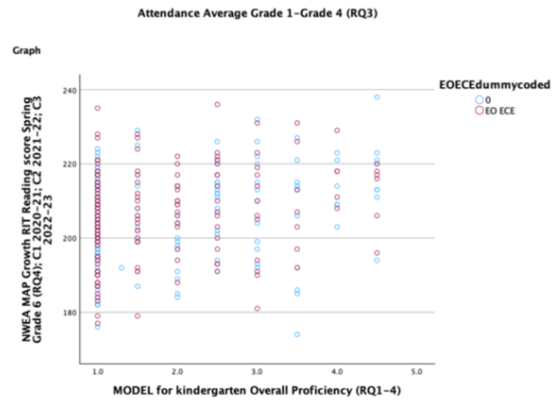


Normal P-P plot



NWEA MAP Growth Reading Scores Grade 4





Heteroscedasticity

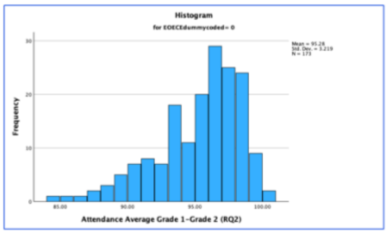
Appendix E

Outlier Analyses

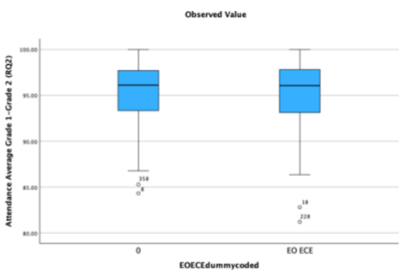
Average Attendance Grade 1 to Grade 2

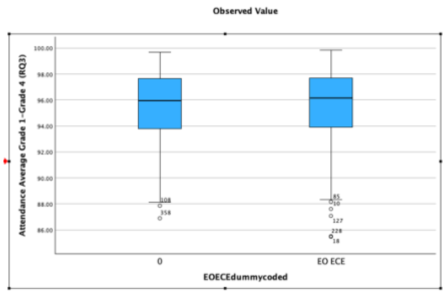
Attendance Average Grade 1-Grade 2 (RQ2)

Histograms



Histogram

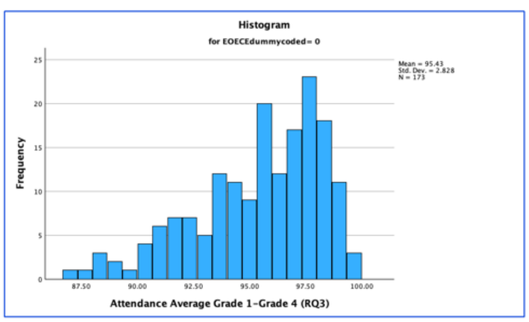


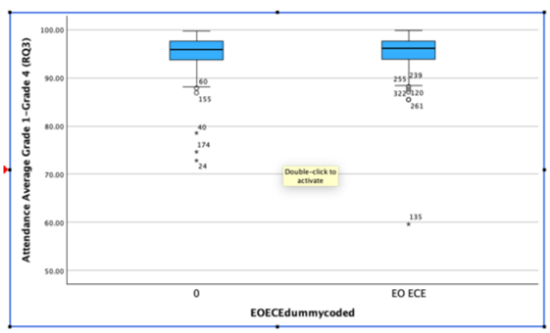


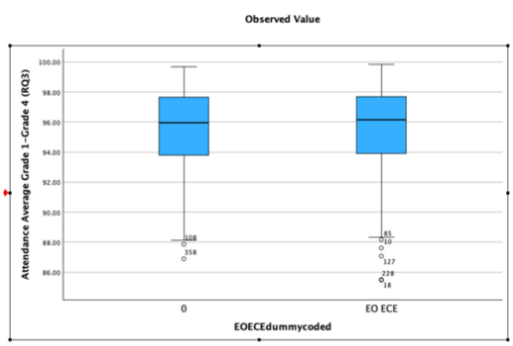
Average Attendance Grade 1 to Grade 4

Attendance Average Grade 1-Grade 4 (RQ3)

Histograms







Average Attendance Grade 1 to Grade 6

Observed Value