Renaissance

Whitepaper

Biliteracy Trajectories: Supporting Literacy Development in Two Languages

Introducing the Renaissance Star assessment Biliteracy Trajectories Project

Contents

Introduction

By Dr. Kathy Escamilla

It is often said that the greatest compliment that can be paid to an educator is to see her students surpass her teachings and knowledge. In the case of this whitepaper, there is no doubt that *las estudiantes han sobrepasado a la maestra* (the students have exceeded the teacher).

Over the past two decades, the US has seen the rapid expansion of bilingual/dual language programs, with concomitant enthusiasm for embracing the idea that the development of bilingualism, biliteracy, and biculturalism is advantageous for all students in the country. Unfortunately, however, our assessment policies and practices to inform us about developing biliteracy have not kept pace with the expansion of instructional programs.

All too frequently, the efficacy of dual language programs is judged by monolingual English assessment practices and standards. Even practices that assess students in two languages—such as Spanish and English—frequently evaluate each language separately, a practice commonly referred to as parallel assessment.

Teachers, researchers, and others in the field have argued that if the potential of bilingual/dual language programs is to be realized, we must develop and utilize holistic biliteracy assessment practices that employ assessments in two languages in ways that enable us to understand:

1. Development *in* each language, such as Spanish and English; and
2. The *interaction* between the two languages as we are assessing achievement and progress.

In short, we have long argued for research and practices that are based on holistic theories of biliteracy and how the theory might be applied to assist practitioners in building trajectories toward biliteracy and instructional programs.

Building on and honoring the nascent research base in this area, this whitepaper addresses many of the most commonly posed and vexing questions about how to build and interpret trajectories toward biliteracy, including how these trajectories are influenced by children's home languages (Spanish or English), and—perhaps most importantly—how these trajectories are influenced by children's opportunities to participate in dual language programs over time.

In a few short chapters, this paper presents a treasure trove of information that adds new and critical empirical evidence about trajectories toward biliteracy that can enrich the current context in which dual language/bilingual programs are being implemented by providing tools to assess children's progress toward biliteracy in a way that can be readily taken up by practitioners and policy makers.

The research design is noteworthy and adds to the confidence that can be placed in its findings. The design combined robust quantitative research methods, a biliterate theoretical lens, and an asset-based orientation to use national data from large-scale assessments to develop trajectories for over 13,000 students with similar linguistic profiles who attend various types of bilingual/dual language programs.

Results reported
provide validation to many important working hypotheses in the field, as well as new and highly relevant findings, including:

1.	**Bilingual experiences are not monolithic or homogeneous.** There is not one bilingual trajectory, but multiple bilingual trajectories. In addition, each language contributes differently to learning and performing in the other language due to its unique construct. Quite simply, Spanish and English are different languages and need to be considered as such in program development, program implementation, and assessment practices.
2.	**Spanish and English data are not directly comparable** due to the inherent differences between the languages. This means that a score in one language does not equate to the same score in the other language.
3.	**It is important to interpret and discuss biliterate data within a biliterate framework.** Interpretation goes beyond presentation of data and speaks directly toward the asset-based biliteracy trajectory framework. Biliterate interpretive lenses are critical going forward.
4.	Students in dual language programs are acquiring literacy skills in their home language (either English or Spanish) **at a modestly higher rate than the national population**, most of whom are enrolled in monolingual programs.
5.	The size, scope, and design of the study enabled the researchers to create biliteracy benchmarks for four distinct profiles of bilingual learners. **This represents a tremendous step forward in the field of K–12 assessment** and for addressing the frequently asked question about how trajectories toward biliteracy may differ for home language English and home language Spanish students.

Of the many interesting findings in this study, there is one that stands out as it reinforces, expands, and magnifies the importance of biliteracy trajectories that are established when children are studied across time and when a bilingual lens is applied to interpretation of student biliteracy acquisition. This finding bolsters and buttresses what we have long known about the cumulative effects of participation in dual language/bilingual programs that accrue across time and may be underestimated if such instructional programs are short term. The same is true for the trajectories toward biliteracy.

Simply stated, biliteracy development takes time—and understanding and embracing this fact gives us permission to make a strong case for the benefits of implementation of long-term dual language/bilingual programs.

Finally, while it is affirming to know that all students in the study take similar paths to biliteracy, the journey for each differs slightly, likely due to the differences in the home languages themselves.

Quite simply, this paper is a must read. Once read, it is likely to be read again and again as the information to be learned is new and indispensable to the forward progress of our field. *¡Adelante y felicidades colegas!* This retired teacher is looking forward to learning from you for years to come.

1 Origin of biliteracy trajectories: Method and approach

By Dr. Susan Hopewell and Dr. Jody Slavick

The need for theory-based, data-driven understandings of typical paths to bilingualism cannot be overstated. Two decades ago, in 2004, a team of researchers, scholars, teachers, and doctoral students coalesced around a project they titled Literacy Squared©, with the mission of hypothesizing these trajectories based on established, research-based knowledge. Additional goals were:

1. To test these theories through rigorous research designs.
2. To develop innovative instructional approaches to bilingual education with the understanding that the quality and appropriateness of instructional approaches would, undoubtedly, influence these trajectories.

In the ensuing 20 years, the team grew and changed, but the fundamental mission has remained the same: **to develop an instructional model with practices that strengthen bilingualism and biliteracy in Spanish and English–while also developing the assessment tools and research base to support biliteracy education in the US** (Escamilla et al., 2014).

From its inception, the Literacy Squared team recognized that existing approaches to bilingual education were founded upon the principle that most students would become bilingual in a sequential manner, such that one language would be firmly established before layering on a second or additional language. This premise stemmed from the fact that many families who enrolled their children in bilingual education programs were immigrants.

Today's bilingual population differs significantly, however.

Most students are born in the United States and have been processing and acquiring two or more languages since birth. These students are discussed in the field as *simultaneous bilinguals*. The Literacy Squared team understood that the trajectories, educational paths, and world experiences of simultaneous bilingual learners would likely differ in significant ways from those of previous generations. After all, the essence of what it means to experience the world through two or more languages and cultures encompasses cognitive, educational, linguistic, and psychological aspects. Each of these aspects is influenced by individuals' unique relationship to language acquisition.

Accepting that bilingual individuals experience the world differently than monolingual individuals requires us to re-examine the pedagogies and assessment practices we have employed to understand and measure students' bilingualism, while simultaneously honoring that bilingual experiences are not monolithic or homogeneous.

Developing the first biliteracy trajectory

In 2004, the Literacy Squared team created a hypothesized trajectory outlining an expected relationship between Spanish and English literacy achievement. It was predicated upon the idea that bilingual education rooted in paired literacy practices that maintained Spanish longer and accelerated English language acquisition would result in enhanced biliteracy development. The team surmised that these considerations would result in students achieving higher levels of proficiency in both languages.

Importantly, the team also understood that parallel language and literacy achievement would not always happen at the same rate across both languages. In other words, depending on the learning context and the targeted instruction, students might assess slightly higher in one language than the other, with the expectation that the gap between them would lessen over time. Students acquiring literacy in two languages have more complex processes to integrate, so their trajectories are not expected to mirror those of monolingual students who must attend to only one language.

The development of this trajectory required the use of parallel assessment instruments in Spanish and English, but no specific set of assessments. In other words, while the team created the trajectory using data derived from the *Evaluación del desarrollo de la lectura* (Celebration Press, 2007a) and the *Developmental Reading Assessment* (Celebration Press, 2007b), the theoretical foundation and data collection and analyses methods are applicable to any two Spanish/English parallel assessments. Trajectories can only be established when students have been assessed in each of their languages and the results are interpreted holistically.

Over time, the team collected data from thousands of elementary-aged students in both Spanish and English, resulting in a refined trajectory validated in one-way dual language settings.

Historically, the Literacy Squared trajectory has been used by school districts across the country to understand students' biliteracy development and to inform instructional decisions. In the intervening years, many schools and districts have evaluated their unique data to create trajectories that reflect their specific contexts. Regardless of context, the application of the trajectories is similar.

Application of the biliterate reading trajectory

Even though many bilingual/dual language programs assess their students in both languages, the interpretation of student performance has historically been through a monolingual lens. For example, suppose a student is performing below expectations in English, yet is “on grade level” in Spanish. In this case, it is not uncommon for the student to be given English reading interventions–without considering that the child knows how to read but may still be developing the *language* in English to be able to access and express understanding of an English text.

Viewing students from such a monolingual lens can result in unnecessary labels, inappropriate interventions, and needless deficit-oriented perceptions. In contrast, bilingual/dual language schools that analyze students using the biliterate reading trajectory are able to use realistic, logical, and empirically based measures to design instruction at the classroom level, track school-wide and district-wide trends, and make informed programmatic decisions.

Application at the classroom level

The trajectory helps teachers to determine whether students are performing within the expected ranges in Spanish and English compared to other bilingual students. It also provides guidance on where to target literacy instruction in both languages. Let us consider two scenarios to illustrate how a biliterate reading trajectory helps a teacher to make informed instructional decisions:

SCENERIO 1

Miguel

Miguel is a grade 4 student who attended school in Mexico and moved to the United States in the spring of grade 3. According to the biliterate reading trajectory, he scores *within* the expected performance range in Spanish and *below* the expected range in English.

Considering Miguel's holistic performance in both languages, the teacher understands that Miguel controls the reading competencies expected in grade 3 and does not need reading intervention. Instead, the teacher continues to develop his literacy skills in Spanish while supporting the transfer of these skills to English by exposing him to English texts within the biliteracy zone and supporting his comprehension and expression of those texts with second language acquisition strategies.

In other words, the teacher leverages Miguel's strengths in Spanish literacy to support his developing skills in English.

SCENERIO 2

Liliana

Liliana is a grade 2 student who was born in the United States and speaks mostly Spanish at home and English with some of her cousins and peers. According to the biliterate reading trajectory, she scores *below* the expected performance range in Spanish but is *within* the zone in English–or, said another way, the difference between where she is performing in Spanish and English is similar to other bilingual students scoring at that level in Spanish.

Liliana's teacher celebrates that Liliana is transferring her reading knowledge from Spanish to English and that there is not a large discrepancy between the two. Since Liliana is performing below the expected performance range, the teacher provides more intensive reading instruction in Spanish while simultaneously continuing to expose Liliana to English texts within the biliteracy zone so she can transfer her reading skills between languages.

By using the biliterate reading trajectory, bilingual/dual language teachers can set high-level, realistic goals for their students' biliteracy development, rather than relying on monolingual benchmarks. This approach builds on students' strengths and points to their potential, empowering educators to guide their students effectively.

Application at the school level

The biliterate reading trajectory is crucial at the school level in supporting a key goal of bilingual/dual language programs: students' biliteracy development. Specifically:

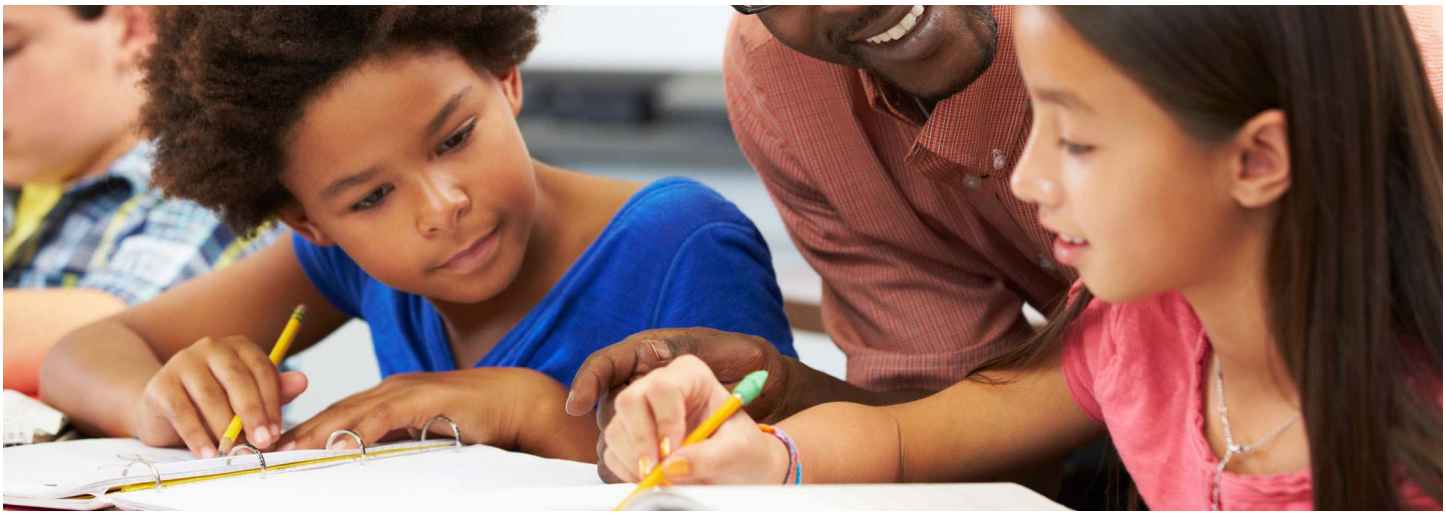
- **School teams** can use the trajectory to ensure that students are meeting the goals of the dual language program to become biliterate over time. The trajectory provides a means for reframing discussions rooted in monolingual perspectives and ideologies.
- **Teachers** use the trajectory to communicate expectations to their students and support their students in articulating their reading progress along the trajectory. They communicate with parents and guardians about student performance along the trajectory and may even add it to their progress reports.
- **Professional learning communities** analyze trends during data-team meetings using the trajectory.
- **Student services teams**, such as in multi-tiered systems of support (MTSS), utilize the trajectory as a source of information and to design targeted supports for students in the bilingual/dual language program.
- **Administrators and instructional coaches** use the trajectory to help teachers set goals and as a source of information for professional development.

The trajectory is a powerful tool to help school communities shift to asset-based conversations about their bilingual students, teachers, and programs.

Application at the district level

District leaders rely on the trajectory to collect and analyze longitudinal data to ensure they are meeting dual language programming goals. By monitoring the longitudinal trends in the data, they are better able to make careful and informed adjustments to their programming, language allocation plans, instructional approaches, curricular resources, policies, and more.

It is common for board members, families, and community members to feel uneasy when students in bilingual/dual language programs are performing differently than those in English-medium programs. However, the trajectory provides evidence that students are on the trajectory toward becoming biliterate and that, over time–and with quality bilingual programming–students in these programs will reach high performance in both languages.



The evolution of the biliterate reading trajectory

The Literacy Squared biliterate reading trajectory has been instrumental in paving the way for a holistic analysis of reading assessment across languages. It has facilitated a significant shift in perspective from a monolingual lens to a bilingual lens when considering the progress and needs of students.

We acknowledge that language and literacy development are significantly influenced by sociocultural contexts within schools and their surrounding communities (see, for example, Babino, 2017). We also recognize that schools use a variety of reading assessments and have different types of bilingual/dual language programs. Therefore, schools need trajectories that reflect their unique populations, programs, and assessments.

To address these needs, the Literacy Squared team and Adelante Educational Consultants created a "Build Your Own Biliterate Reading Trajectory" workshop. This workshop guides district teams in collecting, organizing, and analyzing their Spanish and English reading data to create their biliterate reading trajectory. This work empowers district teams and helps them shift from a monolingual lens to a bilingual lens when considering the progress and needs of their students.

However, this is a resource-intensive process, and districts must collect data longitudinally to create a statistically sound trajectory. For this reason, our Literacy Squared team is energized by the potential offered by Renaissance–**to use national data from large-scale assessments to develop trajectories for students with similar linguistic profiles who attend various types of bilingual/dual language programs, offering a promising future for bilingual/dual language education**.

In the following chapter, Doris Chávez-Linville provides a closer look at this Renaissance initiative.

2 Elevating bilingual education: Renaissance's strategic approach

By Doris Chávez-Linville

At Renaissance, our mission to accelerate learning for all is the foundation of our work with students. In accordance with this mission, we have been dedicated to understanding and addressing the needs of Spanish-speaking Emerging Bilinguals for nearly three decades. Since launching our first Accelerated Reader quiz in Spanish in 1997, we have made significant strides in this area, including the development of our innovative Spanish learning progression, *La progresión de la lectura de Renaissance*. We have also developed five companion learning progressions aligned to specific Spanish Language Arts standards:

1. Common Core en Español
2. California Common Core en Español
3. Texas Essential Knowledge and Skills en Español
4. New Mexico Common Core en Español
5. Illinois Common Core en Español

Our ongoing efforts aim to enhance our resources to better support Emerging Bilingual students and their educators.

Driven by educator requests and aligned with our mission, Renaissance created Star Spanish–which will soon be renamed Star Evaluaciones–to better reflect our approach of creating assessments authentic to Spanish reading development. Star Spanish was designed to enhance support for Spanish-speaking students, especially Emerging Bilinguals, dual language learners, and those in immersion programs.

Our goal was to offer a more comprehensive assessment that evaluates students' skills in Spanish as a way to complement Star English, enabling educators to gain deeper insights into students' abilities and progress by:

- Broadening the options for students to show what they know; and
- Assessing students in the language of the instruction they are receiving–specifically Spanish and English in many bilingual programs across the nation.

Why we are moving in this direction

One of our core values at Renaissance is to grow and evolve, and we embody this value by learning from and listening to our customers. Throughout the design and development of Star Reading Spanish, Star Early Literacy Spanish, and our latest addition, Star CBM Lectura, we have learned many lessons.

One of the most frequent questions we receive from educators and leaders is how they can view students' data side by side, comparing Spanish and English assessment results. When we delved deeper into these questions and requests from educators, we found that–although well intentioned–most questions reflected a monolingual perspective on each assessment. This prompted us to ask further questions and engage with researchers to understand how we could effectively provide guidance on viewing the data in two languages.

We realized it is not only about how to display the assessment data but also about **how to discuss and interpret it within the appropriate framework**.

This intellectual curiosity led us to the work of the Literacy Squared team and their ground-breaking research on bilingualism and biliteracy. Our internal subject area experts have learned about this research and its approach to assessing Emerging Bilinguals, interpreting the data, and discussing it through a holistic bilingual view. This journey has taken us to the Star assessment Biliteracy Trajectories Project.

The Renaissance Star assessment Biliteracy Trajectories Project

Our Star assessment Biliteracy Trajectories Project has been a dream come true. It started from a Spanish Assessment Executive Briefing in Illinois, which brought together a group of Renaissance customers. They provided our new Vice President of Assessment with a “wish list” of what would make Star Spanish an even more useful assessment for their needs. That list included enhancements to individual test items, norms for Star Spanish assessments, parity in reporting, and visualization of results side by side.

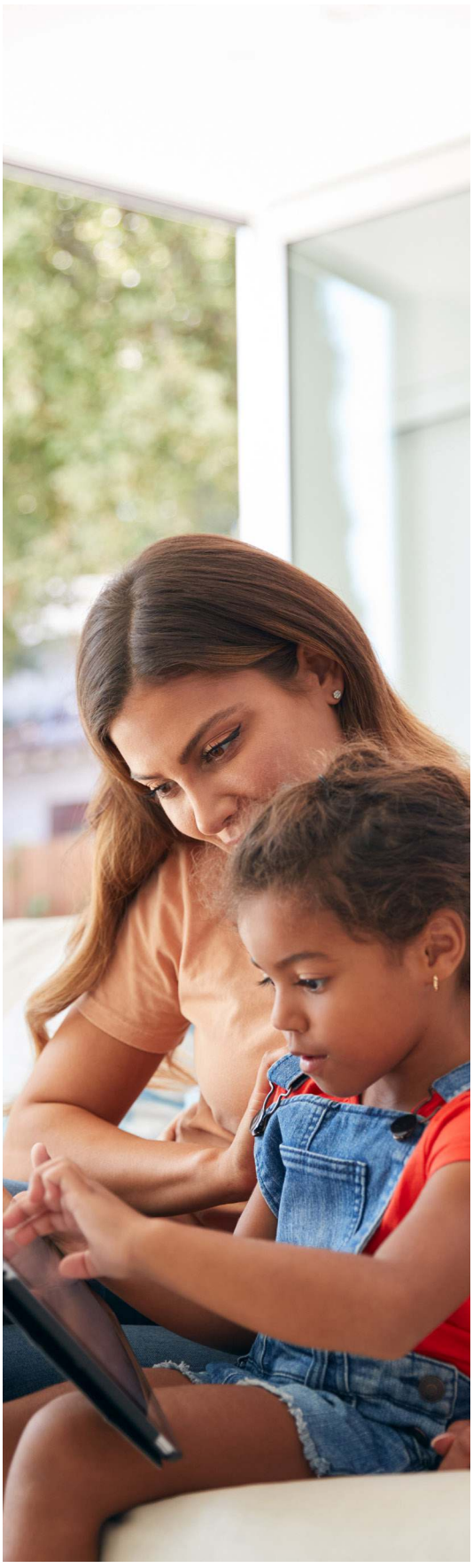
In the last four years, we have accomplished most of these goals. The next step is to develop and align the concept of a Spanish and English side-by-side data comparison with research and efficacy so that educators and leaders can make better decisions and interpretations of the data to support students’ success.

Focusing on biliteracy trajectories: What’s next

The Star assessment Biliteracy Trajectories project started in late 2022, with the presentation of the concept of biliteracy trajectories to the assessment leadership team at Renaissance. Moving forward to 2024, we began formally working with the team at Literacy Squared and created a comprehensive plan. The plan included gathering further information about students to analyze and create the biliteracy trajectories based on the initial work of the Literacy Squared team.

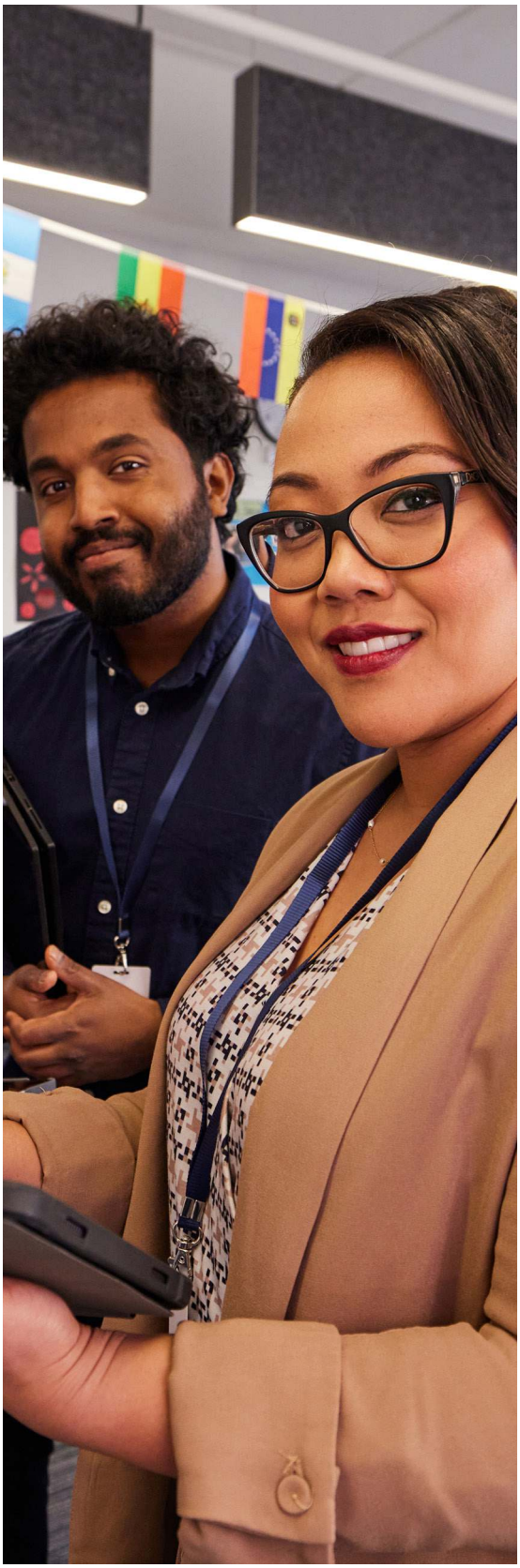
This work is aligned to our Star Reading Spanish and English assessments, which are parallel assessments, as required by the research framework (see page 6). We have an initial research analysis that we are sharing in this whitepaper, with further work to come in the future.

Next, Dr. John Bielinski provides a synopsis of the Star Assessments data analysis protocol and initial results.



3 Collecting and analyzing Star Assessments data for the trajectories

By Dr. John Bielinski



To collect data for this analysis, we contacted districts with dual language immersion programs that were using Star English and Star Spanish as a universal screener to assess students in those programs, and we asked them to provide more specific information about both their students and their programs. Specifically, we asked for each student's home language and the number of years enrolled in the dual immersion program, whether the program was one-way or two-way immersion, and the percentage of instruction in each language.

Fifteen districts agreed to participate, 13 of these districts sent data on their students and dual language programs, and 12 of these districts had been using the Star Reading assessment in prior years. Among these 12 districts, data was provided on 18,588 students.

Using anonymized IDs, the data provided by the districts was matched to the Star test score files. This resulted in 13,100 matches. Among those, 10,619 individual students had both Star Reading English and Spanish scores, as well as dual language program information. The scores encompassed three years of testing, from the 2020–2021 school year through the 2022–2023 school year. Although the data set included students from grades 1–8, only grades 2–6 had sufficient samples to reliably estimate biliteracy trajectories.

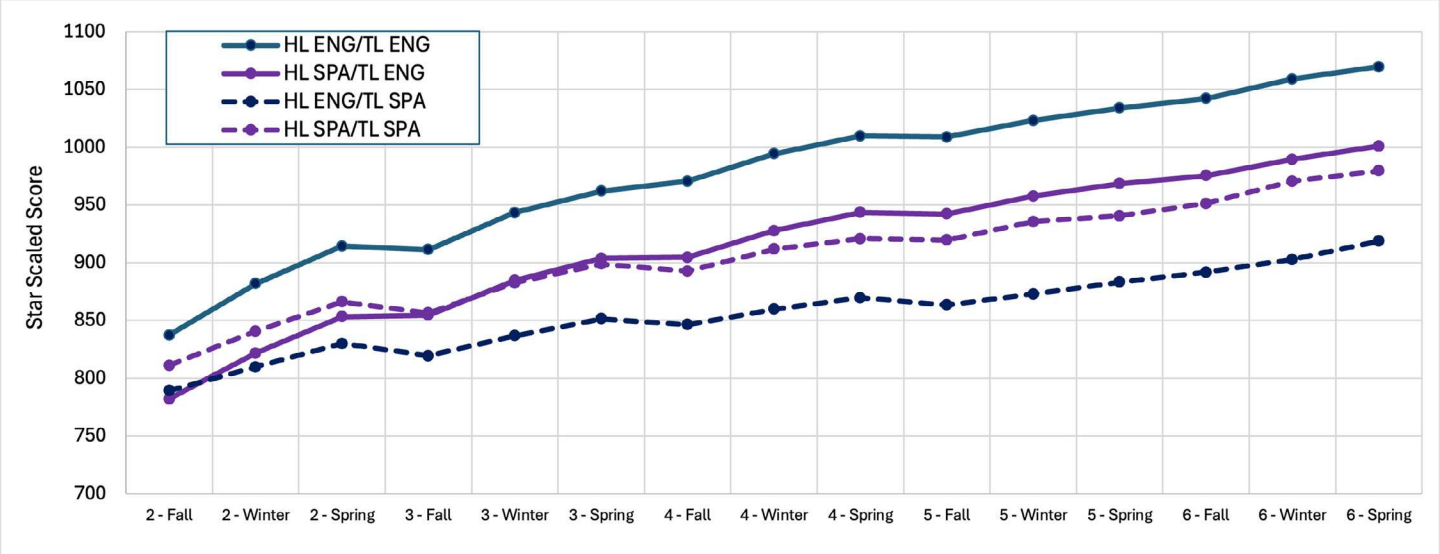
One key piece of information provided by the districts was the students' primary or home language. This information was very important, because it was expected that the growth trajectories by test language would differ, depending on a student's home language. In fact, as shown below, cross-sectional trajectories across grades by test language *did* differ by home language.

Schools tested their students three times per school year: once in the fall, once in the winter, and once in the spring. **It is important to note that the scaled scores for Star English and Star Spanish are not directly comparable, due to the inherent differences between the languages. This means that a score in one language does not equate to the same score in the other language**.

Star scaled score by grade and season

First, we show the mean Star scaled score by test language (TL) and home language (HL) across grades 2–6 and seasons (Figure 1). To simplify interpretation, solid lines indicate Star English scores (denoted by TL ENG), and dotted lines indicate Star Spanish scores (denoted by TL SPA). The dark blue line indicates a home language of English (HL ENG), and the purple line indicates a home language of Spanish (HL SPA).

FIGURE 1 **Star scaled score means by grade and season**



The trajectories all follow similar patterns, with steady increases across grades, with the exception of a dip or flattening of progression between grades. The latter pattern is likely due to the phenomenon called summer slide, where students lose some of the gains from the prior year.

The two solid lines representing Star English show similar rates of growth. Students whose home language is Spanish start grade 2 with an average scaled score of 782, compared to 837 for students whose home language is English. These students grow to an average scaled score of 1000 by the end of grade 6, compared to 1069 for students whose home language is English.

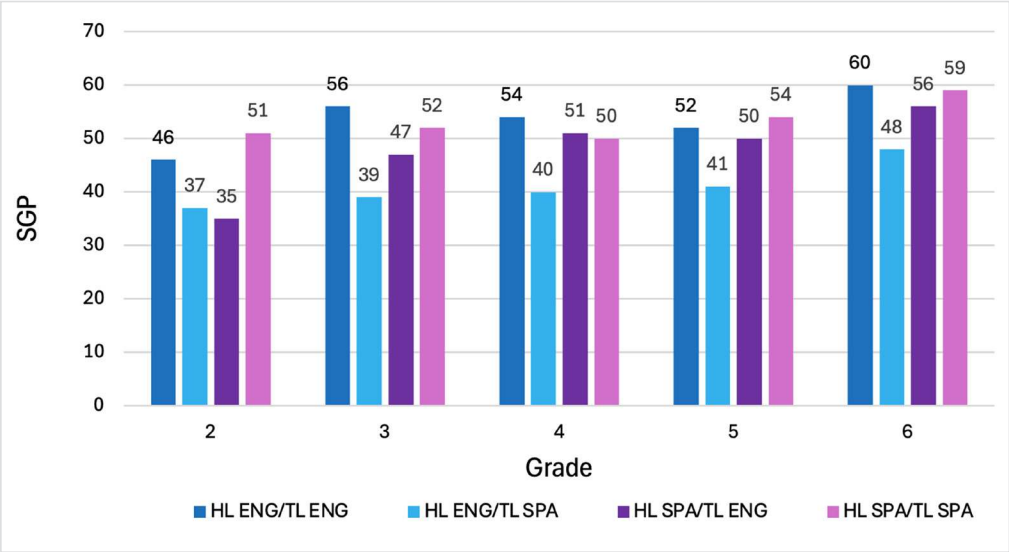
The growth pattern for the Star Spanish test is similar but reversed. For Star Spanish, students whose home language is Spanish begin grade 2 about 20 points higher, with an average scaled score of 811, compared to an average score of 789 for students whose home language is English. By the spring of grade 6, students whose home language is Spanish had an average Star Reading Spanish score of 979, compared to an average score of 918 for students whose home language is English.

One explanation for the consistently lower Star Spanish scores compared to Star English scores in both groups is students' amount of exposure to English outside of school. It is likely that even for students who speak Spanish at home, exposure to English is higher than to Spanish. The strong parallelism of the trajectories across home language likely reflects the common levels of instruction in each language. Most of the programs participating in this study provide 50/50 instruction in Spanish and English to all students. Further explanations for these patterns will be presented in the following chapter.

Star student growth percentile by grade and language

Next, we examined Star Reading growth using student growth percentile (SGP) scores (Figure 2). SGPs are percentiles ranging from 1 to 99 that indicate how the growth of the student compares to other students who had the same fall Star scaled score. The values represent the median fall-to-spring SGP by grade averaged across three school years, from 2020–2021 through 2022–2023.

FIGURE 2 **Star median SGP by grade and language**



One observation from the results is that SGPs generally increase across grades. For example, for students whose home language is English, SGP values on Star English increase from 46 in grade 2 to 56 in grade 3 to 60 in grade 6. Grades 4 and 5 are comparable to grade 3.

Another observation is that annual growth rates are generally above the national average of 50 among students whose home language is English on the Star Reading English test and those whose home language is Spanish on the Star Reading Spanish test. These results indicate that students in dual immersion programs are acquiring literacy skills in their home language at a modestly higher rate than the national population, most of whom are enrolled in monolingual programs.

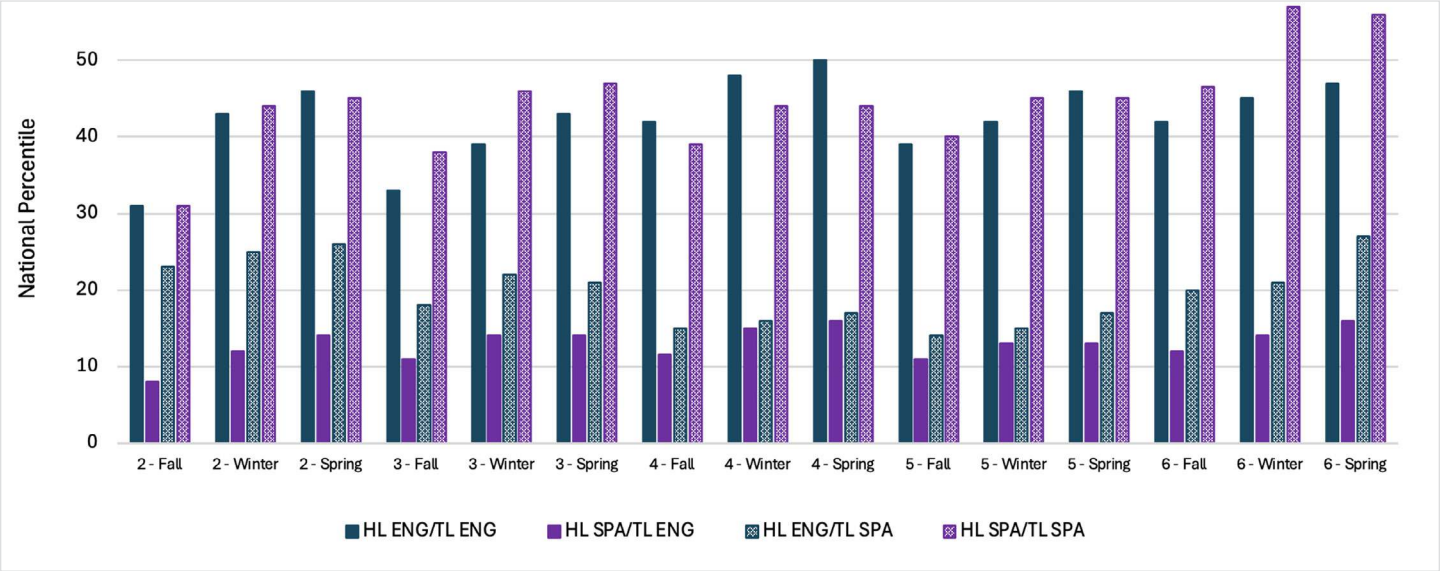
Growth rates in the non-home language were below the national average in the primary grades and improve with each grade through grade 6. By grade 6, both groups grew just above the national average.

It should be noted that the Star Spanish growth norms are based on all students who take the Star Reading Spanish test. Although much of the data comes from dual immersion programs, a sizeable percentage comes from schools that serve a very high rate of English learners who likely come from homes that speak Spanish. Ongoing Spanish literacy development among these students is likely to be further enhanced by speaking Spanish at home.

Star national percentile by grade and season

Figure 3 shows the median national percentile by grade and season, test language, and home language. It is evident from the graph that overall performance is lower than the national average of 50 for all groups and grades–except for grade 6–among students whose home language is Spanish. This pattern is expected because these students are acquiring literacy skills in two languages simultaneously, whereas the national norms are predominantly based on monolingual students.

FIGURE 3 **Star median national percentiles by grade and season**



In this graph, we see that the spring Star Reading English median national percentile for students whose home language is English hovers in the mid-40s range. A similar pattern can be seen on the Star Reading Spanish test for students whose home language is Spanish.

It is also worth noting that the national norms reflected here are pre-COVID norms, whereas the scores are from COVID and post-COVID school years. Recent work to update Star's national norms indicates that the norm declined compared to pre-COVID years. Thus, these results would move closer to the national median of 50.

Establishing biliteracy benchmarks

The other main goal of the study was to create norm-based benchmarks for biliteracy students participating in dual language programs. Like Star national benchmarks, those used here are based on the 25th and 40th percentile by grade and season (fall, winter, and spring). As noted earlier, only grades 2–6 are included in these analyses. These benchmarks are based on the Star scaled scores.

Benchmarks are provided for the following combinations of home language and test language:

1. Home language English (HL ENG), Star Reading English (TL ENG)
2. Home language English (HL ENG), Star Reading Spanish (TL SPA)
3. Home language Spanish (HL SPA), Star Reading English (TL ENG)
4. Home language Spanish (HL SPA), Star Reading Spanish (TL SPA)

The benchmarks are defined as the scaled score at the 25th and 40th percentiles within each group. They are provided in two tables in the appendix.

The national benchmarks are available for reference here:

National Star Reading English benchmarks

National Star Reading Spanish benchmarks

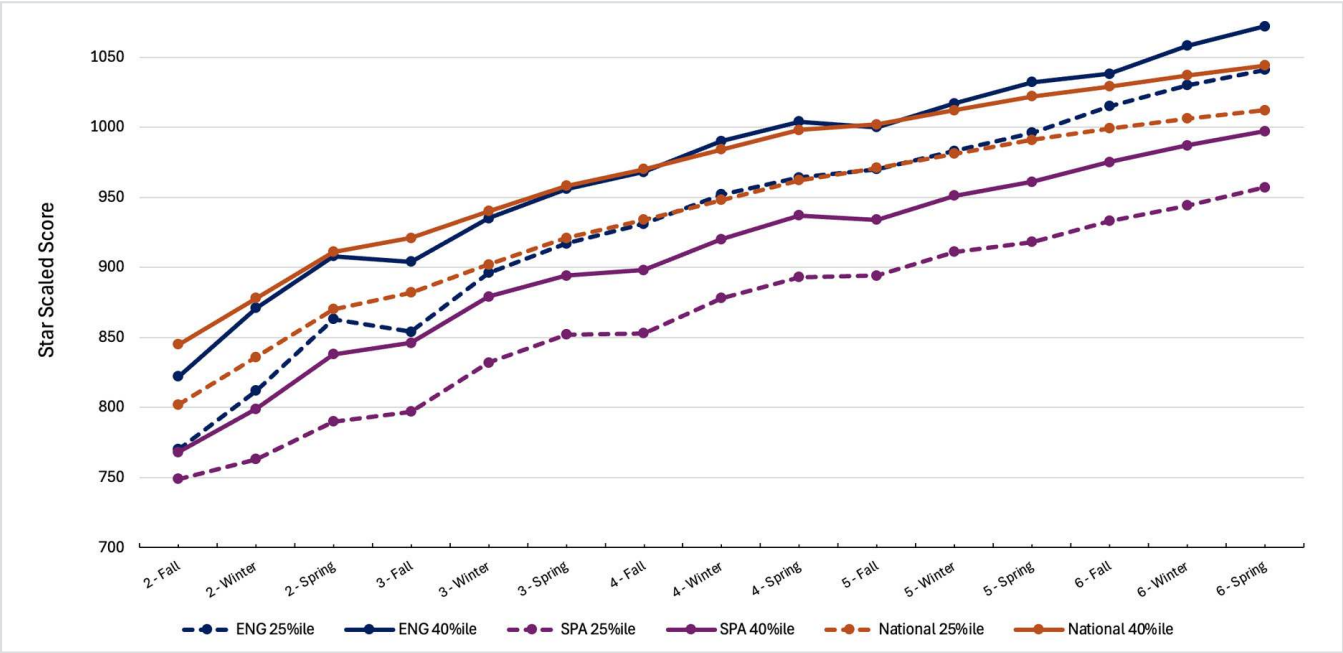
Star Reading English results

Figure 4 shows the 25th and 40th percentile benchmarks on the Star Reading English assessment for students in dual language programs by home language, compared to the benchmarks from the national norm population (most of which is comprised of students in monolingual programs whose home language is English, as noted earlier). Thus, there are three groups of students represented on the graph, each by a different color:

- **Blue lines** represent students whose home language is English and who are enrolled in dual immersion programs
- **Purple lines** represent students whose home language is Spanish and who are enrolled in dual immersion programs
- **Brown lines** represent the national norm sample

Within each group, the 40th percentile scores are represented by a darker color shade and a solid line. The 25th percentile scores are represented by a lighter color shade and a dashed line.

FIGURE 4 **Star Reading English benchmarks (by home language)**



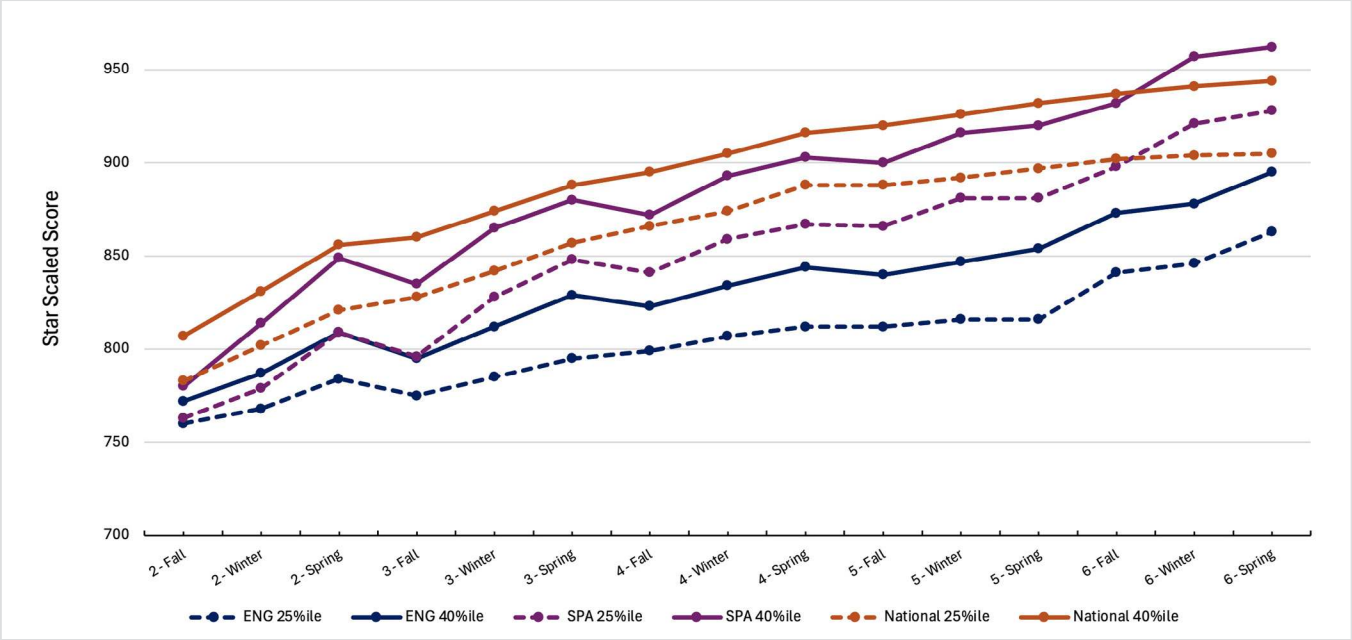
The pattern of progression across grades is similar to that in Figure 1. Among students whose home language is English, benchmarks are just below and closely follow the national benchmarks. By grade 6, the benchmarks are equivalent. This fits with previous research on bilingual students showing slightly lower reading scores in the early grades, but higher reading scores by middle school (Collier & Thomas, 2017).

Among students whose home language is Spanish, the benchmarks fell below the national benchmarks. Importantly, this gap decreased across grades. In the fall of grade 2, the gap was 77 scaled score points at the 40th percentile. By the spring of grade 6, it decreased to just under 50 scaled score points. As mentioned earlier, the "dips" across grades are likely due to a combination of summer slide and sampling variation. The national norms have a slightly different pattern because they were developed using a statistical "smoothing" process.

Star Reading Spanish results

Figure 5 shows the 25th and 40th percentile benchmarks on the Star Reading Spanish assessment for students in dual immersion programs by home language, compared to the benchmarks from the national norm sample of students who took Star Spanish, which includes a broad linguistic and cultural diversity of test takers. The graph uses the same color and line styling conventions as Figure 4 to represent the results.

FIGURE 5 **Star Reading Spanish benchmarks (by home language)**



The results here follow the same patterns as those above. Similar to the Star Reading English results, among students whose home language is Spanish, the benchmarks closely follow the national Star Reading Spanish benchmarks. The differences are more pronounced in the early grades, and by grade 6, the benchmarks exceed those of the national norm sample.

However, the benchmarks among students whose home language is English were substantially lower than the benchmarks for the students whose home language is Spanish. The gap steadily increased across grades. In the spring of grade 2, the gap is about 30 points at the 40th percentile, and by the spring of grade 6, it increases to about 50 points. This also fits with the research on bilingual students cited in the previous section.

In the following chapter, Dr. Carol Johnson provides further discussion and interpretation of the study's findings.

4 Interpreting key findings from the Star Assessments data analysis

By Dr. Carol Johnson

Beyond the development of norm-referenced biliteracy trajectories utilizing Star Reading Assessments in Spanish and English for grades 2–6, this study revealed several additional key findings. Reflecting how students develop reading skills in two languages over time–even as they are acquiring one of those languages–the study suggests several conclusions.

Growth patterns by test language

The growth patterns observed in the two groups tested in both Spanish and English were consistent within and across both home and test languages. (It is important to highlight that when we say "test language" in this whitepaper, we refer to students' reading skills in either Spanish or English. Unlike WIDA, ELPAC, TELPAS, etc., Star Assessments do not assess language proficiency.)

First consider the outcomes for students of both home languages when tested in Spanish, as shown in Figure 6. Although both groups showed continued growth year over year in reading, students whose home language is Spanish clearly outperformed those whose home language is English, which is expected when students are provided the opportunity to build on what they bring to the classroom.

Spanish speakers grew 113 scaled score points from grades 2–6, while English speakers grew 89 scaled score points during the same period.

FIGURE 6 **Spring scaled score (SS), test language Spanish, by home language**

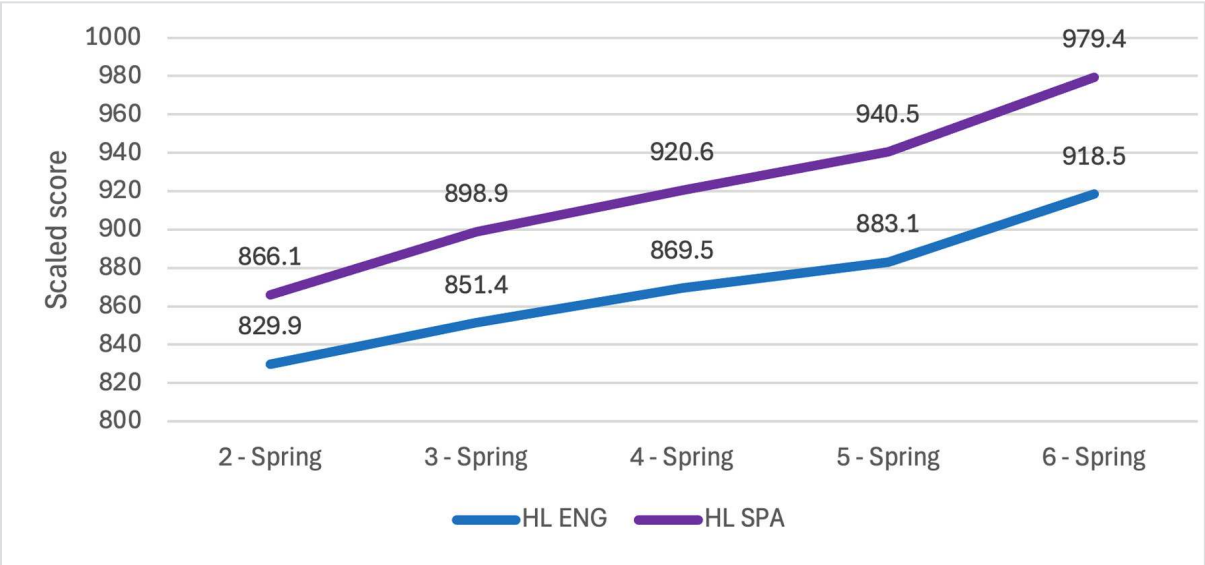
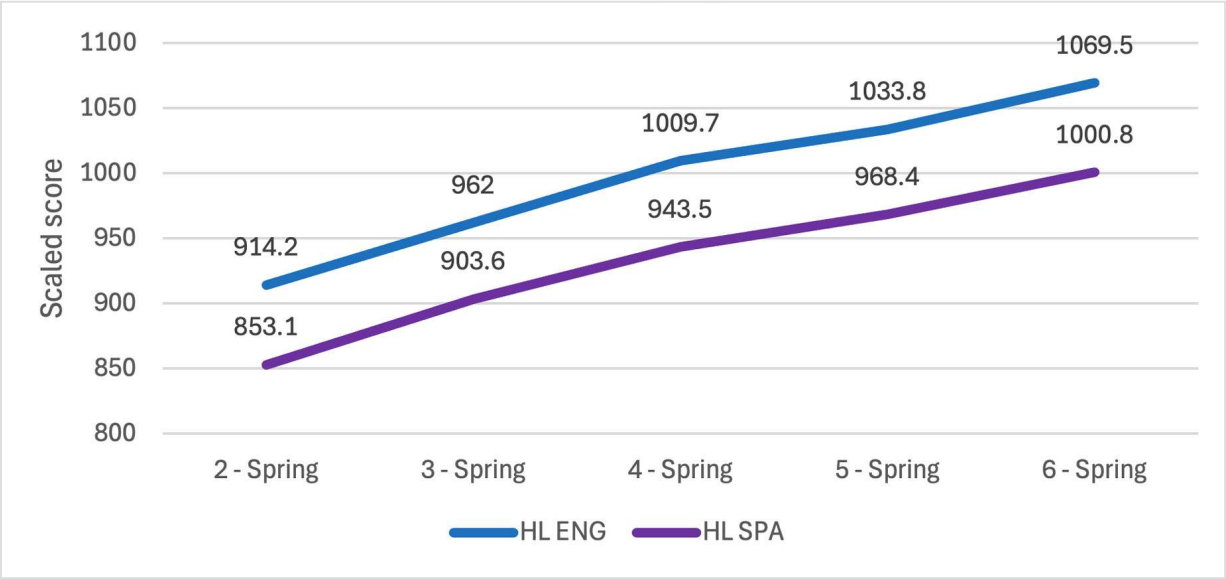


Figure 7 illustrates student performance based on their home language when tested in English. Once again, both groups–regardless of home language–showed growth with similar patterns. However, students whose home language is English consistently outperformed those whose home language is Spanish, starting and ending at higher points on the scale. From grades 2–6, English speakers increased their scaled scores by 155 points, while Spanish speakers' growth was close at 148 scaled score points.

FIGURE 7 **Spring scaled score (SS), test language English, by home language**



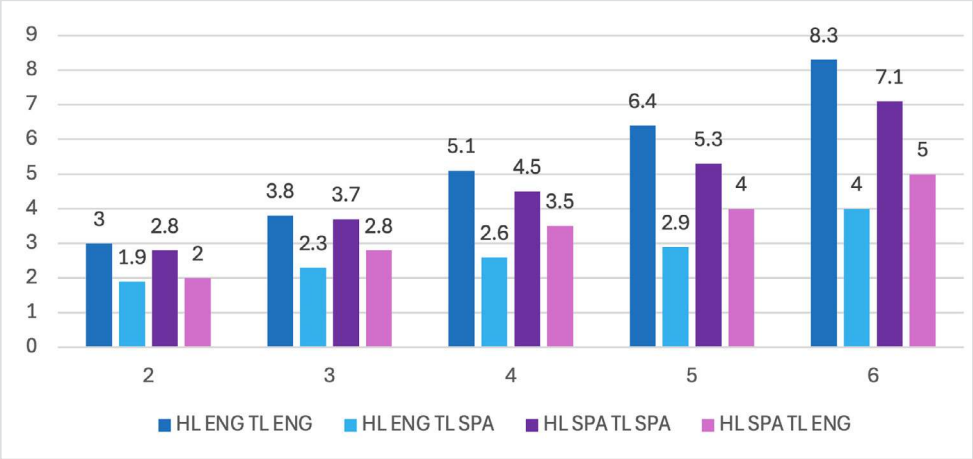
This trend supports the notion that learning a language while simultaneously being educated in that language is a universal experience. Students from both language backgrounds were able to leverage their existing language, knowledge, skills, and cultural understanding, transferring these abilities to the new language they were learning. Finally, each language contributed differently to learning and performing in the other language due to its unique construct.

Despite the differences in scales between Star Spanish and Star English, the upward performance trajectories for each home language group are evident. The similarities in the performance differences between the two groups clearly demonstrate the benefits for students of both home languages. These parallels underscore the effectiveness of well-designed dual language immersion programs (Marian et al., 2013; Umansky et al., 2015; Collier & Thomas, 2017). Moreover, because students whose home language is Spanish have been historically taught and tested only in English, this data is more important than ever.

End of year median grade equivalent by home language

While the previous section illustrates the average mean scaled score changes by home language and grade, we found it practical to convert these averages to grade equivalency. Figure 8 shows the grade equivalency for each home language group by the end of each grade level.

FIGURE 8 **Spring median grade equivalent by home language and test language**



As noted in the previous section, testing both home language groups in both test languages was critical for perspective. Students in both home language groups performed at or near grade level when tested in their respective home languages. As expected, they performed at a lower level in the language they were still learning.

For example, home language English speakers' median grade equivalent progression for Spanish was 1.9, 2.3, 2.6, 2.9, and 4.0 across grades 2–6. Home language Spanish speakers' median grade equivalent progression for English was 2.0, 2.8, 3.5, 4.0, and 5.0. If viewed through a monolingual lens alone, the English speakers would likely be seen as struggling students, moving up only 2.1 grade levels in 5 years (that is, across grades 2–6). The Spanish speakers fare better, moving up 3.0 grade levels in 5 years. Essentially, both would raise alarm bells. However, viewed through a holistic bilingual lens, everything changes.

Each of these progressions reflects not simply the amount of time necessary to acquire the critical mass of language required for grade level comprehension, but the amount of language exposure during that time. English speakers likely have minimal additional exposure to Spanish outside of the classroom, while Spanish speakers likely have more exposure to English in their communities. Additionally, as students move from one grade to the next in dual language programs, more core subjects may be taught in English than Spanish, limiting additional reading growth in Spanish. Context matters. These and other unknown factors may affect ultimate grade level achievement for each language of instruction.

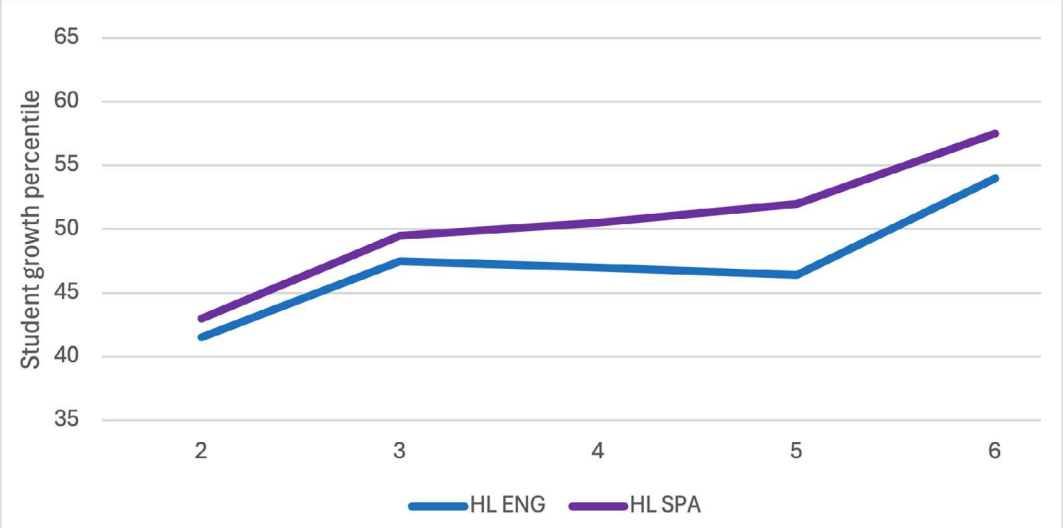
Of most importance was the grade equivalent of outcome of both home language groups in both Spanish and English. Speakers of both groups performed well-within grade level for their home language and made significant progress toward grade level performance across languages. Despite less potential exposure to Spanish outside of the classroom, English speakers made significant progress in Spanish reading, while Spanish speakers clearly approached grade level reading in English.

SGP patterns by home language

While the previous sections reveal student growth patterns, student growth percentile (SGP) offers a comparative context by evaluating a student's growth relative to their academic peers. SGPs ranging from 35 to 65 denote typical growth, indicating average progress (Betebenner, 2011). This metric aids in discerning whether a student is advancing, maintaining, or declining in performance.

While SGPs are typically determined by assessment in either English or Spanish, this study provides a holistic perspective on growth given its dual language lens. As shown in Figure 9, students in both home language groups clearly demonstrate typical average growth for both languages, falling neither below 35 nor above 65.

FIGURE 9 **SGP median for both home & test languages**

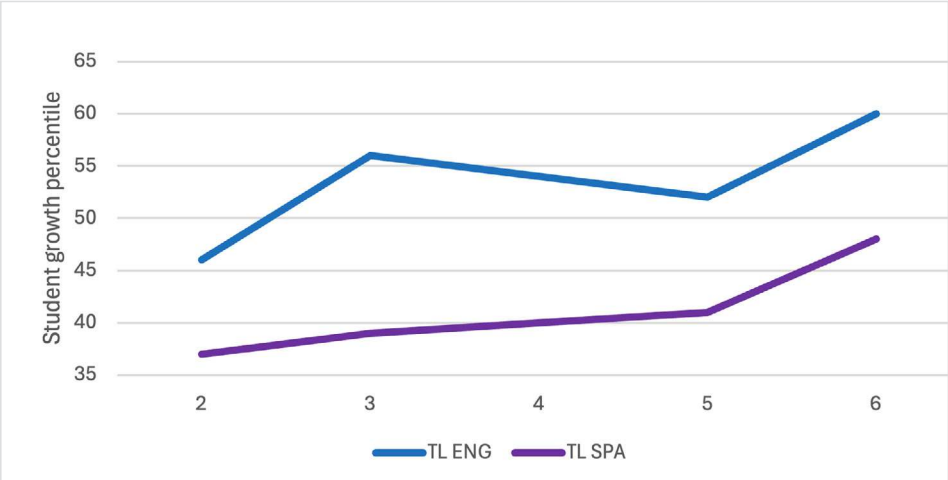


As noted earlier, the findings indicate that students from both home language groups exhibited growth in both languages within the typical range (35 to 65). Although students whose home language is English initially scored lower, likely due to limited exposure to Spanish outside the classroom, they also exhibited a slightly different pattern of growth than students whose home language is Spanish. Spanish speakers demonstrated a fairly consistent growth pattern, while English speakers grew initially from grades 2–3, their level of growth appeared negligible from grades 3–5, even declining slightly before jumping again in grades 5–6.

Peering inside each home language group by test language also reveals interesting differences. English speakers tested in English achieved a jump from grade 2 to 3, demonstrate decline in grades 3–5, before a jump from grade 5 to 6 (see Figure 10). Although not definitive, because research suggests that Spanish-English cognates make up more than 70 percent of the Academic Word list, it is reasonable to hypothesize that this reflects the positive effect of Spanish-English cognates on English reading (Nash, 1997; Hiebert & Lubliner, 2008).

In contrast, the SGP for home language English tested in Spanish is a smooth continual gain over the five grade levels, spiking up from grades 4 to 5. We believe this reflects the complexity of the structure of the Spanish language itself–particularly factors such as number/gender agreement, verb complexity, the subjunctive, etc.–all of which take years for English speakers to acquire, thus showing up in the latter grades.

FIGURE 10 **Median SPG, home language English students for both test languages**



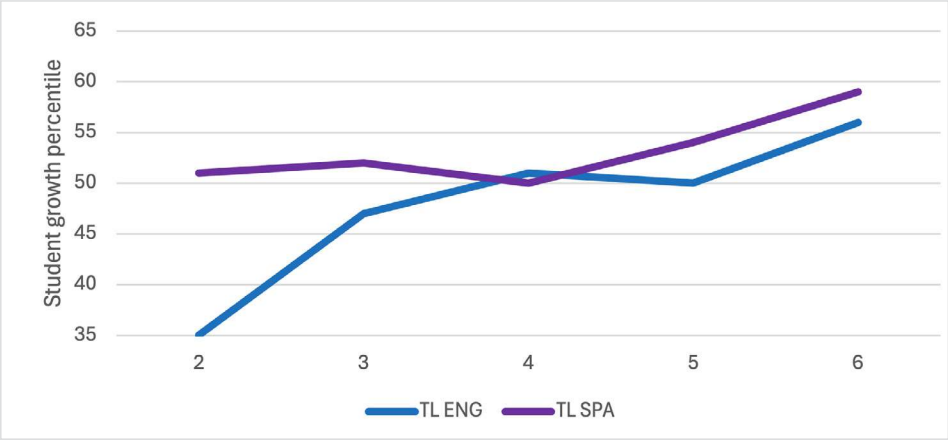
Home language Spanish speakers also reveal an interesting pattern (Figure 11). Home language Spanish speakers tested in Spanish perform consistently in grades 2 through 4, beginning to demonstrate a faster rate of growth in grades 5 and 6. When these same Spanish speakers are tested in English, however, they show a different pattern.

The complexity of English lies significantly in its orthography and phonology, rather than its grammatical structure. The opaque nature of English orthography, characterized by inconsistent grapheme-phoneme correspondences, presents a substantial challenge for learners and contributes to the time required to achieve reading proficiency (Lan et al., 2022; Biber et al., 2024). It's reasonable that the median SGP for grade 2 Spanish speakers tested in English reflects this challenge. However, the steep jump from grade 2 to grade 3 appears to imply that growth begins to accelerate once the English decoding skills are in place.

There is also a leveling from grades 4 and 5 for Spanish speakers tested in English, which we hypothesize is the effect of low frequency vocabulary required to "read to learn" beginning in grade 4, followed by a climb again from grade 5 to 6. This may be the effect of the Latin-based academic words already known to Spanish speakers that begin to appear in higher-grade English texts.

By examining SGPs from multiple perspectives, we can see that while students of both home languages take a similar path to biliteracy, the journey for each differs slightly–likely due to the differences in the home languages themselves.

FIGURE 11 **Median SGP, home language Spanish students in both test languages**



Creating norm-based benchmarks with Star Reading Assessments

Creating norm-based benchmarks for students with the goal of biliteracy in dual language programs was essential for context. This required comparing the study's student scores to those from the national norming samples for Star Reading English and Star Reading Spanish.

The team found that the benchmarks for English speakers in the study closely matched the national benchmarks for Star Reading English, indicating strong alignment with the national norming sample, as noted in the previous chapter. That is to say, the Star Reading English scores of home language English speakers in the study aligned strongly with Renaissance's national norm sample for Star Reading English.

In like manner, although the benchmarks for Spanish speakers were slightly lower in the earlier grades, they still closely followed the national Star Reading Spanish benchmarks, showing similar alignment. That is to say, the Star Reading Spanish scores of home language Spanish speakers in the study closely followed Renaissance's national norm sample for Star Reading Spanish. Ensuring this similarity between students in the study and Renaissance national norms was critical for this project.

Determining biliteracy trajectories using cut scores

Validating the similarity between the study group and the Renaissance national norms for both Star Reading English and Star Reading Spanish was a crucial step. This validation enabled the computation of benchmarks at the 25th and 40th percentiles.

Within Star Assessments, students scoring at or above the 40th percentile are generally considered to be meeting or exceeding benchmark scores, while those below the 25th percentile are seen as performing below benchmark. Given that the foundational research by Hopewell & Slavick (see chapter 1) expressed the understanding that "parallel language and literacy achievement would not always happen at the same rate across both languages," these percentiles together have the potential to serve as the upper and lower boundaries for determining that a student is achieving within a biliteracy trajectory.

Finally, and most important of all, in lieu of splitting into two isolated monolingual views, this gives educators the ability to reframe achievement in two languages within the context of one student–a massive leap forward.

Additional insights

Validation of existing research

According to Virginia Collier and Wayne Thomas (2017), two renowned researchers known for their 50+ years of extensive work in the field of bilingual and dual language education, the question consistently asked about Emerging Bilingual students is, "How long does it take for English learners ages 5–18 in grades K–12, just beginning to acquire English, to achieve grade-level performance in their second language (English) and maintain it throughout their schooling?" Among their key findings:

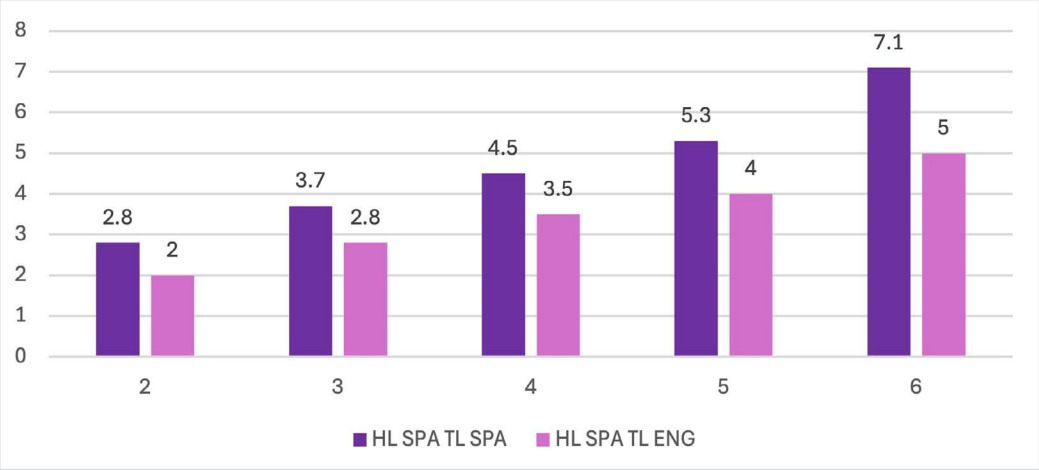
- On average, it takes **about six years** for students who begin in kindergarten and receive quality dual language education in both their first language (L1) and second language (L2), with at least half of the instruction in their L1.
- For students who do not receive schooling in their L1, it can take **7–10 years or more** to reach grade-level achievement, and many students in this situation are often referred to as "long-term English learners."

This clearly highlights the importance of sustained, quality dual language education for achieving and maintaining grade-level reading performance in a second language.

The data collected for the biliteracy trajectories study provided Renaissance with the opportunity to validate Collier & Thomas' decades of work on the efficacy of dual language education for Spanish-speaking students. Figure 12 shows the spring median average grade equivalent English reading outcomes of the Emerging Bilingual students in our study, confirming Collier & Thomas' work, which demonstrated that it takes about six years for students to approach grade level achievement in English.

Additionally, the decades of work by Collier & Thomas reveals which of the dual language programs produce this highest English outcome for students in bilingual and dual language education. Because of recent trends in terminology, where "bilingual" is the umbrella term for all dual language instruction, we are thus far unable to disaggregate by exact dual program type. However, even with this limitation, the results are remarkably close to Collier & Thomas' research.

FIGURE 12 **Spring grade equivalent, home language Spanish in both test languages**



Expansion of the research base

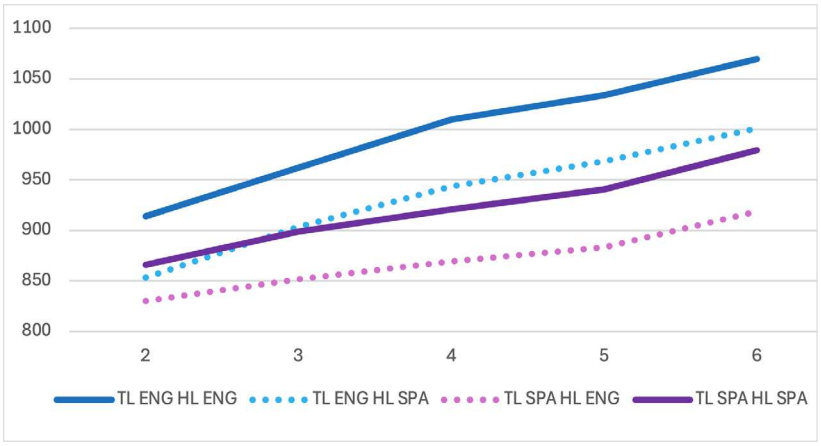
Building upon the research conducted by Escamilla et al. (2014), which focused on Spanish-speaking students within a one-way bilingual program, this study provides additional data illustrating the advantages for English-speaking students participating in dual language immersion programs. This extension of Escamilla et al.'s work highlights the benefits of dual language immersion not only for Spanish-speaking learners but also for English speakers, thereby broadening the scope and applicability of bilingual education research.

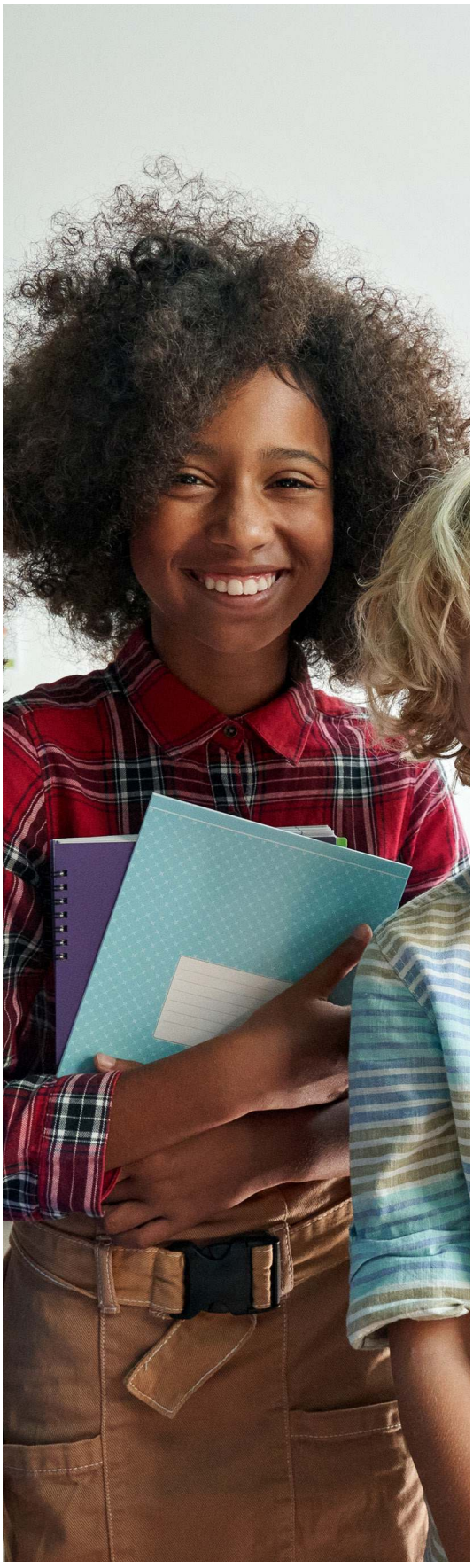
Figure 13 illustrates the scaled scores of students categorized by their home language and the language of the test they took. A crucial aspect to note in this chart is the disparity between the Spanish and English scales. As noted earlier, this variation is attributable to the distinct linguistic features of each language, including orthography, number and gender agreement, verb conjugation, and other language-specific constructs.

The most significant finding, however, is that speakers of both language groups demonstrate comparable performance in both their home language and their second language. This observation lends support to the notion that the process of acquiring a new language while simultaneously learning subject matter in that language is a universal experience.

This appears to be particularly true when the languages in question share similar alphabetic systems and contain a substantial number of cognates. Further, one can hypothesize that language exposure has a lot to do with the development and performance in a reading assessment (Agirdag & Vanlaar, 2018). In short, exposure matters.

FIGURE 13 **Spring scaled score by home and test language**

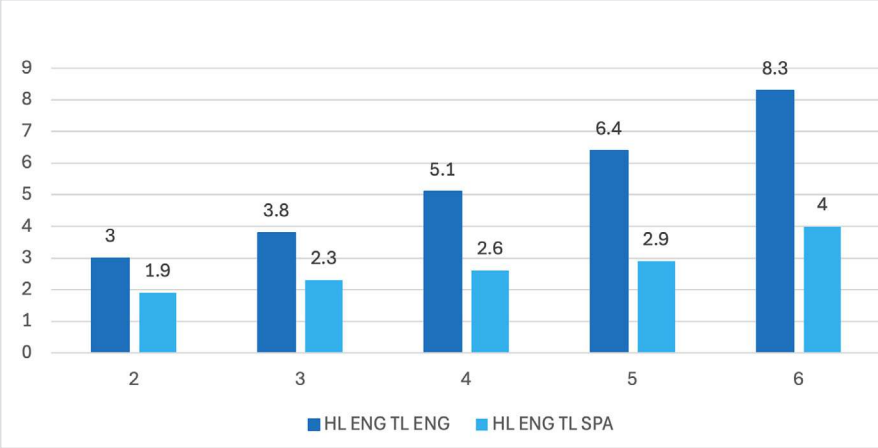




Demonstration of benefits for English speakers

Finally, less research has been conducted on the performance outcomes of English-speaking students in dual language programs. Figure 14 illustrates the grade-level performance in both English and Spanish at the end of the school year for English-speaking students. Even though the Spanish outcome for the students in this study is not yet on grade level (grade equivalent of fourth grade by the end of grade 6), they show steady growth, unquestionably demonstrating a benefit to students whose home language is English. Additionally, by the spring of grade 6, the English-speaking students in this study were well above grade level (eighth grade, third month) in English reading. Clearly, opportunity matters.

FIGURE 14 **Spring grade equivalent, home language English in both test languages**



Summary

The analysis of the Renaissance biliteracy trajectory and its development has yielded significant contributions to the field of bilingual education research. These contributions are as follows:

1. **Validation of existing research:** The study corroborates the decades of findings by Collier & Thomas (2017) regarding the positive impact of dual language instruction on the English language proficiency of Emerging Bilingual students. This validation strengthens the evidence supporting dual language programs as effective educational strategies for enhancing English outcomes among these learners.
2. **Expansion of the research base:** By incorporating both Spanish- and English-speaking students in two-way immersion programs, this analysis extends the research foundation established by Escamilla et al. (2014). It provides a broader understanding of the dynamics and benefits of bilingual education across different linguistic groups, thereby enriching the existing literature on two-way immersion education.
3. **Demonstration of benefits for English speakers:** The study demonstrates that dual language immersion programs also offer substantial benefits for English-speaking students, particularly in improving their English reading outcomes. This finding highlights the reciprocal advantages of bilingual education, suggesting that such programs can enhance literacy skills for English speakers as well.

Overall, this research contributes to a more comprehensive understanding of biliteracy development and supports the implementation of dual language programs to foster academic success in multilingual settings.

Conclusion

By Doris Chávez-Linville

The Renaissance Star assessment Biliteracy Trajectories Project represents a significant advancement in understanding and supporting biliteracy development. By analyzing data from thousands of students across multiple school districts, this research has yielded several key insights:

- Biliteracy trajectories follow consistent patterns across languages and student groups, highlighting the universal nature of dual language acquisition.
- Norm-based benchmarks for students with the goal of biliteracy closely align with national benchmarks, validating the effectiveness of well-designed dual language programs.
- The study confirms and expands upon previous research on the timelines and efficacy of dual language education for both Spanish-speaking and English-speaking students.
- Viewing student performance through a biliteracy lens, rather than two separate monolingual lenses, provides a more holistic and accurate picture of reading development in two languages.

This research empowers educators to make more informed decisions about instruction and assessment for bilingual learners. By providing a framework to interpret biliteracy data, it helps shift the conversation from deficit-based to asset-based perspectives on bilingual education, regardless of the student's dominant language at home.

As dual language programs continue to grow across the US, tools like the biliteracy trajectories, which have proven a key indicator of student biliteracy growth and which are now available for Star Assessments, continue to be crucial in ensuring these programs meet their goals of producing truly bilingual and biliterate students. The Renaissance project lays the important groundwork for future research and practical applications in this rapidly evolving field.

Ultimately, this work represents a significant step forward in our understanding of biliteracy development, with the potential to positively impact educational outcomes for millions of dual language learners across the country.

Study limitations

The study, while comprehensive in its inclusion of data from 13 school districts and more than 13,000 students, may not fully represent all bilingual and dual language programs across the US, however. Conducted over a three-year period from the 2020–2021 through 2022–2023 school years, the study's timeframe could be extended to provide deeper insights into biliteracy development over a longer period.

Additionally, the study's overlap with the COVID-19 pandemic likely impacted both classroom instruction and assessment results, especially for younger students. Although the study encompassed various types of dual language programs, it also might not capture all the nuances of different program models and implementations. Furthermore, it is possible that other assessment tools might yield different results or insights.

Future directions for research

To build on the findings of this study and address its limitations, several future research directions are proposed:

1. Longitudinal studies could follow the same cohort of students from early elementary through at least grade 8 to track long-term biliteracy development.
2. Program comparisons might analyze differences in biliteracy trajectories across various dual language program models, such as 50/50 versus 90/10 models.
3. Research into cross-linguistic influences could examine how skills in one language transfer to or influence development in the other language.
4. Investigating socioeconomic factors and other demographic variables could provide insights into their impact on biliteracy trajectories.
5. Studying the impact of specific instructional strategies on biliteracy development and exploring the cognitive advantages of biliteracy and how they manifest over time would be valuable.
6. Examining how educational technology can support biliteracy development in dual language programs could offer new avenues for enhancing learning outcomes.

By addressing these limitations and pursuing these research directions, future studies could provide an even more comprehensive understanding of biliteracy development and further refine the biliteracy trajectories model within Star Assessments.

Appendix: Biliteracy benchmarks for grades 2–6

We are proud to share the following look-up tables of Star scaled scores to aid in planning biliteracy trajectories for your school or classroom. When using the cut scores in these tables, educators should consider the type of bilingual program the student is enrolled in, the student's home language, stage of second language acquisition, and the results of the Star assessments in Spanish and English.

The look-up tables presented in this appendix can support districts by providing a guide to connect the bilingual student performance expectations based on:

- Assessment language (Star Reading Spanish or Star Reading English);
- Home language (Spanish or English);
- Grade level (2 to 6); and
- Season of the year (fall, winter, and spring).

We provide the 25th percentile (Table 1) and the 40th percentile (Table 2) as ranges in which students might be performing compared to other students in bilingual programs, always considering the type of program, language allocation, and quality of instruction.

Developing customized biliteracy benchmarks that consider the unique developmental patterns of Emerging Bilingual students is essential. **These benchmarks recognize that progress may not be linear or identical in both languages but should show coordinated development over time.**

To fully apply the biliteracy trajectories concept, Renaissance has enhanced the Star Reading Spanish assessment report (Instructional Planning Report) by identifying transferable skills between languages. We recommend looking at the Instructional Planning Report in both languages to understand which reading skills a student has mastered in which language, and to then teach from the highest level of performance, while prioritizing language development of the language showing the lower mastery of reading skills.

To effectively use Star Assessments for tracking biliteracy trajectories, we suggest the following process:

1. Conduct assessments in both languages at regular intervals throughout the school year.
2. Use the results to inform instruction in both languages, ensuring skills are reinforced across the curriculum.
3. Provide professional development for educators on interpreting biliteracy data and using it to guide instruction.

TABLE 1 **25th percentile biliteracy benchmarks for grades 2–6, by test language, home language, and season**

Star Language	Home Language	Grade	Season	25th Percentile
English	English	2	Fall	770
English	English	2	Winter	812
English	English	2	Spring	863
English	English	3	Fall	854
English	English	3	Winter	896
English	English	3	Spring	917
English	English	4	Fall	931
English	English	4	Winter	952
English	English	4	Spring	964
English	English	5	Fall	970
English	English	5	Winter	983
English	English	5	Spring	996
English	English	6	Fall	1015
English	English	6	Winter	1030
English	English	6	Spring	1041
English	Spanish	2	Fall	749
English	Spanish	2	Winter	763
English	Spanish	2	Spring	790
English	Spanish	3	Fall	797
English	Spanish	3	Winter	832
English	Spanish	3	Spring	852
English	Spanish	4	Fall	853
English	Spanish	4	Winter	878
English	Spanish	4	Spring	893
English	Spanish	5	Fall	894
English	Spanish	5	Winter	911
English	Spanish	5	Spring	918
English	Spanish	6	Fall	933
English	Spanish	6	Winter	944
English	Spanish	6	Spring	957

TABLE 1 (CONT.)

TABLE 1 (CONT.)

Star Language	Home Language	Grade	Season	25th Percentile
Spanish	English	2	Fall	760
Spanish	English	2	Winter	768
Spanish	English	2	Spring	784
Spanish	English	3	Fall	775
Spanish	English	3	Winter	785
Spanish	English	3	Spring	795
Spanish	English	4	Fall	799
Spanish	English	4	Winter	807
Spanish	English	4	Spring	812
Spanish	English	5	Fall	812
Spanish	English	5	Winter	816
Spanish	English	5	Spring	816
Spanish	English	6	Fall	841
Spanish	English	6	Winter	846
Spanish	English	6	Spring	863
Spanish	Spanish	2	Fall	763
Spanish	Spanish	2	Winter	779
Spanish	Spanish	2	Spring	809
Spanish	Spanish	3	Fall	796
Spanish	Spanish	3	Winter	828
Spanish	Spanish	3	Spring	848
Spanish	Spanish	4	Fall	841
Spanish	Spanish	4	Winter	859
Spanish	Spanish	4	Spring	867
Spanish	Spanish	5	Fall	866
Spanish	Spanish	5	Winter	881
Spanish	Spanish	5	Spring	881
Spanish	Spanish	6	Fall	898
Spanish	Spanish	6	Winter	921
Spanish	Spanish	6	Spring	928

TABLE 2 **40th percentile biliteracy benchmarks for grades 2–6, by test language, home language, and season**

Star Language	Home Language	Grade	Season	40th Percentile
English	English	2	Fall	822
English	English	2	Winter	871
English	English	2	Spring	908
English	English	3	Fall	904
English	English	3	Winter	935
English	English	3	Spring	956
English	English	4	Fall	968
English	English	4	Winter	990
English	English	4	Spring	1004
English	English	5	Fall	1000
English	English	5	Winter	1017
English	English	5	Spring	1032
English	English	6	Fall	1038
English	English	6	Winter	1058
English	English	6	Spring	1072
English	Spanish	2	Fall	768
English	Spanish	2	Winter	799
English	Spanish	2	Spring	838
English	Spanish	3	Fall	846
English	Spanish	3	Winter	879
English	Spanish	3	Spring	894
English	Spanish	4	Fall	898
English	Spanish	4	Winter	920
English	Spanish	4	Spring	937
English	Spanish	5	Fall	934
English	Spanish	5	Winter	951
English	Spanish	5	Spring	961
English	Spanish	6	Fall	975
English	Spanish	6	Winter	987
English	Spanish	6	Spring	997

TABLE 2 (CONT.)

TABLE 2 (CONT.)

Star Language	Home Language	Grade	Season	40th Percentile
Spanish	English	2	Fall	772
Spanish	English	2	Winter	787
Spanish	English	2	Spring	809
Spanish	English	3	Fall	795
Spanish	English	3	Winter	812
Spanish	English	3	Spring	829
Spanish	English	4	Fall	823
Spanish	English	4	Winter	834
Spanish	English	4	Spring	844
Spanish	English	5	Fall	840
Spanish	English	5	Winter	847
Spanish	English	5	Spring	854
Spanish	English	6	Fall	873
Spanish	English	6	Winter	878
Spanish	English	6	Spring	895
Spanish	Spanish	2	Fall	780
Spanish	Spanish	2	Winter	814
Spanish	Spanish	2	Spring	849
Spanish	Spanish	3	Fall	835
Spanish	Spanish	3	Winter	865
Spanish	Spanish	3	Spring	880
Spanish	Spanish	4	Fall	872
Spanish	Spanish	4	Winter	893
Spanish	Spanish	4	Spring	903
Spanish	Spanish	5	Fall	900
Spanish	Spanish	5	Winter	916
Spanish	Spanish	5	Spring	920
Spanish	Spanish	6	Fall	932
Spanish	Spanish	6	Winter	957
Spanish	Spanish	6	Spring	962

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