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FIRST 5 CALIFORNIA
Dual Language Learner
PILOT STUDY

INSTRUCTIONAL SERIES | BRIEF 2

A Deeper Look at Classroom Language Approaches and How They Relate to Language Skills and Other Outcomes for Dual Language Learners

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Introduction

More than half a million of California's children between the ages of 3 and 5 live in households where Spanish is spoken (UCLA Center for Health Policy Research, 2020). Many of these dual language learners (DLLs) attend early learning and care programs that help foster children's language, social, and cognitive development. The First 5 California (F5CA) DLL Pilot Study, a large-scale study funded by F5CA and conducted by the American Institutes for Research (AIR) and partners, was designed to examine how teachers support DLLs from diverse backgrounds in early learning settings, and how various types of supports, including different approaches to classroom instruction, relate to children's language skills and other outcomes. This brief is part of a series that addresses these questions. The series includes briefs on the following topics:

BRIEF 1 | How specific classroom language use practices relate to language and learning outcomes for preschool-aged DLLs from four different language backgrounds

BRIEF 2 | **THIS BRIEF—How preschool-aged DLLs' language and learning outcomes differ in classrooms with different English and Spanish language use profiles**

Key Findings

- DLLs from a Spanish language background who were in "primarily Spanish" classrooms significantly outperformed those in classrooms with less Spanish use on Spanish language outcomes, pre-academic outcomes, and executive functioning.
- Spanish-language DLLs in "balanced" classrooms performed better, on average, than those in more English-dominant classrooms on Spanish language outcomes, mathematics as assessed in Spanish, and social-emotional well-being.
- Spanish-language DLLs in "nearly all English" classrooms did not perform better than those in other classroom profile groups on *any* outcome, and, on English oral comprehension, they performed significantly lower, on average, than those in all of the other classroom profile groups.
- Being in a "primarily Spanish" or "balanced" classroom does not appear to have had negative effects on the English skills of DLLs from a Spanish language background.

BRIEF 3 | How classroom practices that teachers can use regardless of their language backgrounds relate to language and learning outcomes for preschool-aged DLLs

BRIEF 4 | How classroom practices relate to language and learning outcomes for infant and toddler DLLs

The first brief in the series found that greater use of the home language in instruction was associated with better child performance on several different outcomes, particularly for DLLs from a Spanish language background. *This* brief (#2 in the series) delves more deeply into the relationships between classroom language use practices and child outcomes for preschool-aged DLLs from Spanish language backgrounds, leveraging the large number of these children (more than 1,300 in our sample) and the large number of classrooms they were in (almost 250). It does so by describing classrooms with four different *profiles* of Spanish use and analyzing how DLL outcomes differed across these four classroom groups. We found that **Spanish-language DLLs in classrooms using primarily Spanish performed better on multiple outcomes than their peers in classrooms with a more balanced Spanish-English language use profile, who in turn performed better than Spanish-language DLLs in classrooms using mostly English.** These language use profiles capture the actual use of language practices, as reported by teachers, in classrooms for DLLs. While the profiles do not presuppose the implementation of specific language models or approaches (e.g., 50/50 dual immersion, English with home language support), findings may have implications for decisionmakers who are considering adopting a particular model or approach.

Classroom Language Use Profiles for DLLs From Spanish Language Backgrounds

As described in Brief 1, the study had five measures of classroom language use, derived from a web-based survey of teachers conducted from May 2020 through July 2020:[1]

1. the percentage of time teaching teams used English
2. the percentage of time teaching teams used the home language
3. the frequency of activities in English
4. the frequency of activities in the home language
5. the frequency of strategies in the home language to build English

Because these practices were related to one another, we were interested not only in analyzing them individually (as in Brief 1) but also in using them to identify groups, or *profiles,* of classrooms that were using similar kinds of language-related practices, which we could then compare in terms of child outcomes (this brief).[2]

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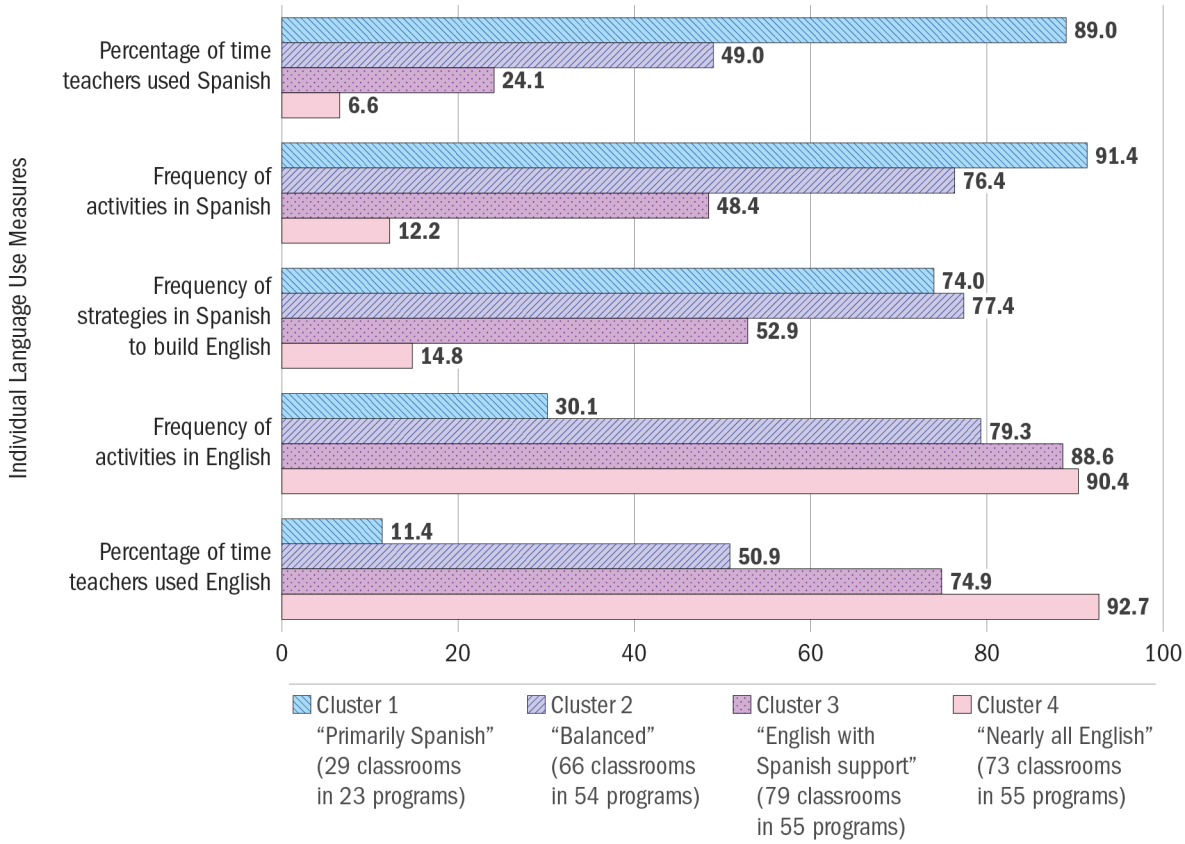
[1] Although this was after disruptions related to the COVID-19 pandemic had begun, most of the questions on the survey instructed teachers to answer based on their classrooms and instructional practice *prior* to the pandemic. The analyses and findings presented in this brief are based on the responses of teachers in 247 classrooms that served preschool-aged DLLs from a Spanish language background. These teachers and classrooms were in 137 early learning and care programs, 24 of which were family child care homes.

[2] Although the study included DLLs from Spanish, Mandarin, Cantonese, and Vietnamese language backgrounds, we were only able to do this profile identification for the large sample of classrooms with Spanish-language DLLs; the other three language groups had too few classrooms—only about 20 each, compared to well over 200 for Spanish—to allow for identification of clearly distinct classroom profile groups and subsequent analysis of relationships between classroom profiles and child outcomes.

We used a statistical technique called *latent profile analysis* to identify groups of classrooms that shared a common "profile" with respect to the five classroom language use practices.[3] The procedure produced four classroom clusters that were clearly distinct based on their average values on the five practices (Exhibit 1). The 29 classrooms in cluster 1 (blue bars) had high average values on the Spanish use measures and low average values on the English use measures; we therefore labeled this cluster *primarily Spanish.* The 73 classrooms in cluster 4 (pink bars) had the opposite pattern, but with even greater extremes, so we labeled this group *nearly all English.* Cluster 2 classrooms appeared relatively evenly split, on average, between English and Spanish, so we labeled this group *balanced.* Finally, cluster 3 classrooms used English for a substantial majority of time and activities, but also reported a nontrivial amount of Spanish use; we therefore called this group *English with Spanish support.*

Exhibit 1. Average (Mean) Values of the Five Classroom Language Use Measures for Each of the Four Classroom Profile Groups



Note. The scale for the three frequency measures is 0 to 100, where 0 represents *never using any of the activities* and 100 represents *using all of the activities every day.* Data are based on classrooms with assessed DLLs from a Spanish home language background (child-level n = 144, 464, 486, and 287 for the four classroom profile groups, respectively as ordered in the table). In 45 programs, different classrooms had different profiles, including five programs that had classrooms with *three* different profiles. Two classrooms were omitted from the latent profile analysis because their teaching teams used relatively large amounts of one or more *other* languages beyond English and Spanish. Together, these two classrooms had six assessed Spanish-language DLLs in the sample.

[3] We had also tried forming groups of classrooms manually based on their values on the five measures, but this approach involved setting cut points that were essentially arbitrary. Latent profile analysis solved this problem. We experimented with the number of classroom groups to output and settled on four as having good overall fit to the data and allowing for a manageable number of pairwise comparisons (six) for the analysis of child outcomes.

How the Classroom Profiles Relate to Children's Skills

As described in Brief 1 and the report describing the sample ("Description of the Sample of Preschool-Aged DLLs Included in Analyses of Instruction"—hereafter called the Sample Report, available here), the study examined 10 separate child outcomes in five domains: language skills, math, early literacy, executive functioning, and social-emotional well-being. Language skills (vocabulary and oral comprehension) and math were assessed in both English and Spanish. From the pair of vocabulary measures, we calculated a measure of bilingualism. Basic literacy skills and executive function were assessed *either* in English or in the home language, and social-emotional well-being was determined from parent report.[4] The assessments were administered in late 2019 and early 2020, prior to disruptions caused by the COVID-19 pandemic.

We compared each classroom profile group to each other profile group, for a total of six comparisons for each outcome. Some 1,381 preschool-aged DLLs from a Spanish language background were included in these analyses, which controlled for a wide variety of child, family, and classroom background characteristics. These characteristics included the extent to which parents selected their early learning program for its language approach, multiple measures of the children's language environment at home (level of exposure to Spanish at home, age of first exposure to English, parent proficiency in both the home language and Spanish), parent education level, household income, child age and gender, *teacher* proficiency in both English and Spanish, and several others.[5]

Key Finding: DLLs from a Spanish language background who were in "primarily Spanish" classrooms significantly outperformed those in classrooms with less Spanish use on Spanish language outcomes, pre-academic outcomes, and executive functioning.

Exhibit 2 summarizes the results of the comparisons. The first column shows that on average, Spanish-language DLLs in classrooms classified as *primarily Spanish* performed significantly better than similar children in each of the other three classroom types on multiple outcomes, including Spanish vocabulary, bilingualism, executive functioning, and (for two of the three comparisons) math as assessed in Spanish and literacy skills. *Primarily Spanish* performed significantly better than *balanced* on three outcomes, significantly better than *English with Spanish support* on five outcomes, and significantly better than *nearly all English* on seven of the 10 outcomes (bottom left cell). In contrast, as shown in the top row of the exhibit, the latter three groups—*balanced, English with Spanish support,* and *nearly all English*—did not perform significantly better than *primarily Spanish* on any outcomes.

Key Finding: Spanish-language DLLs in "balanced" classrooms performed better, on average, than those in more English-dominant classroom groups on Spanish language outcomes, mathematics as assessed in Spanish, and social-emotional well-being.

Although Spanish-language DLLs in the *balanced* group did not perform better, on average, than those in the *primarily Spanish* group on any of the outcomes, they did perform better than those in *English with Spanish support* classrooms on four outcomes, and better than those in *nearly all English* classrooms on five outcomes (second column). Both sets of outcomes included Spanish vocabulary, math as assessed in Spanish, and social-emotional well-being.

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[4] See the Sample Report for more specific information about the outcomes and the assessments they were based on.

[5] See the Sample Report for information on how the analyses were conducted and for further detail on the background characteristics.

Spanish-language DLLs in *English with Spanish support* classrooms, meanwhile, performed better than those in *nearly all English* classrooms on three outcomes (third column): Spanish vocabulary, Spanish oral comprehension, and English oral comprehension.

Key Finding: Spanish-language DLLs in "nearly all English" classrooms did not perform better than those in other classroom profile groups on *any* outcome, and, on English oral comprehension, they performed significantly lower, on average, than those in all of the other classroom profile groups.

Spanish-language DLLs in *nearly all English* classrooms did not perform significantly better on any outcome than any of the other three groups (fourth column). Moreover, they also performed significantly worse than Spanish-language DLLs in all three other profile groups on *English* oral comprehension, in addition to Spanish vocabulary and Spanish oral comprehension. This suggests that greater use of Spanish in the classroom may benefit DLLs' English learning—an interpretation supported by evidence that skills can transfer across languages and that a strong foundation in the home language can help facilitate the learning of a second language (e.g., Dickinson et al., 2004).

Exhibit 2. Summary of Results of Pairwise Comparisons Among the Four Classroom Profile Groups

	Primarily Spanish higher on...	Balanced higher on...	English with Spanish support higher on...	Nearly all English higher on...
...compared to Primarily Spanish		[none]	[none]	[none]
...compared to Balanced	■ Spanish Vocabulary** ■ Bilingualism* ■ Exec. Functioning***		[none]	[none]
...compared to English with Spanish support	■ Spanish Vocab.*** ■ Spanish Math** ■ Bilingualism*** ■ Literacy Skills* ■ Exec. Functioning***	■ Spanish Vocab.* ■ Spanish Math** ■ Bilingualism* ■ Social Emotional*		[none]
...compared to Nearly all English	■ Spanish Vocab.*** ■ Spanish Oral Comp.** ■ Spanish Math** ■ Bilingualism** ■ English Oral Comp.* ■ Literacy Skills* ■ Exec. Functioning**	■ Spanish Vocab.*** ■ Spanish Oral Comp.** ■ English Oral Comp.* ■ Spanish Math* ■ Social Emotional*	■ Spanish Vocab.* ■ Spanish Oral Comp.* ■ English Oral Comp.*	

***$p < .001$; **$p < .01$; * $p < .05$. ($p < .10$ not shown.)

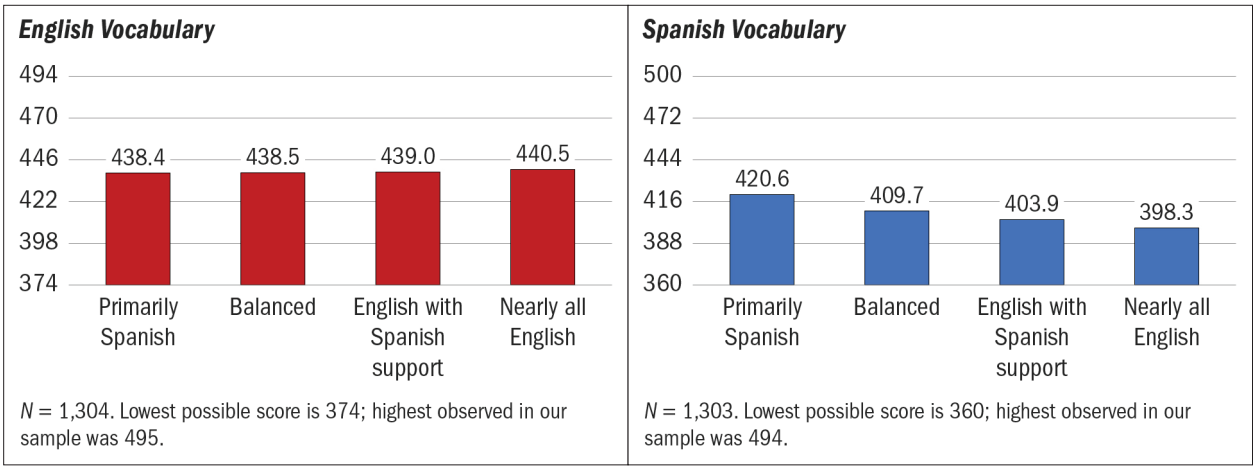
While Exhibit 2 lists the outcomes for which we observed statistically significant differences among profile groups, the bar graphs in Exhibit 3 provide a sense of the *magnitude* of the differences between the groups on each of the 10 outcomes, as another way to view the same story. Perhaps the most striking graph is the one for Spanish vocabulary (top right), which shows that average scores were highest for *primarily Spanish,* next highest for *balanced,* next highest for *English with Spanish support,* and lowest for *nearly all English.* As shown in Exhibit 2 on the previous page, each group was significantly different from each other group on this outcome. The biggest difference between groups—that between *primarily Spanish* and *nearly all English*—was quite large, at about 22 score points.[6] The graphs for Spanish oral comprehension, basic mathematics as assessed in Spanish, and bilingualism show a similar pattern for the difference between the *primarily Spanish* group and the *nearly all English* group.[7]

Another notable graph is the one for English oral comprehension, which illustrates the finding noted earlier that the *nearly all English* group had the lowest average score on this outcome. The differences between the groups on this outcome were modest, however.[8]

Key Finding: Being in a "primarily Spanish" or "balanced" classroom does not appear to have had negative effects on the English skills of DLLs from a Spanish language background.

There were no significant differences ($p < .05$) among groups on English vocabulary or mathematics as assessed in English. It is worth noting that although the *primarily Spanish* and *balanced* classrooms did not do significantly better than the two more English-focused classroom groups on these two English outcomes, they also did not do significantly worse. Therefore, being in a *primarily Spanish* or *balanced* classroom does not appear to have had negative effects on the English skills of DLLs from a Spanish language background, and may even have helped, given the finding on English oral comprehension.

Exhibit 3. Average Performance of Each Classroom Profile Group on Each Outcome



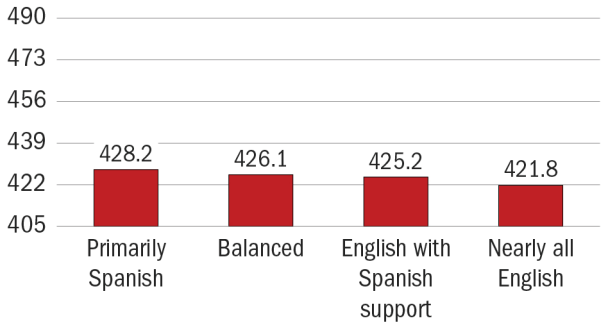
[6] This 22-point difference represents an effect size of about 0.7 standard deviations, typically considered a large effect, although the non-experimental design of our study should be noted. It is equivalent to answering about six more questions correctly on the vocabulary assessment. For perspective, being a year older was associated with scoring only about 9 points higher (about two to three more items answered correctly) on the Spanish vocabulary outcome (all else being equal). The highest number of questions that any child in the sample answered correctly on this assessment was 32.

[7] For each of these three outcomes, the effect size of the difference between the *primarily Spanish* group and the *nearly all English* group was about 0.5 standard deviations.

[8] The biggest difference on English oral comprehension, between *primarily Spanish* and *nearly all English*, was 6.4 score points (about one third of a standard deviation). At the level at which most sample children performed, this corresponds to only about one more item correct.

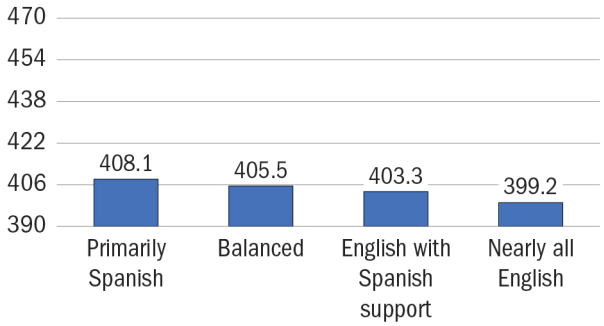
Exhibit 3, continued

English Oral Comprehension



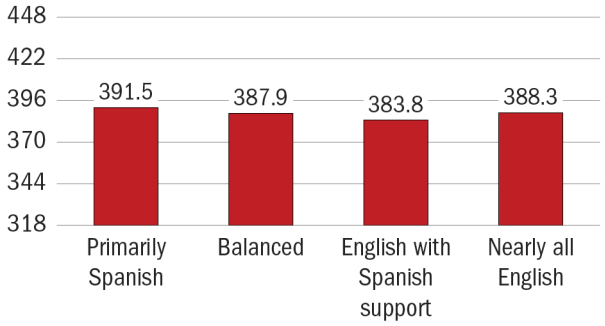
N = 1,304. Lowest possible score is 405; highest observed in our sample was 490.

Spanish Oral Comprehension



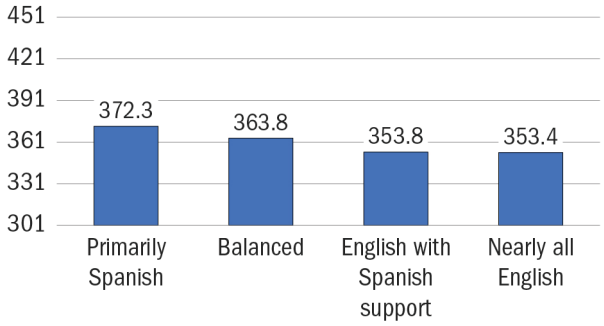
N = 1,302. Lowest possible score is 390; highest observed in our sample was 470.

Basic Mathematics Assessed in English



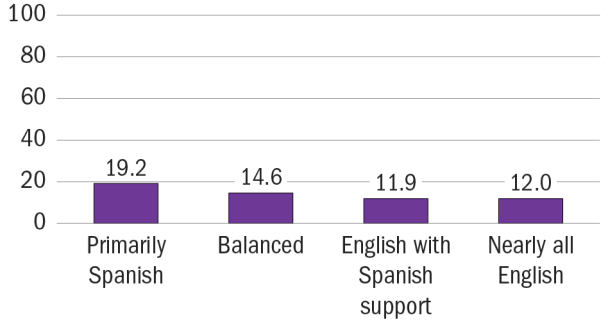
N = 962. Lowest possible score is 318; highest observed in our sample was 449.

Basic Mathematics Assessed in Spanish



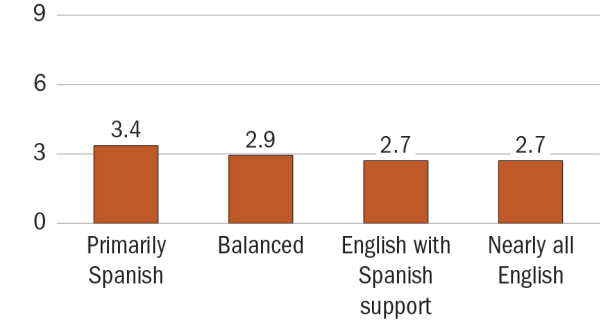
N = 961. Lowest possible score is 301; highest observed in our sample was 456.

Bilingualism



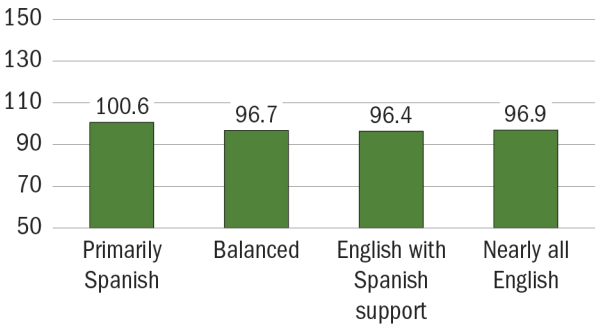
N = 1,300. Possible range is 0 to 100; highest observed in our sample was 68.8.

Literacy Skills

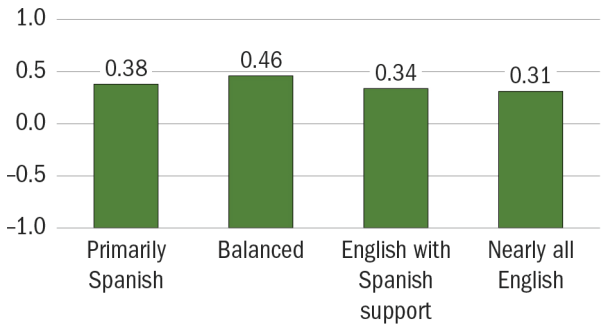


N = 1,295. Possible range is 0 to 9.

Exhibit 3, continued



N = 1,286. Observed range in our sample was 61 to 123.



N = 858. *Signs reversed so that higher is better.* Observed range in our sample was –3.81 to 1.16 (scale reversed); full range not shown in figure.

Note. The scores for *nearly all English* are unadjusted; scores for the other three groups are adjusted for control variables, so as to allow for an "all-else-equal" comparison (i.e., as if the composition of each of the other three groups was the same as that of the *nearly all English* group in terms of background characteristics).

In summary, these findings indicate that for DLLs from a Spanish language background, being in a classroom that used *primarily Spanish*—or, to a lesser extent, a classroom that was relatively *balanced* between English use and Spanish use—was positively related to scores on several Spanish language outcomes, several outcomes not primarily focused on language, and English oral comprehension. These results are consistent with those presented in Brief 1—namely that greater use of Spanish in the classroom (as measured by individual language practices) was associated with better outcomes across several domains for Spanish-language DLLs.

How Exposure to Spanish at Home Factors in to This Brief's Findings

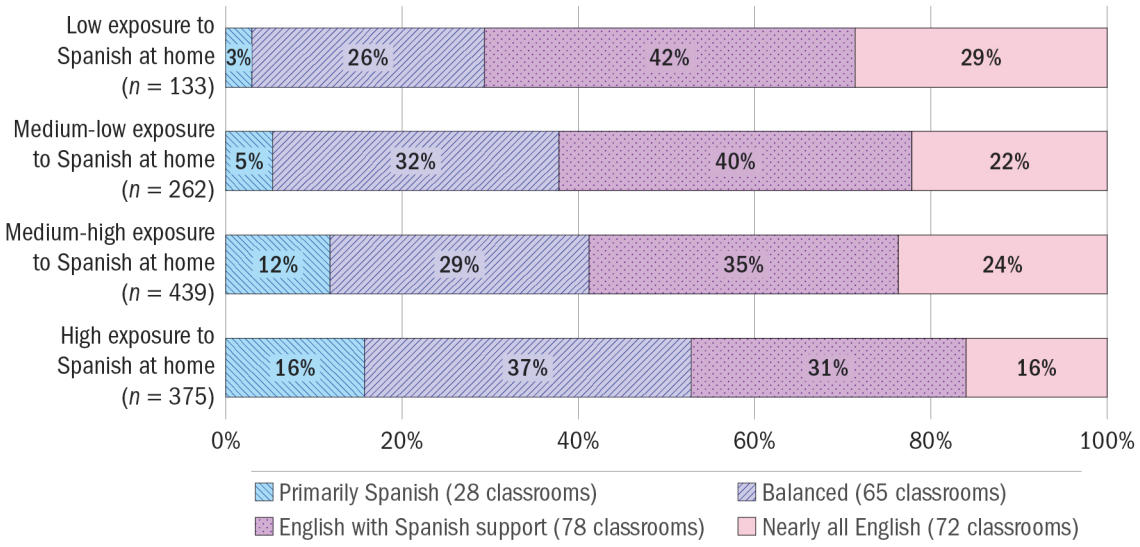
The Spanish-language DLLs in the study sample were a diverse group of children in terms of many child and family background characteristics (see the Sample Report). The analyses described in the main section of this brief controlled for several of these characteristics, but they do not reveal whether the relationships between classroom types and child outcomes were *the same* for DLLs of varying characteristics. One characteristic that we were particularly interested in was DLLs' exposure to Spanish *at home,* because it could be that, for example, *primarily Spanish* classrooms might be more or less effective in supporting DLLs depending on how much Spanish they heard at home.

To explore this, we divided the sample of preschool-aged DLLs with a Spanish language background into four subgroups based on their home language exposure—a measure based on parent report that ranged from 0 (no exposure to Spanish at home) to 100 (exposure solely to Spanish, and no other languages, at home). (See the Sample Report for more information about this measure.) The subgroups were as follows:

- Low (0 to 25) exposure to Spanish at home: 133 children (11%)
- Medium-low (26 to 50) exposure to Spanish at home: 262 children (22%)
- Medium-high (51 to 75) exposure to Spanish at home: 439 children (36%)
- High (76 to 100) exposure to Spanish at home: 375 children (31%)

As shown in Exhibit A, there was a relationship between children's level of exposure to Spanish at home and the type of classroom they attended. For instance, DLLs with lower exposure to Spanish at home were more likely than children with higher exposure to be in the two more English-focused classroom types (e.g., 71% of those with low home exposure compared to 47% of those with high exposure.) Similarly, although relatively few children were in *primarily Spanish*

Exhibit A. Classroom Types Attended by Spanish-Language DLLs in Each Home Language Exposure Subgroup



Note. Total child-level *n* = 1,209; 172 children were missing a value for the home language exposure measure. Although a technique called dummy variable imputation enabled us to include these children in the main (whole-group) analyses, we excluded them from the subgroup analyses.

classrooms overall, children with higher exposure to Spanish at home were more likely to be in those classrooms than were children with lower exposure to Spanish at home. That said, most of the proportions are not dramatically different across the home language exposure subgroups, especially for *balanced* and *English with Spanish support* classrooms. Moreover, all four exposure subgroups had children in each of the four classroom types, and each of the four classroom types had children from all four exposure subgroups.

Given this finding, we repeated the outcome analyses described in the main part of this brief *separately for each of the four home language exposure subgroups.* However, to reduce the number of analyses and comparisons, we only analyzed three outcomes: English vocabulary, Spanish vocabulary, and bilingualism. We selected these three language development measures because of the language-related nature of both the classroom types (profiles of classroom language use) and the DLL subgroups (exposure to Spanish at home).[a]

Results for all four subgroups generally mirrored those of the full-group analysis. In particular, in *all four home language exposure subgroups,* the DLLs in the *primarily Spanish* classrooms scored significantly higher than DLLs in at least one other classroom type on at least one of the three outcomes we looked at. Typically, *primarily Spanish* classrooms outperformed all three other classroom types on both the Spanish vocabulary and bilingual outcomes. **Therefore, *regardless of children's level of exposure to Spanish at home* (given at least some), they seem to have learned more Spanish and improved their bilingual ability if they were in classrooms that used primarily Spanish.** The apparent benefits of being in a primarily Spanish classroom environment were not limited to DLLs with more—or less—exposure to Spanish at home.

[a] In addition, the vocabulary measures had more even score distributions than the oral comprehension measures (see the Sample Report), and in the full-group analyses (both for individual language use measures, as reported in Brief 1, and for the classroom profiles analyses reported in this brief), we obtained more significant results for Spanish vocabulary than for Spanish oral comprehension. Also, the bilingualism measure was derived from the vocabulary measures.

Summary, Discussion, and Implications

The results presented in this brief provide a deeper look at Spanish language use in early learning and care classrooms and its potential benefits for preschool-aged DLLs from Spanish language backgrounds. We identified groups of classrooms with varying levels of Spanish and English language use and examined how outcomes varied across these classroom types for Spanish-language DLLs. **We found that DLLs in classrooms with more Spanish use (i.e., those categorized as *primarily Spanish* and *balanced* classrooms) demonstrated better outcomes, on average, on Spanish language skills, non-language skills (e.g., executive functioning, social-emotional skills), and English oral comprehension.**

These findings extend those presented in Brief 1 by accounting for multiple aspects of classroom language use *together,* and support previous research on the benefits of home language use for young, Spanish-language DLLs (e.g., Burchinal et al., 2012; Collins, 2014; Méndez et al., 2015). Previous research has found that bilingual classroom models have positive effects, particularly on Spanish language development, at no cost to children's English development (Barnett et al., 2007; Durán et al., 2013; Durán et al., 2015). There is also evidence that Spanish instruction on its own (such as during the first year of a transitional bilingual program in which instruction was *only* provided in Spanish) can promote DLLs' language outcomes in Spanish (Durán et al., 2010). Although our study did not test specific language models that programs report adhering to, the profiles we constructed differentiate classrooms based on the actual implementation (as reported by teachers) of some of the practices that characterize language models. Using this approach, we found that children in classrooms using primarily Spanish outperformed similar children in classrooms using less Spanish, including those using a balanced approach to English and Spanish instruction. All in all, our results support classroom language approaches that incorporate a substantial amount of the home language (defined as either *primarily Spanish* or *balanced* in this study).

These findings, together with the findings from Brief 1, have important policy implications. We recommend that state and local stakeholders focus on (1) **recruiting and training teachers who speak children's**

LIMITATIONS AND FUTURE RESEARCH

Although we were able to conduct this in-depth analysis for the Spanish-language children and classrooms in our sample, we were not able to conduct a parallel set of analyses for other home language groups due to limited sample sizes. Therefore, these findings may not generalize to other language groups, and future research may benefit from focusing more intentionally on recruiting and studying large samples of children from these language backgrounds.

However, it should also be noted that this limitation likely reflects the reality of early learning and care settings in California. Specifically, many classrooms tend to have high concentrations of DLLs from Spanish language backgrounds, but (except in some bilingual/immersion programs) lower concentrations of DLLs from other language backgrounds. As a result, it may be difficult for teachers to implement high levels of home language instruction for languages other than Spanish, particularly if many different languages are represented. Novel research designs may be needed to identify, recruit, assess, and analyze outcomes for DLLs in these superdiverse early childhood classrooms. Future research might examine profiles of *multilingual* classrooms to understand how teachers can best support DLLs from a variety of different backgrounds. Factors that likely make a difference include the number of DLLs from a particular background, the number of languages represented by the children, teacher language competency, and student-teacher language match.

In addition, our study did not examine the effects of formally adopted language models on DLL children's outcomes, but rather approximated language models based on teacher report and examined *relationships* (not causal effects) with child outcomes. There continues to be a lack of experimental research on specific language models (e.g., 50-50, transitional bilingual education) in early childhood classrooms. Future studies should recruit and target intentional dual language programs (focusing on a variety of languages) willing to try out and/or experiment with language models to provide more rigorous evidence on the most effective approaches for supporting young DLLs from different backgrounds.

home languages, (2) **staffing classrooms to ensure that each classroom has at least one teacher who can fluently speak the language(s) of the DLLs that the program serves, and** (3) **encouraging teachers who know and can speak the language of DLLs in their classroom to engage and interact with children using that language.** In addition, based on findings from the classroom language use profiles described in this brief, programs should consider (4) exploring language models or a formal program approach to support the **intentional use of home language instruction** in the classroom. Creating more education and care options that support bilingual development would also be responsive to the priorities of the large proportion of families of DLLs who want their children to reap the benefits of bilingualism (Hsin et al., 2022). Adopting a new language model or significantly increasing the amount of home language used in the classroom may require additional resources, as it may mean hiring bilingual educators and providing significant targeted professional development to ensure the intentional use of the home language. However, given prior research evidence and the findings shared here and in Brief 1, these investments will be important to consider as California, and the larger field, works to find optimal ways to support DLLs in early learning classrooms and prioritize efforts to prepare the early childhood workforce to effectively support their learning.

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About the First 5 California DLL Pilot Study

In 2015, First 5 California committed $20 million for a "DLL Pilot" to identify and promote effective, scalable strategies that early learning and care programs can use to support DLLs and their families. A key component of this initiative is a study focused on three high-leverage areas: instructional practices, professional development for early educators, and family engagement. The study is examining the practices used across different early learning settings, diverse language groups, and DLLs of varying ages and backgrounds, and the extent to which various practices are associated with child and family outcomes. Sixteen counties, selected to be broadly representative of California's DLL population, are participating in the DLL Pilot: Butte, Calaveras, Contra Costa, Fresno, Los Angeles, Monterey, Orange, Riverside, Sacramento, San Diego, San Francisco, Santa Barbara, Santa Clara, Sonoma, Stanislaus, and Yolo. The study is being conducted by the American Institutes for Research in partnership with Juárez & Associates; CRI; School Readiness Consulting; Allen, Shea & Associates; and Stanfield Systems, Inc. Guidance is provided by a DLL Input Group composed of stakeholders, advocates, and state and national experts on DLLs.

For more information about the study and to read other study briefs and reports:

https://californiadllstudy.org/

www.ccfc.ca.gov/

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