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SEAL Students' PreK and TK Spanish and English Language Development Outcomes

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Sobrato Early Academic Language (SEAL) Model
Research & Evaluation, Section 4 — Brief 12

Student Outcomes: Study #4

SEAL Students' PreK and TK Spanish and English Language Development Outcomes

WEXFORD INSTITUTE

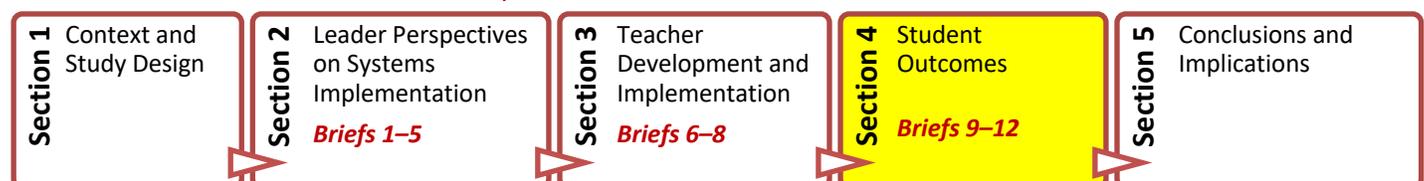## Introduction to the SEAL Model and the 4-Year Research and Evaluation Effort

The Sobrato Early Academic Language Model (SEAL) is a preschool through third grade model that powerfully develops students' language, literacy, and academic skills within the context of a whole-school initiative. This intensive approach to language and literacy education is woven into all aspects of the school day where English Learners and native English students learn together. The Model was first piloted in three schools in the Silicon Valley and an initial evaluation of the Model showed significant impact on student achievement, teacher practice, and parent literacy activities. As a result of these pilot findings, SEAL developed a Replication Model, a comprehensive whole-school reform that is implemented systematically and that includes teachers, coaches, principals, district leaders, and families.

Loyola Marymount University's Center for Equity for English Learners and the Wexford Institute conducted an external evaluation of the SEAL preschool through third grade Replication Model from fall 2015–fall 2019. This comprehensive research and evaluation study focused on (1) Leader Perspectives and Depth of Implementation, (2) Teacher Development, and (3) Student Outcomes. Twelve districts and 67 schools across California participated. This Research and Evaluation Final Report presents findings that will allow the SEAL team to institute its short- and long-term evaluation and research agenda based on the SEAL Logic Model and desired results for project management, decision-making, refinement, and expansion.

The SEAL Research and Evaluation Final Report is comprised of five sections presented in a series of briefs (see Figure 1) to maximize usability for multiple stakeholders. This brief is part of Section 4.

Figure 1
SEAL Research and Evaluation Final Report Overview

Section 1 Context and Study Design	Section 2 Leader Perspectives on Systems Implementation *Briefs 1–5*	Section 3 Teacher Development and Implementation *Briefs 6–8*	Section 4 Student Outcomes *Briefs 9–12*	Section 5 Conclusions and Implications

Section 4, Brief 12 – Research Focus

Over the few past decades, two educational issues have intersected with one another, while simultaneously gaining greater attention from policy makers, educators, and families: 1) early childhood education; and 2) the increased numbers of children with a home language other than English who are entering early childhood programs in preschool, pre-kindergarten (PreK), and traditional kindergarten (TK) as Dual Language Learners (DLL).

In 2016, the U.S. Department of Health and Human Services (HHS), in conjunction with the U.S. Department of Education (ED), issued a *Policy Statement on Supporting the Development of Children Who Are Dual Language Learners in Early Childhood Programs*[1], which included a vision for supporting the development of those students, so that:

> "…all early childhood programs adequately and appropriately serve the diverse children and families that make up this country. Programs should foster their cognitive, linguistic, social emotional, and physical development and prepare them for success in school and beyond."

This policy statement went on to indicate that a variety of policies and actions, including the following, could support the attainment of the vision:

- *"Setting an expectation for high-quality and appropriate supports and services specifically designed for young children who are DLLs;*
- *Increasing awareness about the benefits of bilingualism and the important role of home language development;*
- *Reviewing the research on the unique strengths of and challenges faced by this population, and strategies that are effective in promoting their learning and development."*

The SEAL Replication Model addresses this vision through the participation of PreK and TK teachers in the professional development programs with their K-3 colleagues, to support the use of evidence-based practices in PreK and TK instruction and to provide continuity between PreK, TK, and K-3 classrooms. Research indicates that supporting bilingualism from early ages can have wide ranging benefits, from cognitive and social advantages early in life, to long term employment opportunities and competitiveness in the workplace later in life (Callahan & Gándara, 2014).[2] Another crucial piece that is closely related to the HHS and ED vision is the need for DLL to retain and develop their home language in order to prevent language loss.

The research and evaluation study measures language development of a sample of students who have Spanish as their home language, and who participated in SEAL PreK or TK classrooms in six districts during 2016-17. Using the *pre*LAS[©] The Language Proficiency Assessment for Early Learners (*pre*LAS[©])[3], in Spanish and English, for annual pre- and post-assessment data, the study focused on children's Spanish language development and English language development. This study began in 2015-16, with a year of iterative planning and initial implementation to create the assessment process that would be conducted by external evaluators, Wexford Institute (Wexford), in collaboration with SEAL, and the participating SEAL districts and schools in 2016-17.

> **PreK and TK Spanish and English Language Development Study**
> **Research and Evaluation Question**
>
> What growth from pre to post assessments in Spanish and English Language development was made by samples of PreK and TK children in 2016-17?

This research and evaluation brief present findings from the two-year, two-part study. Within this brief, there are three parts. Part One of the brief provides an overview of the study methods and participants. Part Two includes a summary of the elements necessary for conducting the assessment and a summary of the PreK and TK student outcomes. Part Three provides a summary of findings and implications.

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[1] U.S. Department of Health and Human Services (2016, June). *Policy Statement on Supporting the Development of Children Who Are Dual Language Learners in Early Childhood Programs.* Page 2. https://www.acf.hhs.gov/ecd/dual-language-learners
[2] Callahan, R. M., & Gándara, P. C. (Eds.). (2014). *The bilingual advantage: Language, literacy and the US labor market (Vol 99).* Multilingual Matters.
[3] *pre*LAS Copyright 2020 by the Data Recognition Corporation. https://laslinks.com/prelas/

Part One: Study Methods and Participants

Purpose

This study was designed to assess the development of Spanish and English oral language and pre-literacy skills of children in SEAL PreK and TK classrooms.

Methods

Wexford worked with SEAL and SEAL districts to develop and implement a two-part study to answer the research and evaluation question. In 2015-16, the first part of the study included an iterative planning process and initial implementation to develop and refine the process for conducting the full student assessment in 2016-17. The initial implementation included

- identifying at least two SEAL districts to work with Wexford and SEAL to determine and initially implement the elements of a process necessary to conduct the study,
- identifying the necessary elements of the study,
- creating a plan for and conduct an initial implementation of those elements, and
- using lessons learned during the initial implementation to refine the process and prepare for implementation with more districts.

In 2016-17, the second part of the study used the refined process designed the year before to gather quantitative data of PreK and TK children from *pre*LAS© assessments in both Spanish and English. The PreK and TK assessment and analyses were conducted during 2016-17, with pre-assessments conducted in the fall of 2016 and post-assessments conducted in spring of 2017.

There are two components to the *pre*LAS© assessments, an Oral Language Fluency and Pre-Literacy. The oral language fluency component, for children ages 4 to 6, includes assessment of:

- listening comprehension
- expressive vocabulary
- expressive skills in syntax
- semantics
- morphology

The pre-literacy component, for children who were ages 5 and 6, includes receptive and expressive literacy skills in reading and writing. Table 1 describes the score ranges for each of the Spanish and English proficiency levels and interpretation of numerical levels for children who were 4-years old and those who are 5-years old at the time the assessments were conducted.

Table 1
preLAS© English and Spanish: Component Proficiency Levels and Interpretation of Scores

*pre*LAS© Component	Total score ages 48-59 months	Total score ages 60-83 months	Proficiency level	Interpretation of numerical values
Oral Language Fluency	0-56	0-61	1	Not fluent
	57-66	62-71	2	Limited fluency
	67-76	72-81	3	Limited fluency
	77-86	82-91	4	Fluent speaker
	87-100	92-100	5	Fluent speaker
Pre-Literacy	N/A	0-59	1	Low
	N/A	60-79	2	Mid-level
	N/A	80-100	3	High

If children were 5 years of age or older, they were assessed on the pre-literacy component. Ten of the 73 Pre-K children were age 5 on the dates the pre-literacy component was administered. Fifty-six of the 66 TK children were age 5 on the dates the pre-literacy component was administered. (See Section 4 – Appendix Q)

Pre- and post-assessment results were matched for *pre*LAS$^©$ English and Spanish. A Matched Pair *t*-Test or a Wilcoxon Matched Pairs Signed Rank Test was conducted on this data for each group, PreK and TK, to determine pre- and post-assessment mean differences. Pre and post results were also summarized by proficiency level for each of the *pre*LAS$^©$ components. (See Section 4 – Appendix R)

Participants

During 2016-17, a convenience sample of children in PreK and TK, with Spanish as a home language, were assessed in English and Spanish. Wexford staff and assessors coordinated with district and site administrators to identify and assess the target numbers of children for each school. A target number of children to be assessed was determined based on two factors: 1) the number of children in the identified teachers' classrooms and 2) the number of student assessments that could be conducted during the time allocated by SEAL schools. Identified teachers' classrooms were defined as the classrooms of PreK and TK teachers who had participated in SEAL professional development programs (identified in six SEAL districts). A total of 86 PreK and 73 TK children were assessed. Of those children who were assessed in both English and Spanish, 73 PreK children with matched pre- and post-assessment scores in five SEAL school districts, and 66 TK children with matched pre- and post- assessment scores in six SEAL school districts were selected for analysis. The PreK and TK samples are described, with numbers by school district in Table 2.

Table 2
Number of Children Assessed, PreK and TK 2016-17 Matched Case Samples

SEAL district	Grade level of children assessed		Total
	PreK	TK	
Redwood City SD	16	12	28
San Lorenzo USD	27	18	45
Oak Grove SD	0	12	12
San Rafael City Schools	10	9	19
Mountain View ESD	8	12	20
Santa Clara USD	12	3	15
Total	73	66	139

Limitations

Given that the SEAL Replication Model implementation occurred across cohorts, each beginning implementation during different time frames and while the model underwent continued refinement, any comparisons made in this brief should be interpreted with these limitations in mind:

- The implementation of the SEAL Replication Model for SEAL districts and schools participating in this study included those who began implementation in 2013-14, and those who began in 2014-15.[4]
- There were differences in provision of student language acquisition programs (bilingual/dual language or structured English Immersion) throughout the evaluation period (2014–2019). That is, some districts and schools were refining or expanding their bilingual/dual language programs at the same time as this evaluation project was being conducted.

Part Two: Findings

Year 2 PreK and TK Study Findings

The following sections provide summaries of information on Spanish Language Development outcomes, and English Language Development outcomes, for PreK and TK children.

PreK Spanish Language Development Outcomes

The Spanish pre- and post-assessment results of the Oral Language Fluency component for the PreK student group are displayed in Figure 2. Twenty percent of children moved up in proficiency level from pre- to post-assessment, with almost 70% ending the year in *limited* and *fluent* levels.

Figure 2
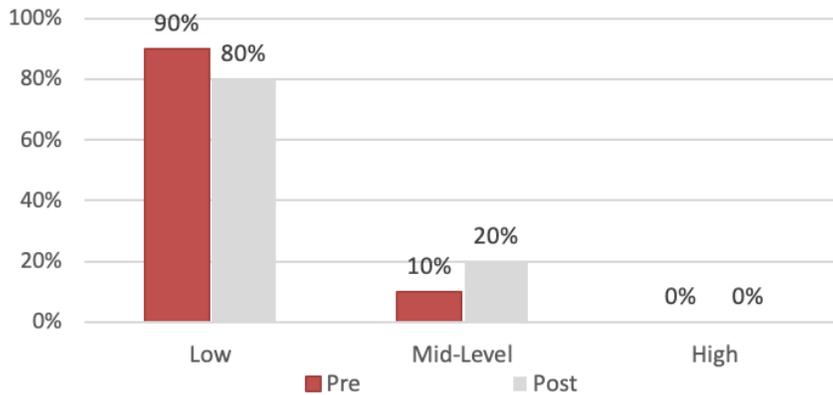*preLAS© Spanish Pre-Post Oral Language Fluency - Grade PreK with Matched Scores (n = 73)*

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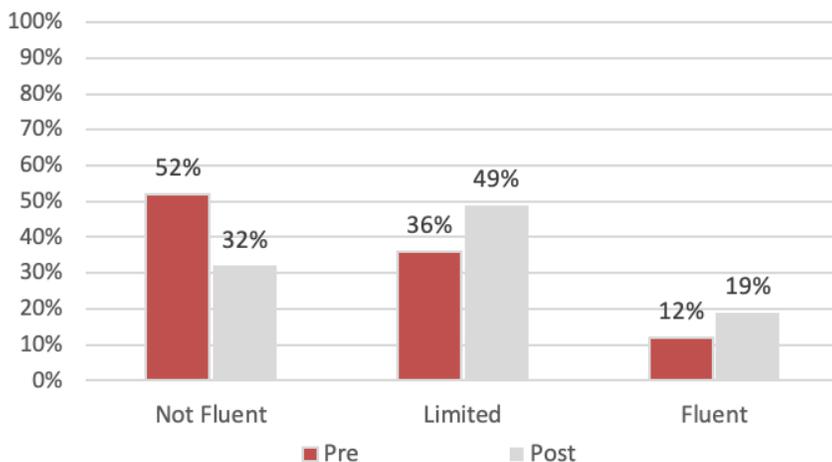
[4] Students in this study attended schools in districts that started SEAL implementation in 2013-14, 2014-15 and 2015-16. Students in this study were enrolled in SEAL PreK and TK classrooms in 2016-17.

Figure 3 presents the pre- and post-assessment analysis of the PreK matched sample for the Spanish Pre-Literacy component. The PreK sample (*n* = 10) is very small because of only assessing children who were at least 5-years old on this component of the assessment.[5] Eighty percent of children remained at the *low-level* of pre-literacy from pre- to post-assessment. Only one student changed levels, moving from *low* to *mid-level*.

Figure 3
preLAS© Spanish Pre-Post Pre-Literacy - Grade PreK with Matched Scores (n = 10)

The Spanish language development outcomes of children in PreK from pre- and post-assessment of the Oral Language Fluency and Pre-Literacy components are reported in Table 3 and Table 4. The change in overall performance in Oral Language Fluency, from pre- to post-assessment for matched scores, was analyzed using a Matched Pairs *t*-Test. The change in overall performance in Pre-Literacy, from pre- to post-assessment for matched scores, was analyzed using a Wilcoxon Matched Pairs Signed Rank Test. Because the data was not normally distributed, the Wilcoxon Test was utilized. (See Section 4 – Appendix R)

Table 3
preLAS© Spanish Pre-Post Mean Raw Scores – Grade PreK

*pre*LAS© Spanish assessment component	*n*	Mean raw scores		
		Pre	Post	Pre-post change
Oral Language Fluency	73	53.6	61.7***	+8.1

***$p < .001$

Table 4
preLAS© Spanish Pre-Post Median Raw Scores – Grade PreK

*pre*LAS© Spanish assessment component	*n*	Median raw scores		
		Pre	Post	Pre-post change
Pre-Literacy	10	39.0	41.5	+2.5

Note. Students are assessed on the Pre-literacy component if they are 5 years of age or older.

Following is a summary of the findings about the comparison of the pre-post median raw scores for *pre*LAS© PreK Spanish.

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[5] The number of PreK children assessed on the pre-literacy components is small because children under 5-years old were not assessed on the pre-assessment. They were assessed on the post-assessment if they had turned age 5 by the assessment date. If they were not old enough to have a pre-assessment, they were not included in the group with pre- and post-matched scores.

1. PreK Spanish Oral Language Fluency: In comparing the pre- and post-mean raw scores, the difference was statistically significant, $t(72) = 4.22$, $p < .001$, $d = .49$. The effect size[6] of .49 indicates a moderate difference between the pre and post scores.
2. PreK Spanish Pre-Literacy: There was no significant difference found between pre- and post- median raw scores.

TK Spanish Language Development Outcomes

A visual representation of the outcomes for TK Spanish Oral Language Fluency component is shown in Figure 4. By the post-assessment, there were 13% fewer students at the *not fluent* level, with an increase of 4% of children at the *limited* level, and increase of 9% of students at the *fluent* level. Just over half of the children ended the year in *limited* and *fluent* levels, with almost half of the group at the *not fluent* level.

Figure 4
preLAS$^©$ Spanish Oral Language Fluency Outcomes – Grade TK with Matched Scores (n = 66)
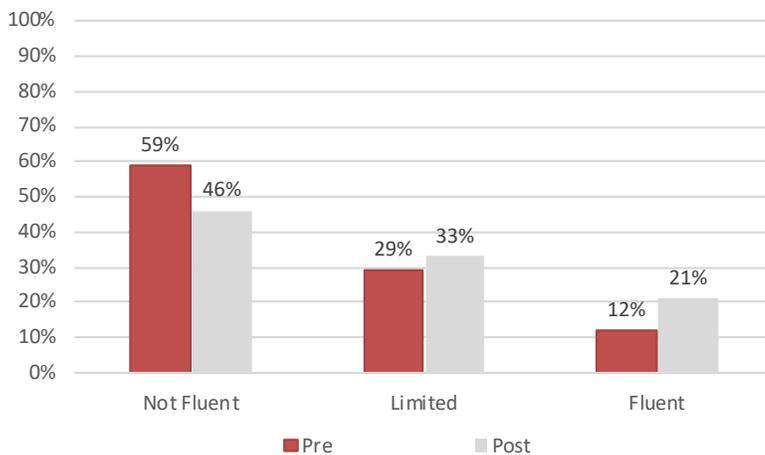
A visual representation of TK student outcomes on the Spanish Pre-Literacy component is provided in Figure 5. By the post-assessment, there were 25% fewer children at the *low* level, with an increase of 18% of children at the *mid-level*, and an increase of 7% at the *high* level. However, almost 70% of children were at the *low* level.

Figure 5
preLAS$^©$ Spanish Pre-Literacy Outcomes – Grade TK with Matched Scores (n = 56)

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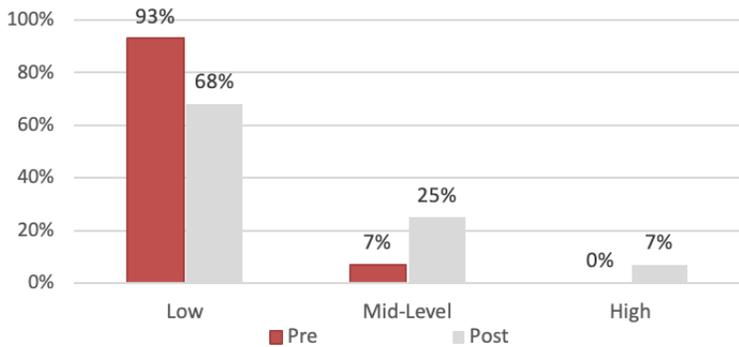
[6] While an analysis of significance tells if there is a difference between two means, the analysis of effect size tells how strong a relationship there is between two or more sets of data. In the comparison between two means, an effect size of .2 is considered a small effect size, .5 is a moderate effect size and .8 is a large effect size. If two groups' means do not differ by .2 standard deviations or more, the difference is trivial, even if it is statistically significant.

Table 5 presents the Spanish language development mean raw scores for the TK student group. Matched Pairs *t*-Tests were utilized to compare the pre- to post-assessments in Spanish Oral Language Fluency and Pre-Literacy components in 2016-17. (See Section 4 – Appendix R)

Table 5
preLAS© Spanish Pre-Post Mean Raw Scores – Grade TK

preLAS© Spanish assessment component	*n*	Mean raw scores		
		Pre	Post	Pre-post change
Oral Language Fluency	66	55.0	60.6***	+5.6
Pre-Literacy	56	32.6	44.6***	+12

***$p < .001$

The following is a summary of findings for the pre-post comparison of mean raw scores for the *pre*LAS© Spanish for TK:

Findings
1. TK Spanish Oral Language Fluency: There was a significant difference between the pre- and post-mean scores, $t(65) = 3.57$, $p < .001$, $d = .44$. The effect size of .44 indicates a small difference between the pre- and post-assessments.
2. TK Spanish Pre-Literacy: There was a significant difference between the pre- and post-mean scores $t(55) = 6.79$, $p < .001$, $d = .91$. The effect size of .91 indicates a large difference between the pre- and post-assessments.

PreK English Language Development
The pre- and post-assessment outcomes of the PreK children on the *pre*LAS© English Oral Language component are presented in Figure 6. By the post-assessment, there were 20% fewer children at the *not fluent* level, with an increase of 13% at the *limited* level, and an increase of 7% at the *fluent* level. Sixty percent of children ended the year at *limited* and *fluent* levels, with 40% of children at the *not fluent* level.

Figure 6
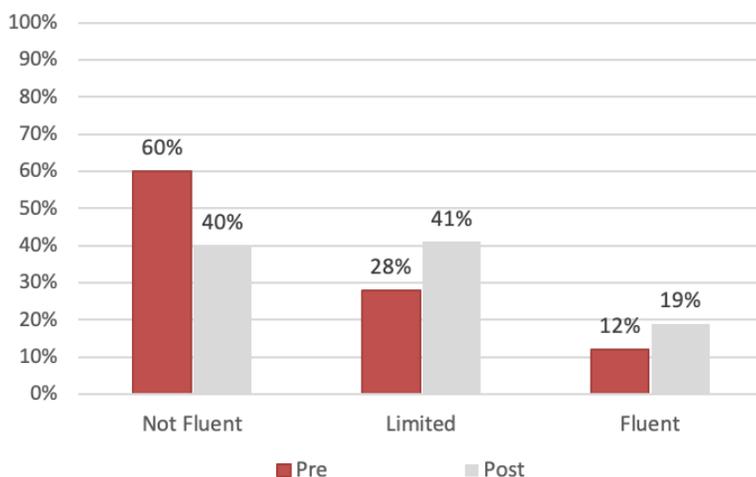*preLAS© English Pre-Post Oral Language Fluency Outcomes – Grade PreK with Matched Scores (n = 73)*

Figure 7
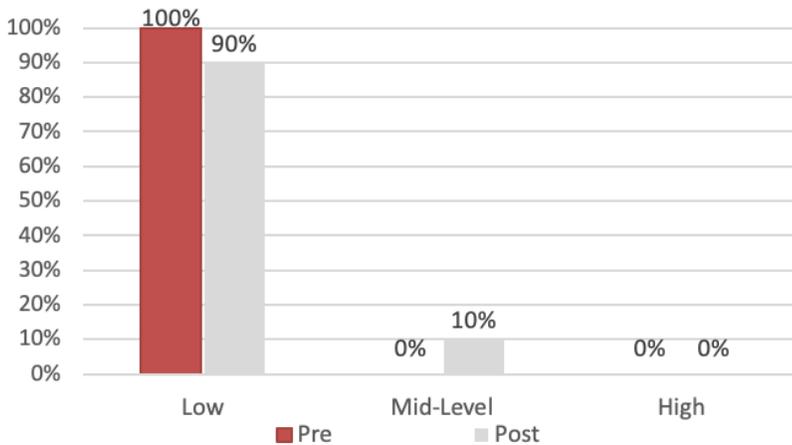*preLAS© English Pre-Post Pre-Literacy Outcomes Grade PreK with Matched Scores (n = 10)*

Figure 7 presents the pre- and post-assessment analysis of the PreK matched sample for the English Pre-Literacy component. The PreK sample (*n* = 10) is very small because only children who were at least 5-years old were assessed on this component of the assessment.[7] Only one student moved from *low* to *mid-level* pre-literacy level, while 90% remained in the *low* level.

The raw scores and gains for the PreK English Oral-Language Fluency and Pre-Literacy components are displayed in Table 6 and Table 7. The change in overall performance level on the *pre*LAS© English Oral Language Fluency component, from pre- to post-assessment for matched scores, was analyzed using a Wilcoxon Matched Pairs Signed Rank Test. A Matched Pairs *t*-Test was utilized to determine the pre to post difference in overall performance on the *pre*LAS© English Pre-Literacy component. The full details of this analysis are found in Section 4 – Appendix R.

Table 6
preLAS© English Pre-Post Median Raw Scores – Grade PreK

*pre*LAS© English assessment component	*n*	Median raw scores		
		Pre	Post	Median Pre-post change
Oral language fluency	73	47	65***	+18

***$p < .001$

Table 7
preLAS© English Pre-Post Mean Raw Scores – Grade PreK

*pre*LAS© English assessment component	*n*	Mean raw scores		
		Pre	Post	Mean Pre-post change
Pre-literacy	10	35.6	52.2*	+16.6

*$p < .05$

Following is a summary of findings from the pre-post score comparison on the *pre*LAS© English for PreK:

Findings
1. PreK English Oral Language Fluency: There was a significant difference from pre-to post on the Oral language fluency component for PreK students, $Z = -5.61$, $p < .001$, $r = .66$, $p < .001$. The effect size of .66 indicates a moderate difference between the pre and post scores.
2. PreK English Pre-Literacy: There was a significant difference between pre- and post-mean raw scores of PreK children, $t(9) = 3.22$, $p < .05$, $d = 1.02$. The effect size of 1.02 indicates a large difference between the mean pre and post scores.

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[7] The number of PreK children assessed on the pre-literacy components is small because children under 5-years old were not assessed on the pre-assessment. They were assessed on the post-assessment if they had turned age 5 by the assessment date. If they were not old enough to have a pre-assessment, they were not included in the group with pre- and post-matched scores.

TK English Language Development Outcomes

The pre- and post-assessment outcomes of the TK matched sample for the English Oral Language Fluency component are displayed in Figure 8. From pre to post, there was a decrease of 16% of students at the *not fluent* level, an increase of 14% at the *limited* level and an increase of 4% at the *fluent* level. Close to 80% of children ended the year at *limited* and *fluent* levels.

Figure 8

preLAS© English Oral Language Fluency Outcomes – Grade TK with Matched Scores (n = 66)
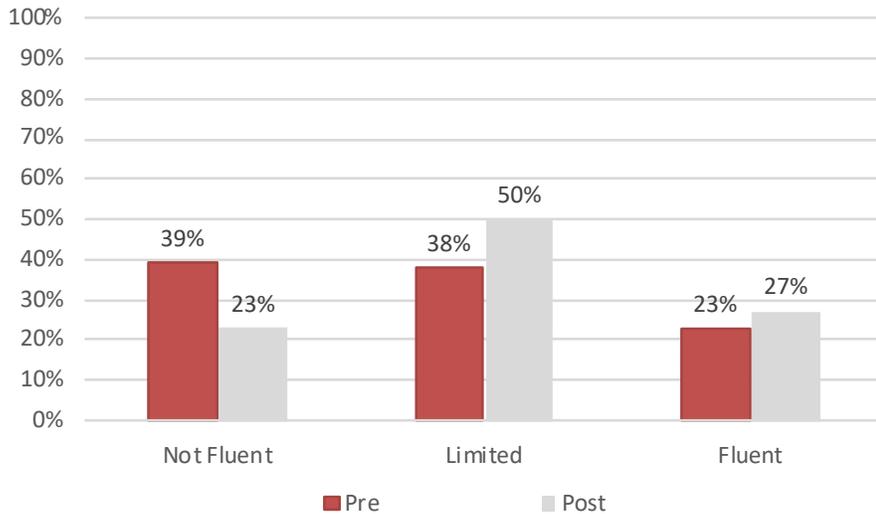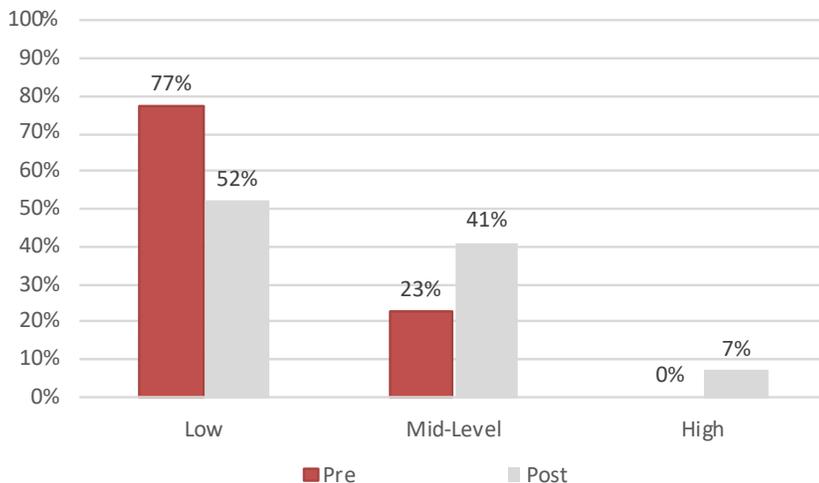

Figure 9 presents the pre- and post-assessment outcomes of the TK matched sample for the English Pre-Literacy component. 25% of the children moved to the *mid* and *high* levels. However, about half of the children ended the year at the *low-level* at post-assessment.

Figure 9

preLAS© English Pre-Literacy Outcomes, Grade TK with Matched Scores (n = 56)

The pre and post mean raw scores on the *pre*LAS© English assessment for TK children are reported on Table 8. The pre- to post-assessments were analyzed utilizing Matched Pairs *t*-Tests and examined mean raw scores gains for English *oral language fluency* and *pre-literacy* levels. (See Section 4 – Appendix R)

Table 8

preLAS© English Pre-Post Mean Raw Scores, Grade TK

preLAS© English assessment component	n	Mean raw scores		
		Pre	Post	Pre-post change
Oral language fluency	66	62.2	68.9***	+6.7
Pre-literacy	56	46.2	59.7***	+13.5

***$p < .001$

The following is a summary of findings from the pre-post comparison of the mean raw scores on the *preLAS©* English for TK:
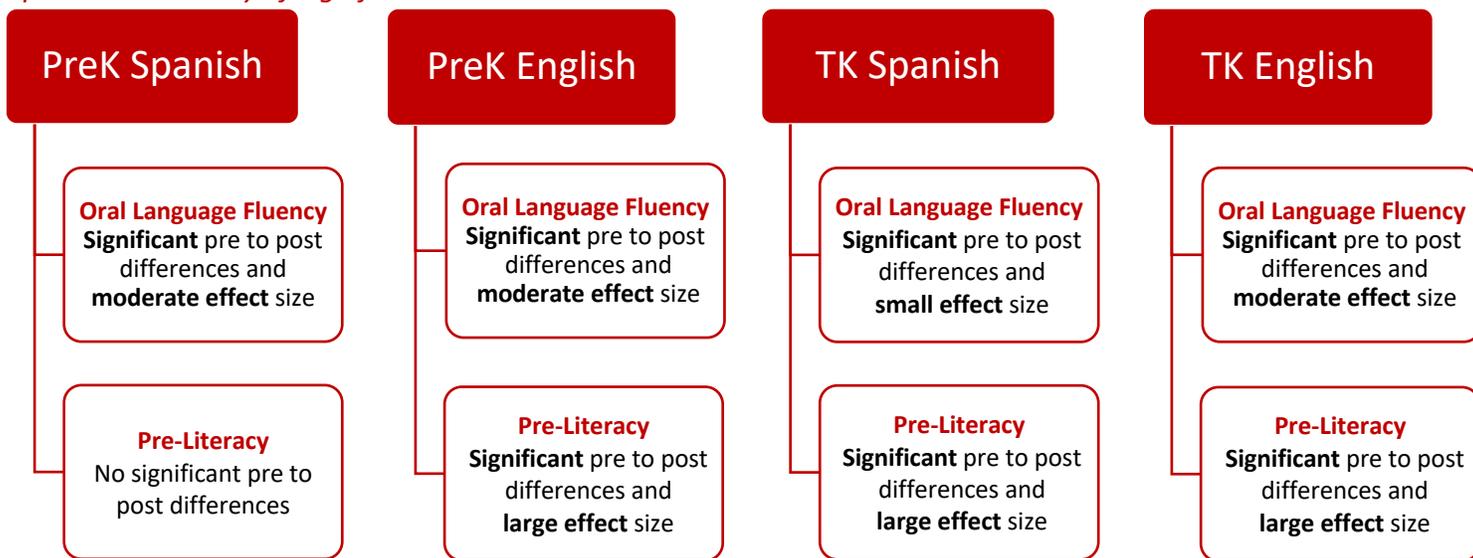
Findings
1. TK English Oral Language Fluency: The difference between pre- and post-mean raw scores is statistically significant, $t(65) = 4.68$, $p < .001$, $d = .58$. The effect size of .58 indicates a moderate difference between the means.
2. TK Pre-Literacy: The difference between pre- and post-mean raw scores is statistically significant, $t(55) = 9.37$, $p < .001$, $d = 1.25$. The effect size of 1.25 indicates a large difference between the means.

Part Three: Summary of Findings and Implications

Summary of Findings

Children showed significant changes from pre- to post-assessment in both English and Spanish. Results from the study indicate significant growth in Spanish and English oral language for PreK and TK children and significant growth in Spanish pre-literacy for TK children and English pre-literacy for PreK and TK children. Although there was not a significant difference in Spanish pre-literacy for PreK children (due to a small analysis group, $n = 10$), the children did make some growth from pre to post.

Large effects sizes (the difference between pre and post means) occurred in English pre-literacy for PreK (d = 1.02) and TK (d = 1.25), and Spanish pre-literacy in TK (d = .91). Moderate effect sizes were seen in oral language fluency for PreK Spanish (d = .49), PreK English (r = .66) and TK English (d = .58) and small effects sizes were seen in TK Spanish oral language fluency (d = .44). Moderate to large effect sizes denote greater differences between the pre and post means, indicating that SEAL PreK and TK student growth from pre to post-assessment was greater in areas with large effect sizes than those with small effect sizes.

Figure 10
preLAS© Summary of Significance Test Results

PreK Spanish	PreK English	TK Spanish	TK English
Oral Language Fluency **Significant** pre to post differences and **moderate effect** size	**Oral Language Fluency** **Significant** pre to post differences and **moderate effect** size	**Oral Language Fluency** **Significant** pre to post differences and **small effect** size	**Oral Language Fluency** **Significant** pre to post differences and **moderate effect** size
Pre-Literacy No significant pre to post differences	**Pre-Literacy** **Significant** pre to post differences and **large effect** size	**Pre-Literacy** **Significant** pre to post differences and **large effect** size	**Pre-Literacy** **Significant** pre to post differences and **large effect** size

Implications

The results from the present study are relevant for the professional development training provided to early childhood educators, specifically, those serving children who are Spanish-speaking. These results show the importance of implementing instructional practices that foster growth in both children's Spanish and English language development to prevent language loss and promote bilingualism and biliteracy. Previous research, as well as statements from the U.S. Department of Health and Human Services and the U.S. Department of Education, underscore the critical role of high-quality instruction in early childhood, bilingualism, and home language for young children's development. The SEAL model, as highlighted by the results of this study, shows promise in addressing both the training needs of early childhood educators by providing high quality training that focuses on evidence-based instructional practices that foster home language development, bilingualism and biliteracy.