MEMORANDUM September 7, 2017

TO: Lance Menster
Officer, Elementary Curriculum and Development

FROM: Carla Stevens
Assistant Superintendent, Research and Accountability

SUBJECT: **COMPARISONS OF ACADEMIC ACHIEVEMENT AMONG PREKINDERGARTEN STUDENTS ENROLLED IN HISD EARLY CHILDHOOD CENTERS AND SCHOOL-BASED PROGRAMS, 2016–2017**

This evaluation compared mean scores and proficiency levels on the 2016–2017 CIRCLE English and Spanish language, literacy, and mathematics assessments between students enrolled in Early Childhood Centers (EECs) with their School-based Program (SBP) peers. The evaluation helped to determine whether there were observable differences in academic achievement between the two groups.

Key findings include:

- Comparisons of CIRCLE mean scores and proficiency rates indicated that the majority of HISD prekindergarten students, regardless of Pre-K program type, met or surpassed proficiency benchmarks by the end-of-year (EOY), Wave 3 CIRCLE assessment.
- Prekindergarten program type correlated with differences in total mean scores and proficiency rates, with children enrolled in ECCs tending to outperform peers in SBPs on most subtests.
- When demographic indicators, such as economically disadvantaged status, were taken into account, these differences became more apparent, particularly among students tested in English.

Further distribution of this report is at your discretion. Should you have any further questions, please contact me at 713-556-6700.

Carla J. Stevens CJS

Attachment

cc: Grenita Lathan
Gabrielle Coleman

HOUSTON INDEPENDENT SCHOOL DISTRICT

RESEARCH

Educational Program Report

COMPARISONS OF ACADEMIC ACHIEVEMENT AMONG PREKINDERGRARTEN STUDENTS ENROLLED IN HISD EARLY CHILDHOOD CENTERS AND SCHOOL-BASED PROGRAMS, 2016-2017

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COMPARISONS OF ACADEMIC ACHIEVEMENT AMONG PREKINDERGARTEN STUDENTS ENROLLED IN HISD EARLY CHILDHOOD CENTERS AND SCHOOL-BASED PROGRAMS, 2016–2017

Executive Summary

Program Description

In compliance with Texas Education Code § 29.153, the Houston Independent School District (HISD) has provided free prekindergarten classes for eligible Houston area four-year old students since the 1985–1986 school year. Following the growing consensus among educators and scholars that early education programs are a vital resource in equipping children, especially those from disadvantaged backgrounds, for success in school, HISD has looked for ways to further expand, support and develop prekindergarten programs within the district. In 2015, the 84th Texas State Legislature enacted HB 4, which established additional state support for early education programs including authorization for the High Quality Prekindergarten Grant, a program which assists districts by providing funding for the implementation of new, and enhancement of existing, high quality prekindergarten programs. The grant program focuses on certain enhanced quality standards related to curriculum, teacher qualification, academic performance and family engagement. Monies are restricted for use by prekindergarten programs only, but may be used for a range of innovations including the procurement of supplies, materials or educational technologies for classrooms, teacher training and professional development, and family outreach offers, such as the Ready Rosie program, which helps parents learn to model the skills and competencies essential for school success in interactions with their own children. HB4 also added new prekindergarten reporting requirements for participating districts, with requisite data collection beginning during the most recent (2016-2017) school year.

Currently, HISD offers full-day prekindergarten programs to all eligible students within its attendance boundaries. To be eligible for participation in a free prekindergarten program in HISD for the 2016–2017 report year, a child must (1) be four years old on or before September 1; (2) live within the HISD attendance boundary; (3) have an updated immunization record in accordance to state policy for students; and (4) meet at least one of the following criteria:

(a) Be homeless;
(b) Be unable to speak or understand English;
(c) Be economically disadvantaged;
(d) Be the child of an active-duty member of the U.S. military or one who has been killed, injured, or missing in action while on duty;
(e) Is or ever has been the conservatorship of the Department of Family and Protective Services following an adversary hearing held as provided by Section 262.201. Family code; or
(f) Meet any eligibility criteria for Head Start, not only those who meet the low-income eligibility criteria for Head Start.

Children who meet the above criteria are determined by the Texas Legislature to be the most at risk for school failure, and therefore need more assistance to become school ready by the time they reach

kindergarten. Additionally, HISD also offers prekindergarten classes on a tuition basis to children who do not meet the above eligibility requirements. If space is available at a given school, children can be enrolled into an HISD prekindergarten on a tuition basis only after all students eligible for free Pre-K have been accommodated. A campus can also enroll up to five three-year-old students after all eligible four-year old students have been enrolled and if space is available (HISD, 2016a).

Once enrolled, children are placed into either an early childhood center (ECC) or a school-based program (SBP; early childhood center within a school). Home language surveys are also administered to children's parents or guardians in order to place them in a linguistically-appropriate HISD prekindergarten classroom (i.e., Transitional Bilingual, English as a Second Language, English, or Dual Language). With the exception of Montessori schools within HISD, the district uses *the Frog Street Pre-K (FSPK)* curriculum. The *Frog Street Pre-K* curriculum focuses on the physical, social, emotional, cognitive, and language development of preschool-age children (Schiller, n.d.). The quality of implementation of education curriculum affects children's future academic success. Presently, the HISD operates 155 campuses that provide instruction for young children (Houston Independent School District [HISD], 2016a).

Overview

Pursuant to the accountability requirements set down by Texas HB4 and the High Quality Prekindergarten Grant, this report describes how well HISD early childhood centers (ECC) and school-based programs (SBP) are preparing young children to be school ready. Specifically, this report compared the language, literacy, and mathematics mean scores and proficiency levels of prekindergarten students who were enrolled in ECCs to those of their peers enrolled in SBPs during the 2016–2017 school year.

Academic proficiency was measured using scores from the CIRCLE Assessment (formerly known as C-PALLS+), a test battery developed by the Children's Learning Institute (CLI) at the University of Texas's McGovern Medical School. CIRCLE subtests measure skills in early language acquisition, literacy, mathematics, and social and emotional skills through interactive, classroom-based activities. During the 2016-2017 school year, HISD prekindergarten students were administered a total of seventeen CIRCLE language, literacy and mathematics subtests across three testing waves, the first at the beginning of the school year (BOY; Wave 1), the second at the middle of the school year (MOY; Wave 2), and the final at the end of the school year (EOY; Wave 3). Since not all subtests are administered in all three testing waves, this report isolates data from fourteen English-language, and thirteen Spanish-language, tests of mathematics, literacy, and language arts administered during Wave 3 (EOY), so as to better measure the impact of Pre-K program type on student progress.

Highlights

- Comparisons of CIRCLE mean scores as well as proficiency rates indicate that majorities of HISD prekindergarten students, regardless of subtest and Pre-K program type, met or surpassed proficiency benchmarks by the end of year (EOY) Wave 3 CIRCLE assessments.

- Prekindergarten program type was observed to correlate with differences in total mean scores, with children enrolled in early childhood centers (ECCs) tending to achieve higher total means than peers in school-based programs (SBPs) on most subtests.

- Prekindergarten program type was also observed to correlate with differences in proficiency rates, with

children enrolled in ECCs tending to be more likely than students in SBPs to meet or exceed minimum score benchmarks on most subtests. When demographic indicators, such as economically disadvantaged (EDA) status, were taken into account, these differences became more apparent, particularly among students tested in English.

- Differences in both mean scale scores and proficiency rates between ECC and SBP-enrolled students were larger among English-language test-takers than among students tested in Spanish. Moreover, students who took the CIRCLE assessment in Spanish generally performed better, with Spanish-language test-takers more likely to meet or exceed proficiency benchmarks across all subtests than those students tested in English.

Recommendations

- The Early Childhood Department may want to identify and monitor factors that impact the educational experiences of students once they enroll in HISD Pre-K programs to provide further insight as to why students enrolled in ECC-based programs tended to achieve higher proficiency in language, literacy, and mathematics across most subtests than did students in SBPs.

- The Early Childhood Department may want to do further research aimed at determining why English-language test takers tend to show lower CIRCLE subtest proficiency rates when compared to Spanish-language test-takers. The Department may also want to identify factors that cause English-language test-takers to apparently derive more benefit from ECC-based programs compared both to peers in SBPs and to Spanish-language test-takers.

- The Early Childhood and Research and Accountability departments should consider monitoring the academic growth and achievement gaps of students in the context of demographic characteristics and content area.

- The Early Childhood Department may consider working with the Student Assessment Department, Special Education Department and/or Research and Accountability Department to identify and implement with fidelity an inclusive, monitored assessment to measure all children's strengths, progress, and needs upon entering and exiting HISD prekindergarten programs.

Introduction

Researchers suggest that high-quality early childhood centers (ECC) promote students' school readiness, enhance students' cognitive development, and reduce the risk of students' having reading and writing difficulties as they progress through school (see Butin & Woolums, 2009). School readiness refers to children being prepared to succeed in a structured learning setting (United Nations Children's Fund [UNICEF], 2012). While school readiness is important for all children, it is especially important for vulnerable and disadvantaged populations, including "girls, children with disabilities, ethnic minorities, and those living in rural areas" (UNICEF, 2012, p. 9). Students from disadvantaged backgrounds gain the most benefits from early childhood programs when compared to their non-disadvantaged peers (Brooks-Gunn, 2003; Currie, 2000; Gormley, Gayer, Phillips, & Dawson, 2005; Magnuson, Ruhm, & Waldfogel, 2007). Researchers suggest students who attend prekindergarten have higher completion rates in high school and lower dropout rates than their disadvantaged peers who did not attend preschool (see Currie, 2000;

UNICEF, 2012). Review of the literature concurs that the beneficial effects of an early childhood education are typically larger for disadvantaged youth compared to their non-disadvantaged peers (Currie, 2000).

The rising number of early childhood centers (ECCs) was in part attributed to the brain research highlighting the integral role early childhood education has in promoting the healthy development of children (Center on the Developing Child at Harvard University, 2010). HISD provided the following eight ECCs focused on serving young children (not to exceed second grade) during the 2016–2017 school year: Bellfort; Farias; Fonwood; Halpin; Martin Luther King, Jr.; Laurenzo; Mistral; and Neff. Early childhood centers within schools, hereafter referred to as school-based programs (SBP), were also offered at HISD bringing the total number of campuses that provide instruction to young children to 155 (HISD, 2016a).

The purpose of this evaluation is to meet reporting requirements established by Texas HB4 and the High Quality Prekindergarten Grant, as well as to provide HISD and early childhood stakeholders with information about the academic achievement of HISD prekindergarten students who attended either an ECC or SBP during the 2016–2017 school year. This observational study answered the following research questions:

1. How well do students perform in tests of language, literacy, and mathematics skills, as measured by the HISD CIRCLE assessment, by the end of one year of prekindergarten instruction?

2. What were the differences in CIRCLE mean scores between HISD prekindergarten students who attended an early childhood center compared to students who enrolled in a school-based program during the 2016–2017 school year?

3. What were the differences in CIRCLE proficiency rates between HISD prekindergarten students who attended an early childhood center compared to students who enrolled in a school-based program during the 2016–2017 school year?

4. What were the differences in CIRCLE proficiency attainment and mean scores between HISD prekindergarten students when prekindergarten program type and demographic variables, such as economically disadvantaged (EDA) status, were taken into account?

Methods

Data Collection

- Data collection for prekindergarten students who were enrolled in an HISD prekindergarten program during the 2016–2017 school year was conducted in two phases. The first phase of data collection identified all prekindergarten students (coded 'PK') who attended HISD during the 2016–2017 school year. This information, retrieved from the Public Education Information Management System (PEIMS) 2016–2017 HISD student database, revealed that 14,664 Pre-K students attended HISD.

- The second phase of data collection involved merging students' PEIMS data to their academic data located in the HISD CIRCLE 2016–2017 student database. "The CIRCLE assessment is a revision of the Center for Improving the Readiness of Children for Learning and Education (CIRCLE) Phonological Awareness Language and Literacy System that now incorporates Science, Technology, Engineering and Math skills [(C-PALLS+STEM)]" (Landry, Assel, Williams, Zucker, Swank, & Gunnewig, 2014, p. 2).

Sample

- The PEIMS 2016–2017 HISD student database includes 14,664 prekindergarten students who had an Average Daily Attendance (ADA) eligibility classification greater than '0'-enrolled, no membership. After merging the PEIMS 2016–2017 HISD student database with the HISD CIRCLE 2016–2017 student database, and removing students who had either incomplete, no scores or had not achieved a minimum score greater than zero on the language, literacy, and mathematics subtests on the 2017 end-of-year (EOY) tests, the size of the sample evaluated in this report was reduced. Score totals for each subtest are listed in **Appendices C, D, E** and **F-Tables 1** to **8 (pp. 23-49),** however because some students may have been administered particular subtests more than once, and because some students may have been tested in both English and Spanish, these figures may render overestimates of actual counts of students tested.

- Data retrieved from PEIMS represent a 'snapshot' of students who were enrolled by the last Friday in October of each school year in HISD (Texas Education Agency [TEA], 2016a). Students present for the 'snapshot' may not have been actively enrolled in a specific HISD prekindergarten program the entire year. In contrast, students who were not present during the 'snapshot' may have actually enrolled later into a program, but were not identified as having attended either a SPB or ECC during the 2016–2017 school year. Because these students were most likely not present for each assessment wave, they were not included in this report.

Measures

- The academic achievement of HISD prekindergarten students was measured on the CIRCLE assessment. CIRCLE is an online assessment tool designed to monitor the academic progress of prekindergarten children ages three years and six months to four years and eleven months. HISD currently uses this criterion-referenced assessment to determine children's understanding in the areas of language, literacy, and mathematics. All CIRCLE assessments may be given in either English or Spanish with the exception of the Onset-Rime subtest, which is only administered in English (see **Appendix C**, **Table 4, p. 26**). The 2017 end-of-year (EOY) testing wave consisted of the following CIRCLE language and literacy subtests: ABC Names, ABC Sounds, Alliteration, Onset-Rime (English only), Rapid Vocabulary, Rhyming I, Syllabication, and Words in a Sentence. Mathematics subtests administered during the 2017 EOY testing wave included: Counting Sets, Number Naming, Operations, Patterns, Rote Counting, and Shape Naming. **Appendix A (p. 21)** shows the complete list of subtests HISD administered to students during the 2016–2017 school year.

- English and Spanish versions of the CIRCLE assessment were administered three times a year to HISD prekindergarten students depending on their instructional program. Assessment "waves" occurred at the beginning-of-year (BOY; Wave 1), middle-of-year (MOY; Wave 2), and end-of-year (EOY; Wave 3). End of year (EOY) cut-point scores are provided in **Table 1 (p. 6)**. If a student scored at or above the cut-point score determined for an academic domain, she or he was considered proficient in that area. If a student scored below the cut point, she or he was considered either 'developing' (referring to students younger than four years old) or 'emerging' (referring to students four years old and older), and therefore at academic risk (Landry et al., 2014).

Table 1. Cut-Point Scores on the HISD CIRCLE EOY Assessments by Subtest and Test Language

Subtest: Language and Literacy	**English**	**Spanish**
ABC Names	40	40
ABC Sounds	40	40
Rapid Vocabulary	22	16
Syllabication	6	5
Onset-Rime	3	Not tested
Alliteration	6	5
Rhyming I	7	5
Words in a Sentence	4	3
Subtest: Mathematics	**English**	**Spanish**
Patterns	3	3
Rote Counting	2	2
Shape Naming	4	4
Number Naming	3	3
Counting Sets	4	4
Operations	3	3

Source. Adapted from Children's Learning Institute (September 2016). *CIRCLE Progress Monitoring Cut Points*. University of Texas Children's Learning Institute: Houston, TX.

Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).

- The demographic characteristics of HISD prekindergarten students used for this report were collected from the PEIMS 2016–2017 HISD student database. Characteristics included gender, ethnicity, economically-disadvantaged status, special education eligibility status, limited English proficient (LEP) status, and at-risk status. HISD defines at-risk students as individuals who have an increased likelihood of dropping out of school. It is a composite measure based on the thirteen indicators shown in **Appendix B (p. 22).**

Statistical Analyses

- Summary statistics (i.e., count, mean, standard deviation, and percent) were computed to determine whether or not prekindergarten students were proficient in language, literacy, and mathematics by the end-of-year (EOY) on the HISD CIRCLE English and Spanish subtests.

- Effect sizes were also computed to measure the magnitude HISD early childhood centers (ECC) had on students' academic achievement when compared to students who attended a school-based program (SBP) using Hedge's g. Hedge's g is a standard deviation-based measure used to compute the effect size for different sample sizes. Hedge's g follows similar criteria to Cohen's d for determining the strength of an intervention with an effect size of 0.2 = small effect, 0.5 = moderate effect, and 0.8 = large effect.

- Data were not examined to determine if children participated in either an ECC or school-based program in years prior to 2016–2017. Thus, findings should be interpreted as the average impact of prekindergarten programs compared to each other (Zhai, Brooks-Gunn, & Waldfogel, 2011).

Limitations

- The information in this report was collected for HISD prekindergarten students identified as 'PK' only in the PEIMS 2016–2017 HISD student database. The population of students identified as receiving prekindergarten instruction may be an underestimate as HISD students coded as 'EE' during 2016–2017 may have also received some Pre-K instruction.

- Academic measures retrieved for prekindergarten students eligible for special education services may not truly reflect their 2016–2017 academic outcomes as a number of three and four-year-old students who attended ECCs and SBPs were coded as 'EE' during the 2016–2017 school year, and were therefore not included in the study sample.

- The information in this report was primarily examined in the context of academic outcomes, demographic characteristics, and prekindergarten program type. Because no components of the prekindergarten programs were included in this report, variance explained by predictor variables in statistical models were limited.

- The CIRCLE assessment was "not designed or evaluated for use for children with disabilities, e.g., language delays, [autism] spectrum disorders, or intellectual disabilities" (Landry et al., 2014, p. 4). As such, HISD currently does not have an inclusive assessment to monitor all children's strengths, progress, and needs upon entering and exiting prekindergarten programs (National Association for the Education of Young Children & National Association of Early Childhood Specialists in State Departments of Education [NAEYC & NAECS/SDE], 2003). Caution should be exercised, therefore, when interpreting results in the context of special education status.

Results

How well do students perform in tests of language, literacy, and mathematics skills, as measured by the HISD CIRCLE assessment, by the end of one year of prekindergarten instruction?

Table 2. Academic Achievement of HISD Prekindergarten Students on the EOY HISD CIRCLE Assessment by Subtest and Testing Language, 2016–2017

		English			Spanish		
Subtest type	**Subtest**	**n**	**Mean**	**SD**	**n**	**Mean**	**SD**
Language and Literacy	ABC Names	7,293	43.3	13.7	5,098	45.5	12.9
	ABC Sounds	7,000	40.4	14.2	4,993	44.2	13.5
	Alliteration	7,282	5.5	1.6	5,013	5.7	1.6
	Onset-Rime	6,669	4.0	1.3	N/A	N/A	N/A
	Rapid Vocabulary	7,530	24.3	9.7	5,095	21.3	9.6
	Rhyming I	7,311	7.0	1.9	5,063	7.3	1.9
	Syllabication	7,200	5.9	1.6	4,993	6.1	1.5
	Words in a Sentence	6,973	4.0	1.3	4,789	3.6	1.4
Mathematics	Counting Sets	6,612	4.5	0.9	5,755	4.6	0.8
	Number Naming	6,342	3.9	1.2	5,483	4.0	1.2
	Operations	6,173	2.6	0.6	5,491	2.7	0.6
	Patterns	6,109	3.4	0.9	5,659	3.4	0.9
	Rote Counting	6,331	1.8	0.4	5,540	1.8	0.4
	Shape Naming	6,668	4.5	0.9	5,775	4.4	1.0

Source: HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note: If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scored below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).
Note: Students who scored on average below the cut points are highlighted in gold.

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Table 2 shows descriptive statistics based on students' mean scores on the 2016–2017 HISD CIRCLE assessment, broken down by test language version and subtest. Subtests for which the average mean score falls below the proficiency benchmark cut-off point (see Table 1, p. 6) are highlighted in gold.

- The data show that HISD prekindergarten students' average scores exceed proficiency benchmarks by the end-of-year (EOY) testing wave in all but four of fourteen subtests for English-language test-takers and two of thirteen for students who took the assessment in Spanish.

- However, it is important to note that a score of two points is both the proficiency benchmark score and maximum possible score for the Rote Counting subtest, and a score of three points is both the maximum possible and proficiency score for the Operations subtest. Therefore, the "below proficiency" averages for these two subtests should be interpreted with caution as population means should be expected to fall below the proficiency benchmark for all groups but those with uniformly perfect scores.

What were the differences in CIRCLE mean scores between HISD prekindergarten students who attended an early childhood center compared to students who enrolled in a school-based program during the 2016–2017 school year?

Table 3. Academic Achievement of HISD Prekindergarten Students on the EOY HISD CIRCLE English and Spanish Language and Literacy Assessments Based on Prekindergarten Program and Subtest Type, 2015–2016

		Early Childhood Center (ECC)			School-based Program (SBP)				
Subtest type	**Subtest**	**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
English Language and Literacy	ABC Names	1,097	44.4	13.0	6,196	43.1	13.9	1.3	0.09
	ABC Sounds	1,054	42.4	14.2	5,946	40.0	14.9	2.4	0.16
	Alliteration	1,066	5.8	1.5	6,216	5.4	1.6	0.4	*0.25**
	Onset-Rime	997	4.1	1.3	5,672	4.0	1.3	0.1	0.08
	Rapid Vocabulary	1,105	26.9	9.8	6,425	23.9	9.6	3.0	*0.31**
	Rhyming I	1,069	7.4	1.8	6,242	7.0	1.9	0.4	*0.21**
	Syllabication	1,071	6.2	1.4	6,129	5.9	1.7	0.3	0.18
	Words in a Sentence	1,047	4.2	1.2	5,926	4.0	1.3	0.2	0.16
Spanish Language and Literacy	ABC Names	1,112	45.9	13.0	3,986	45.4	12.8	0.5	0.04
	ABC Sounds	1,094	44.7	13.8	3,899	44.0	13.5	0.7	0.05
	Alliteration	1,079	5.8	1.6	3,934	5.7	1.5	0.1	0.07
	Rapid Vocabulary	1,110	21.1	8.8	3,995	21.3	9.8	-0.2	-0.02
	Rhyming I	1,084	7.4	1.9	3,979	7.3	1.9	0.1	0.05
	Syllabication	1,079	6.2	1.4	3,914	6.1	1.5	0.1	0.07
	Words in a Sentence	1,034	3.6	1.4	3,755	3.5	1.4	0.1	0.07

Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scored below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).
Note: Students who scored on average below the cut points are highlighted in gold. Assessments for which the Hedges g calculation exceeded the 0.20 cutoff for small effect are italicized and marked with an asterisk.

Table 3 shows descriptive statistics and effect size results based on students' language and literacy achievement on the HISD CIRCLE English and Spanish assessments by prekindergarten program and subtest type.

- Comparisons of cut-point scores (Table 1) and HISD CIRCLE English and Spanish language and literacy subtest results shown in Table 3 indicate that HISD students, on average, met or exceeded the proficiency standard on most assessments regardless of which type of prekindergarten program they attended. The only two exceptions to this were for the English Alliteration subtest, in which the average mean fell below the cut point for students in both early childhood center (ECC) and school-based (SBP)

programs, and for the English Syllabication subtest, in which only SBP students achieved an average below the cut point.

- Data in Table 3 likewise show that pre-kindergarten students enrolled in ECCs tended to achieve comparable or higher mean scores across subtests than did their SBP-enrolled peers, with small effects (Hedges g ≥ 0.2) shown on the English-language Alliteration, Rapid Vocabulary, and Rhyming I subtests.

- **Appendices C (p. 23)**, **D (p. 31)**, **E (p. 38)**, and **F (p. 44)**, **Tables 1** - **8** show students' detailed data on academic achievement by individual subtest, demographic characteristic, and age group.

Table 4. Academic Achievement of HISD Prekindergarten Students on the EOY HISD CIRCLE English and Spanish Mathematics Assessments Based on Prekindergarten Program and Subtest Type, 2016–2017

		Early Childhood Center (ECC)			School-based Program (SBP)				
Subtest type	**Subtest**	**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
English Mathematics	Counting Sets	926	4.6	0.8	5,686	4.5	1.0	0.1	0.10
	Number Naming	894	4.2	1.1	5,448	3.9	1.2	0.3	*0.25**
	Operations	880	2.8	0.5	5,293	2.6	0.6	0.2	*0.34**
	Patterns	918	3.5	0.8	5,191	3.3	0.9	0.2	*0.23**
	Rote Counting	891	1.9	0.3	5,440	1.8	0.4	0.1	*0.29**
	Shape Naming	937	4.7	0.7	5,731	4.5	0.9	0.2	*0.23**
Spanish Mathematics	Counting Sets	1,257	4.6	0.9	4,498	4.7	0.8	-0.1	-0.12
	Number Naming	1,192	4.1	1.2	4,291	4.0	1.2	0.1	0.08
	Operations	1,171	2.7	0.6	4,320	2.7	0.6	0.0	0.00
	Patterns	1,246	3.3	0.9	4,413	3.4	0.8	-0.1	-0.12
	Rote Counting	1,222	1.8	0.4	4,318	1.8	0.4	0.0	0.00
	Shape Naming	1,265	4.5	0.9	4,510	4.4	1.0	0.1	0.10

Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scored below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).
Note: Students who scored on average below the cut points are highlighted in gold. Assessments for which the Hedges g calculation exceeded the 0.20 cutoff for small effect are italicized and marked with an asterisk.

Table 4 shows descriptive statistics and effect size results based on students' mathematics achievement on the HISD CIRCLE English and Spanish assessments by prekindergarten program and subtest type.

- Comparisons of cut-point scores (Table 1, p. 6) and HISD CIRCLE English and Spanish mathematics subtest results shown in Table 4 indicate that HISD students, on average, met or exceeded the proficiency standard on most assessments regardless of which type of prekindergarten program they attended. The only exceptions to this were for the Operations and Rote Counting subtests, in which the average mean for both the English and Spanish-language versions fell below the cut point for students in both program types—although as the proficiency cut point is the same as the maximum

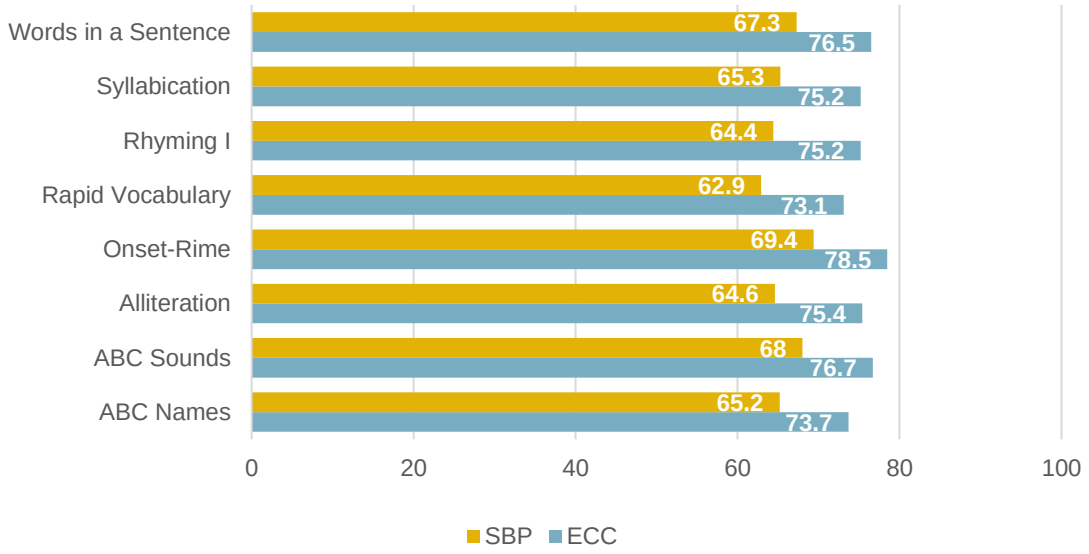
possible score both subtests (see discussion on pg. 8), below-benchmark averages should be expected for these subtests in any population except one with uniformly perfect scores.

- Data in Table 4 likewise show that pre-kindergarten students enrolled in ECCs tended to achieve comparable or higher mean scores across subtests than did their SBP-enrolled peers, with small effects (Hedges g ≥ 0.2) shown on five English-language subtests: Number Naming, Operations, Patterns, Rote Counting, and Shape Naming.

- Appendices C (p. 23), D (p. 31), E (p. 38), and F (p. 44), Tables 1 - 8 show students' detailed data on academic achievement by individual subtest, demographic characteristic, and age group.

What were the differences in CIRCLE proficiency rates between HISD prekindergarten students who attended an early childhood center compared to students who enrolled in a school-based program during the 2016–2017 school year?

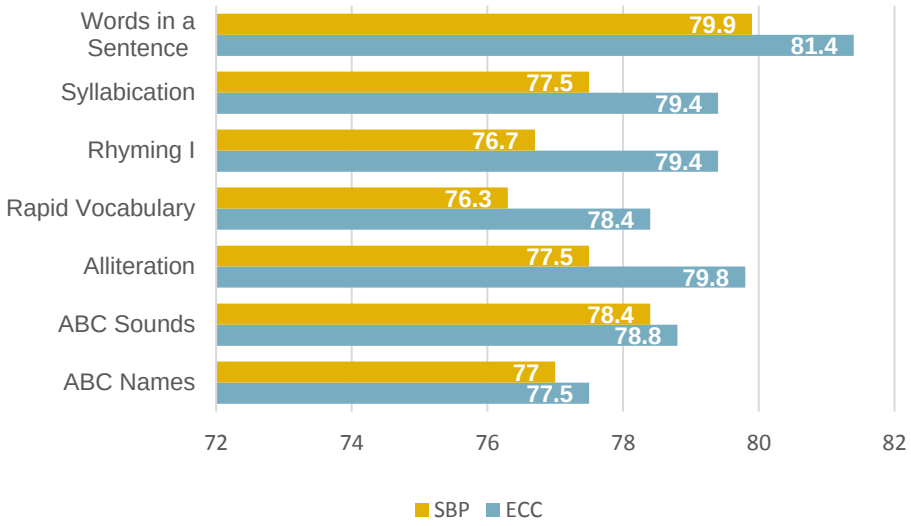
Figure 1. Percent of HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE English Language and Literacy Assessment by subtest and program type



Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).

- As **Figure 1** indicates, more than 60 percent of HISD prekindergarten students, regardless of program type, met or exceeded the proficiency benchmark (see Table 1, p. 6) for all end-of-year (EOY) English CIRCLE language and literacy subtests. However, ECC-enrolled prekindergarten students were more likely to meet these benchmarks than were peers enrolled in school-based programs by an average difference of 9.7 percentage points.

Figure 2. Percent of HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE Spanish Language and Literacy Assessment by subtest and program type



Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).

- **Figure 2** shows the percentage of HISD prekindergarten students who attained proficiency on the end-of-year (EOY) CIRCLE Spanish language and literacy assessments. As with the English language and literature assessments, a majority of students, regardless of Pre-K program type or subtest, met or exceeded this benchmark.

- A comparison with Figure 1 (p. 11) also shows that Spanish-language test takers, regardless of program type, were more likely to meet the proficiency benchmark than peers tested in English (with proficiency rates of greater than 76 percent for all subtests and Pre-K program types).

- Finally, as with the English language and literacy assessments, students enrolled in ECCs were more likely to meet proficiency than were those enrolled in SBPs, though here the distinction was not as stark, with an average difference of 1.5 percentage points across all subtests.

Figure 3. Percent of HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE English Mathematics Assessment by subtest and program type

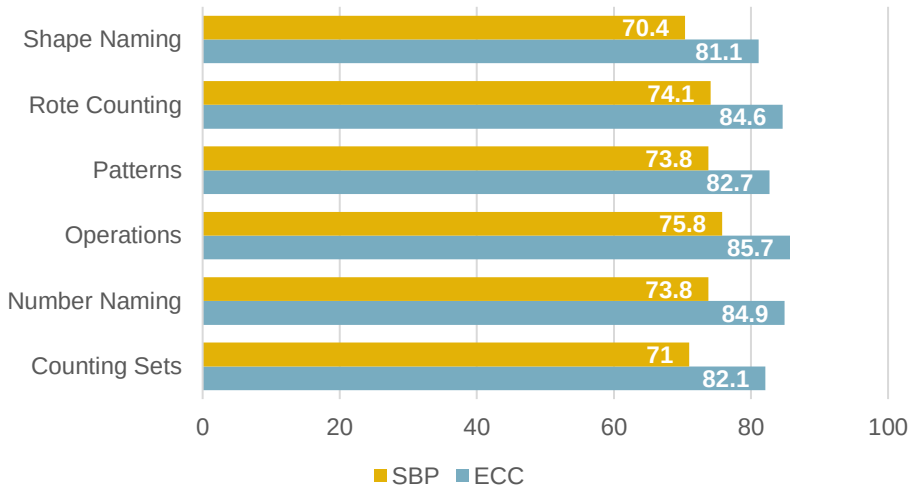
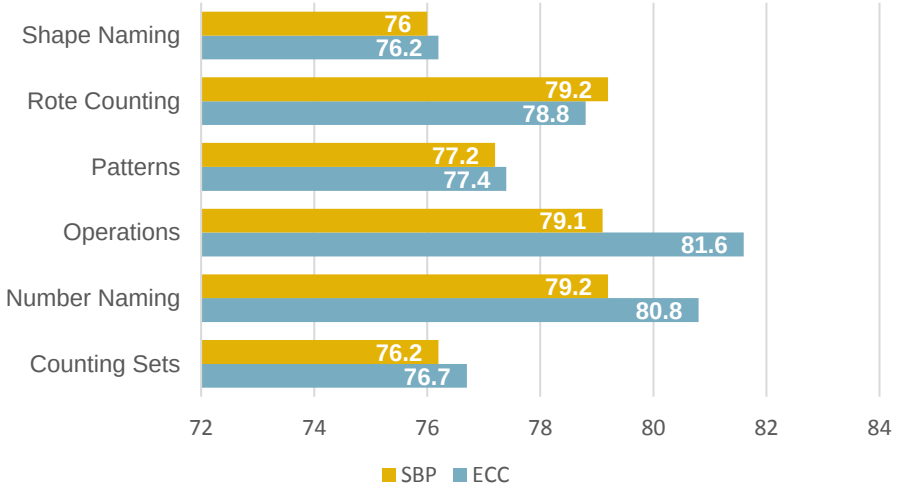


Figure 4. Percent of HISD Prekindergarten Students who met the proficiency benchmark on the EOY CIRCLE Spanish Mathematics Assessment by subtest and program type



Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older).

- CIRCLE English mathematics results illustrated in **Figure 3** indicate that more than 70 percent of all prekindergarten students, regardless of program type, attained proficiency in this assessment by the

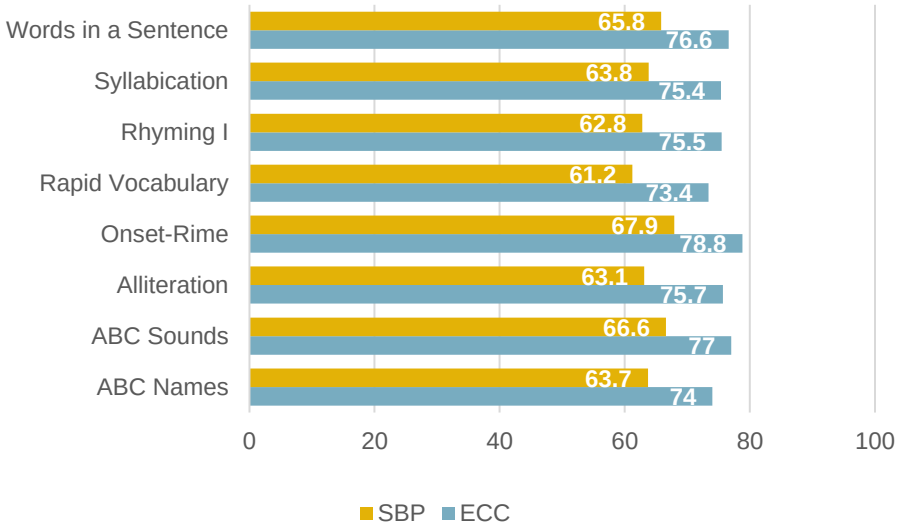
end of year (EOY) testing wave. However, students enrolled in early ECCs were more likely to meet or exceed the proficiency benchmark, by an average of 10.4 percentage points.

- **Figure 4** likewise shows proficiency rates of over 76 percent on the CIRCLE Spanish mathematics assessment, regardless of program type, although students enrolled in ECC programs had slightly higher overall proficiency rates (with the exception of Spanish-language Rote Counting, for which proficiency rates were 0.4 percentage points lower.)

- As with Spanish language and literacy assessments, however, differences in achievement between ECC and SBP-enrolled students were not as large as they were for English language test-takers, averaging out to a 0.8 percentage point advantage for ECC-enrolled students across all subtests.

What were the differences in CIRCLE proficiency attainment and mean scores between HISD prekindergarten students when prekindergarten program type and demographic variables, such as economically disadvantaged (EDA) status, were taken into account?

Figure 5. Percent of economically disadvantaged HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE English Language and Literacy Assessment by subtest and program type

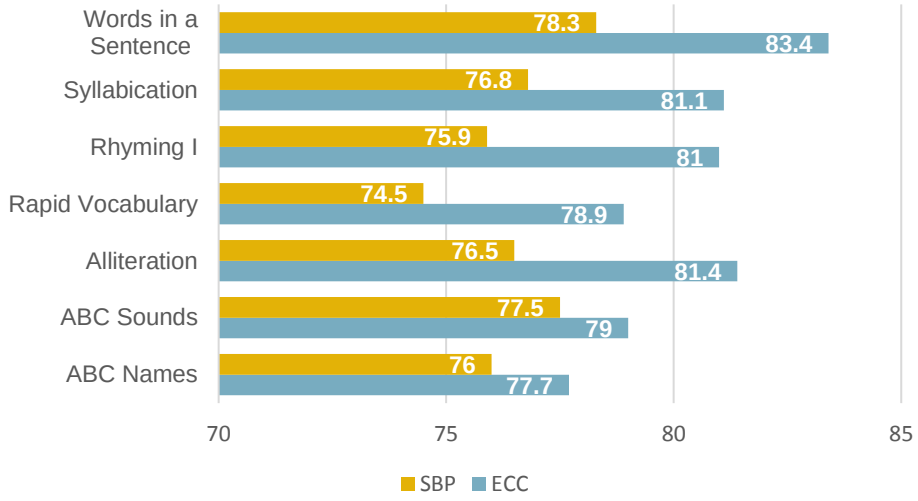


Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for student four years old and older).

Economically disadvantaged (EDA) students represent a majority of the district's total enrollment, with 76.5 percent of all HISD students qualifying for free or reduced-price lunch services (Houston Independent School District [HISD], 2016d). Insofar as the exigent literature concurs that the beneficial effects of an early childhood education are typically larger for disadvantaged youth (Currie, 2000), and because EDA students are a key target demographic for HISD prekindergarten programs, the impact of Pre-K participation on this group is of particular interest.

- **Figure 5** shows the percent of EDA HISD prekindergarten students who met or exceeded the proficiency benchmark on the CIRCLE English language and literacy assessments by prekindergarten program and subtest. While majorities of all EDA students met the proficiency benchmark for each subtest (see Table 1, p. 6), students enrolled in early ECC-based programs showed an 11.4 percentage point difference in proficiency rates compared to peers enrolled in SBPs.

Figure 6. **Percent of economically disadvantaged HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE Spanish Language and Literacy Assessment by subtest and program type**



Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for student four years old and older).

- Percentages of economically disadvantaged (EDA) students who met or exceeded proficiency benchmarks (see Table 1, p. 6) on the end-of year (EOY) CIRCLE Spanish language and literacy assessments are shown in **Figure 6**. While total proficiency rates exceed 70% for all Spanish-language test-takers (and generally exceed those of EDA English-language test-takers, as shown in Figure 5), students enrolled in ECC-based programs met or exceeded the proficiency benchmark across all subtests by an average of 3.7 percentage points when compared to students in SBPs.

Figure 7. Percent of economically disadvantaged HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE English Mathematics Assessment by subtest and program type

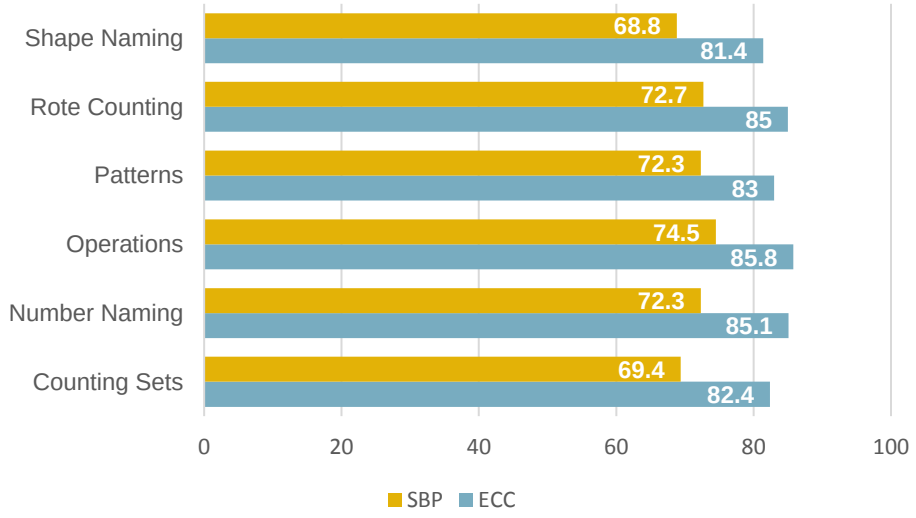
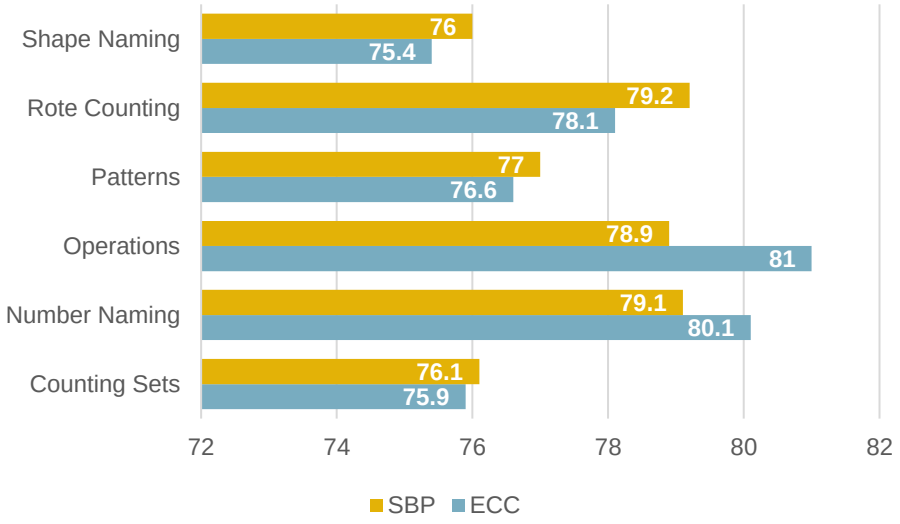


Figure 8. Percent of economically disadvantaged HISD prekindergarten students who met the proficiency benchmark on the EOY CIRCLE Spanish Mathematics Assessment by subtest and program type



Source. HISD CIRCLE 2016–2017 student database; PEIMS 2016–2017 HISD student database.
Note. If a student scores at or above cut points determined for a particular measure, she or he is considered proficient. If a student scores below the benchmark, she or he is considered 'developing' (refers to students younger than four years old) or 'emerging' (for student four years old and older).

- **Figure 7** shows proficiency attainment on the EOY CIRCLE English mathematics assessment by subtest and program type. Overall, more than 68 percent of economically disadvantaged (EDA) students met or exceeded the proficiency benchmarks on each subtest, regardless of program type. However, EDA students enrolled in ECCs demonstrated higher proficiency rates by an average of 12 percentage points.

- **Figure 8** compares proficiency rates on the EOY CIRCLE Spanish mathematics assessment. Pass rates exceed 75% for all EDA students, but here the effect of program type is less clear. EDA students enrolled in SBPs achieved higher proficiency rates in four subtests (Shape Naming, Rote Counting, Patterns, and Counting Sets) by an average of 0.6 percentage points over their ECC enrolled peers, while ECC-enrolled students performed better on two subtests (Operations and Number Naming) by an average of 1.5 percentage points.

Information on mean score differences and hedges g effect size calculations by program status and subtest for other demographic indicators including race, gender, age-group, limited English proficient (LEP), special education, and at-risk status may be found in Appendices C (p. 23), D (p. 31), E (p. 38), and F (p. 44), Tables 1 - 8. This data indicate programmatic differences in mean scores for other demographic variables as well, the most consistent of which were small positive effects for ECC-enrolled black students tested in English.

Discussion

The prekindergarten program is a complex subsystem of early childhood education that is situated within the walls of an elementary school, charged with making and implementing decisions to promote the equitable development, learning, and school readiness of all children. Each child-whatever her or his abilities and differences- should be respected and taken into careful consideration in order for her or him to be included in prekindergarten to the fullest extent with the highest expectations (NAEYC, NAECS/SDE, 2003). For this report, descriptive statistical analyses and effect size computations were used to examine total proficiency rates among HISD prekindergartners on the 2016-2017 end-of-year (EOY) CIRCLE assessments for language, literacy, and mathematics. Total CIRCLE proficiency rates and mean scores were also compared between prekindergartners enrolled in early childhood centers and those enrolled in school-based programs to see if differences in educational environment correlated with assessment outcomes. HISD early childhood centers include Bellfort; Farias; Fonwood; Halpin; Martin Luther King, Jr.; Laurenzo; Mistral; and Neff.

Results from descriptive analyses indicated that majorities of HISD pre-schoolers attain proficiency in language, literacy, and mathematics by the EOY testing wave regardless of subtest, program type, or testing language. Students, particularly those tested in English, who were enrolled in ECC-based programs, tended to show higher mean scale scores and overall proficiency rates than did peers who matriculated in school-based programs. Among students tested in Spanish, these effects were smaller and more mixed. Students tested in Spanish also showed higher overall proficiency rates than those tested in English, although it is not clear to what extent this may be an artifact of content variation between test-language versions or differences in benchmark scores, rather than a result of programmatic differences.

With respect to demographic characteristics, this report includes an examination of CIRCLE proficiency rates for students from economically-disadvantaged (EDA) backgrounds. Data show that, as with the total

prekindergarten population, majorities of EDA students attain proficiency by the end-of-year (EOY) testing wave regardless of subtest, testing language, or program type. However, EDA students enrolled in early childhood centers did lead their school-based program enrolled peers in total proficiency rates across all English-language subtests and all but three of thirteen Spanish-language ones. The impact of demographic characteristics on mean subtest scores are illustrated in Appendices C, D, E and F, Tables 1-8. These show persistent positive effects for ECC-enrollment for black students tested in English as well as more mixed and inconsistent effects (both positive and negative) with respect to other demographic indicators.

Recommendations

- The Early Childhood Department may want to identify and monitor factors that impact the educational experiences of students once they enroll in HISD Pre-K programs to provide further insight as to why students enrolled in ECC-based programs tended to achieve higher proficiency in language, literacy, and mathematics across most subtests than did students in SBPs.

- The Early Childhood Department may want to do further research aimed at determining why English-language test takers tend to show lower CIRCLE subtest proficiency rates when compared to Spanish-language test-takers. The Department may also want to identify factors that cause English-language test-takers to apparently derive more benefit from ECC-based programs compared both to peers in SBPs and to Spanish-language test-takers.

- The Early Childhood and Research and Accountability departments should consider monitoring the academic growth and achievement gaps of students in the context of demographic characteristics and content area.

- The Early Childhood Department may consider working with the Student Assessment Department, Special Education Department and/or Research and Accountability Department to identify and implement with fidelity an inclusive, monitored assessment to measure all children's strengths, progress, and needs upon entering and exiting HISD prekindergarten programs.

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Appendix A

HISD CIRCLE Subtests Administered to Students the 2016–2017 School Year

Wave 1 (BOY): September 25- October 13, 2016; Wave 2 (MOY): January 8- January 31, 2017; Wave 3 (EOY): May 1-25, 2017

Subtest Outside of CIRCLE Progress Monitoring Pre-K	Wave 1 (BOY)	Wave 2 (MOY)	Wave 3 (EOY)
ABC Names (untimed)	X	X	X
ABC Sounds		X	X
Subtest Inside of CIRCLE Progress Monitoring Pre-K	**Wave 1 (BOY)**	**Wave 2 (MOY)**	**Wave 3 (EOY)**
Rapid Vocabulary	X	X	X
Listening	X		
Rhyming I	X	X	X
Alliteration	X	X	X
Words in a Sentence	X	X	X
Syllabication	X	X	X
Onset-Rime *Only in English*	X	X	X
Rote Counting	X	X	X
Shape Naming	X	X	X
Number Naming	X	X	X
Counting Sets	X	X	X
Patterns	X	X	X
Operations		X	X
Positive Social Behaviors	X	X	X
Early Writing Checklist	X	X	X
Book and Print Awareness	X		

Adapted from the *Houston Independent School District CIRCLE Assessment Required Subtests. 2016–2017*

Appendix B

AT-RISK-INDICATOR CODE: Definition

Definition
AT-RISK-INDICATOR-CODE indicates whether a student is currently identified as at-risk of dropping out of school using state-defined criteria only (TEC §29.081, Compensatory and Accelerated Instruction). A student at-risk of dropping out of school includes each student who is under 26 years of age and who: 1. is in prekindergarten, kindergarten or grade 1, 2, or 3 and did not perform satisfactorily on a readiness test or assessment instrument administered during the current school year; 2. is in grade 7, 8, 9, 10, 11, or 12 and did not maintain an average equivalent to 70 on a scale of 100 in two or more subjects in the foundation curriculum during a semester in the preceding or current school year or is not maintaining such an average in two or more subjects in the foundation curriculum in the current semester; 3. was not advanced from one grade level to the next for one or more school years; (Note: From 2010-2011 forward, TEC 29.081 (d-1) excludes from this criteria prekindergarten or kindergarten students who were not advanced to the next grade level as a result of a documented request by the student's parent.) 4. did not perform satisfactorily on an assessment instrument administered to the student under TEC Subchapter B, Chapter 39, and who has not in the previous or current school year subsequently performed on that instrument or another appropriate instrument at a level equal to at least 110 percent of the level of satisfactory performance on that instrument; 5. is pregnant or is a parent; 6. has been placed in an alternative education program in accordance with TEC §37.006 during the preceding or current school year; 7. has been expelled in accordance with TEC §37.007 during the preceding or current school year; 8. is currently on parole, probation, deferred prosecution, or other conditional release; 9. was previously reported through the Public Education Information Management System (PEIMS) to have dropped out of school; 10. is a student of limited English proficiency, as defined by TEC §29.052; 11. is in the custody or care of the Department of Protective and Regulatory Services or has, during the current school year, been referred to the department by a school official, officer of the juvenile court, or law enforcement official; 12. is homeless, as defined NCLB, Title X, Part C, Section 725(2), the term "homeless children and youths", and its subsequent amendments; or 13. resided in the preceding school year or resides in the current school year in a residential placement facility in the district, including a detention facility, substance abuse treatment facility, emergency shelter, psychiatric hospital, halfway house, or foster group home.

Special Instructions
Please note that a student with a disability may be considered to be at-risk of dropping out of school if the student meets one or more of the statutory criteria for being in an at-risk situation that is not considered to be part of the student's disability. A student with a disability is not automatically coded as being in an at-risk situation. Districts should use the student's individualized education program (IEP) and other appropriate information to make the determination.

Retrieved from the Texas Education Agency at http://tea.texas.gov/Reports_and_Data/Data_Submission/PEIMS/PEIMS_Data_Standards/2015-2016

Appendix C

Academic Achievement on HISD CIRCLE English Language and Literacy Subtests

Table 1. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE ABC Names Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,097	44.4	13.0	6,196	43.1	13.9	1.3	0.09
Age Group	3.5-4.0 yrs	200	33.0	18.3	840	30.2	17.9	2.8	0.16
	4.0+	897	47.0	9.9	5,356	45.1	11.9	1.9	0.16
Gender	Female	532	44.7	12.5	3,116	43.6	13.4	1.1	0.08
	Male	565	44.2	13.5	3,080	42.6	14.3	1.6	0.11
Ethnicity	Asian	33	49.4	7.0	331	49.0	8.2	0.4	0.05
	Black	544	47.6	9.4	2,295	43.6	13.7	4.0	*0.31**
	Hispanic	483	40.3	15.6	3,122	41.7	14.5	-1.4	-0.10
	Other	13	50.9	2.0	84	47.1	11.2	3.8	*0.36**
	White	24	46.8	10.9	364	45.4	11.6	1.4	0.12
Economically disadvantaged	No	14	43.0	14.5	535	46.8	11.1	-3.8	*-0.34**
	Yes	1,083	44.5	13.0	5,661	42.7	14.0	1.8	0.13
Special Education eligible	No	1,048	44.6	12.9	6,012	43.2	13.7	1.4	0.10
	Yes	49	41.6	15.6	184	38.6	17.3	3.0	0.18
Limited English Proficient (LEP)	No	995	44.4	13.0	4,943	43.1	13.9	1.3	0.10
	Yes	102	44.5	13.2	1,253	43.0	13.8	1.5	0.11
At risk	No	335	48.0	10.7	1,842	46.9	11.8	1.1	0.09
	Yes	762	42.9	13.6	4,354	41.5	14.3	1.4	0.10

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 2. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE ABC Sounds Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,054	42.4	14.2	5,946	40.0	14.9	2.4	0.16
Age Group	3.5-4.0 yrs	174	29.7	18.8	743	27.1	17.5	2.6	0.15
	4.0+	880	44.9	11.5	5,203	41.9	13.6	3.0	0.15
Gender	Female	512	42.4	14.2	3,009	40.8	14.3	1.6	0.11
	Male	542	42.4	14.2	2,937	39.2	15.6	3.2	*0.21**
Ethnicity	Asian	34	45.8	11.1	327	46.0	10.6	-0.2	-0.02
	Black	533	45.0	9.4	2,179	40.3	15.0	4.7	*0.33**
	Hispanic	451	38.6	16.3	3,000	38.8	15.4	-0.2	-0.01
	Other	13	50.2	3.4	80	45.5	10.5	4.7	*0.47**
	White	23	45.1	12.0	360	42.5	13.0	2.6	*0.20**
Economically disadvantaged	No	14	41.9	12.6	533	44.1	12.3	-2.2	-0.18
	Yes	1,040	42.4	14.2	5,413	39.6	15.1	2.8	0.19
Special Education eligible	No	1,010	42.5	13.9	5,791	40.2	14.8	2.3	0.16
	Yes	44	38.6	17.8	155	35.7	17.6	2.9	0.16
Limited English Proficient (LEP)	No	956	42.3	14.3	4,742	40.0	15.0	2.3	0.15
	Yes	98	43.2	13.3	1,204	40.2	14.9	3.0	*0.20**
At risk	No	326	46.6	11.2	1,779	44.8	12.5	1.8	0.15
	Yes	728	40.5	14.9	4,167	38.0	15.4	2.5	0.16

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 3. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Alliteration Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,066	5.8	1.5	6,216	5.4	1.6	0.4	*0.25**
Age Group	3.5-4.0 yrs	185	4.4	1.6	785	4.3	1.7	0.1	0.06
	4.0+	881	6.0	1.3	5,431	5.6	1.5	0.4	*0.27**
Gender	Female	520	5.8	1.4	3,133	5.5	1.6	0.3	0.19
	Male	546	5.7	1.5	3,083	5.4	1.6	0.3	0.19
Ethnicity	Asian	32	5.6	1.7	332	5.9	1.5	-0.3	*-0.20**
	Black	541	6.0	1.3	2,366	5.5	1.6	0.5	*0.32**
	Hispanic	457	5.4	1.6	3,064	5.3	1.6	0.1	0.06
	Other	13	6.6	0.5	84	6.1	1.3	0.5	*0.40**
	White	23	5.5	1.6	370	6.0	1.5	-0.5	*-0.33**
Economically disadvantaged	No	13	5.5	1.5	540	6.0	1.4	-0.5	*-0.36**
	Yes	1,053	5.8	1.5	5,676	5.4	1.6	0.4	*0.25**
Special Education eligible	No	1,020	5.8	1.5	6,063	5.5	1.6	0.3	0.19
	Yes	46	4.3	2.0	153	4.5	1.7	-0.2	-0.11
Limited English Proficient (LEP)	No	971	5.8	1.5	5,018	5.5	1.6	0.3	0.19
	Yes	95	5.7	1.5	1,198	5.3	1.7	0.4	*0.23**
At risk	No	333	6.1	1.5	1,921	5.9	1.5	0.2	0.13
	Yes	733	5.6	1.5	4,295	5.3	1.6	0.3	0.19

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 4. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Onset-Rime Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		997	4.1	1.3	5,672	4.0	1.3	0.1	0.08
Age Group	3.5-4.0 yrs	151	3.2	1.4	615	3.1	1.5	0.1	0.07
	4.0+	846	4.3	1.1	5,057	4.1	1.3	0.2	0.18
Gender	Female	484	4.1	1.2	2,904	4.0	1.3	0.1	0.16
	Male	513	4.1	1.3	2,768	3.9	1.3	0.2	0.15
Ethnicity	Asian	31	3.9	1.4	309	4.3	1.1	-0.4	*-0.35**
	Black	503	4.3	1.2	2,109	4.0	1.3	0.3	*0.23**
	Hispanic	429	3.8	1.3	2,827	3.8	1.4	0.0	0.00
	Other	13	4.8	0.4	79	4.5	1.0	0.3	*0.32**
	White	21	3.9	1.1	348	4.3	1.1	-0.4	*-0.36**
Economically disadvantaged	No	12	3.8	1.1	515	4.5	1.0	-0.7	*-0.70**
	Yes	985	4.1	1.3	5,157	3.9	1.3	0.2	0.15
Special Education eligible	No	951	4.1	1.3	5,541	4.0	1.3	0.1	0.08
	Yes	46	3.9	1.4	131	3.6	1.4	0.3	*0.21**
Limited English Proficient (LEP)	No	903	4.1	1.3	4,545	4.0	1.3	0.1	0.1
	Yes	94	3.9	1.3	1,127	3.9	1.3	0.0	0.0
At risk	No	310	4.4	1.2	1,775	4.3	1.2	0.1	0.08
	Yes	687	4.0	1.3	3,897	3.8	1.4	0.2	0.14

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 5. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Rapid Vocabulary Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,105	26.9	9.8	6,425	23.9	9.6	3.0	*0.31**
Age Group	3.5-4.0 yrs	208	20.9	8.5	898	17.7	9.2	3.2	*0.35**
	4.0+	897	28.3	9.6	5,527	24.9	9.3	3.4	*0.36**
Gender	Female	537	27.2	9.7	3,215	24.3	9.7	2.9	*0.30**
	Male	568	26.7	9.9	3,210	23.5	9.6	3.2	*0.25**
Ethnicity	Asian	33	20.7	9.9	335	23.6	8.4	-2.9	*-0.34**
	Black	544	29.5	8.6	2,466	25.2	9.6	4.3	*0.46**
	Hispanic	492	24.3	9.9	3,163	22.5	9.7	1.8	0.19
	Other	13	39.8	11.7	86	26.6	8.5	13.2	*1.46**
	White	23	24.3	9.4	375	25.9	9.3	-1.6	-0.17
Economically disadvantaged	No	13	23.0	8.6	543	25.9	8.6	-2.9	*-0.33**
	Yes	1,092	27.0	9.8	5,882	23.7	9.7	3.3	*0.33**
Special Education eligible	No	1,049	27.5	9.4	6,243	24.0	9.6	3.5	*0.37**
	Yes	56	15.5	9.5	182	17.9	10.4	-2.4	*-0.23**
Limited English Proficient (LEP)	No	1,006	27.5	9.6	5,182	24.6	9.5	2.9	*0.30**
	Yes	99	20.7	9.9	1,243	20.6	9.6	0.1	0.01
At risk	No	342	28.9	10.9	1,974	25.9	9.9	3.0	*0.30**
	Yes	763	26.0	9.1	4,451	23.0	9.4	3.0	*0.32**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.

Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 6. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Rhyming I Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,069	7.4	1.8	6,242	7.0	1.9	0.4	*0.21**
Age Group	3.5-4.0 yrs	185	5.8	2.1	804	5.6	2.1	0.2	0.10
	4.0+	884	7.7	1.6	5,438	7.2	1.8	0.5	*0.28**
Gender	Female	524	7.5	1.8	3,142	7.1	1.9	0.4	*0.21**
	Male	545	7.3	1.8	3,100	6.9	2.0	0.4	*0.20**
Ethnicity	Asian	33	7.2	1.9	332	7.4	1.8	0.2	-0.11
	Black	538	7.8	1.6	2,375	7.1	1.9	0.7	*0.38**
	Hispanic	462	6.9	2.0	3,078	6.7	2.0	0.2	0.10
	Other	13	8.5	0.8	84	7.9	1.5	0.6	*0.42**
	White	23	7.1	1.6	373	7.6	1.7	-0.5	*-0.29**
Economically disadvantaged	No	13	6.9	2.3	542	7.8	1.7	-0.9	*-0.52**
	Yes	1,056	7.4	1.8	5,700	6.9	1.9	0.5	*0.27**
Special Education eligible	No	1,026	7.5	1.8	6,092	7.0	1.9	0.5	*0.27**
	Yes	43	6.0	2.0	150	5.8	2.1	0.2	0.10
Limited English Proficient (LEP)	No	973	7.4	1.8	5,039	7.0	1.9	0.4	*0.21**
	Yes	96	7.2	1.7	1,203	6.8	2.0	0.4	*0.20**
At risk	No	333	7.8	1.7	1,918	7.3	1.9	0.5	*0.27**
	Yes	736	7.2	1.9	4,324	6.8	1.9	0.4	*0.21**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 7. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Syllabication Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,071	6.2	1.4	6,129	5.9	1.7	0.3	0.18
Age Group	3.5-4.0 yrs	189	5.2	2.1	761	4.5	2.0	0.7	*0.35**
	4.0+	882	6.5	1.1	5,368	6.1	1.5	0.4	*0.28**
Gender	Female	524	6.3	1.4	3,092	5.9	1.6	0.4	*0.25**
	Male	547	6.2	1.5	3,036	5.8	1.7	0.4	*0.24**
Ethnicity	Asian	31	6.1	1.7	329	6.2	1.4	-0.1	-0.07
	Black	539	6.6	1.0	2,332	5.9	1.7	0.7	*0.44**
	Hispanic	467	5.9	1.7	3,017	5.8	1.7	0.1	0.06
	Other	13	6.9	0.4	83	6.4	1.2	0.5	*0.45**
	White	21	6.3	1.1	368	6.2	1.4	0.1	0.07
Economically disadvantaged	No	12	6.0	2.0	537	6.2	1.4	-0.2	-0.14
	Yes	1,059	6.2	1.4	5,592	5.9	1.7	0.3	0.18
Special Education eligible	No	1,025	6.3	1.4	5,979	5.9	1.6	0.4	*0.25**
	Yes	46	4.7	2.1	150	5.0	2.0	-0.3	-0.15
Limited English Proficient (LEP)	No	977	6.3	1.4	4,941	5.9	1.7	0.4	*0.24**
	Yes	94	6.1	1.6	1,188	5.9	1.6	0.2	0.13
At risk	No	333	6.4	1.4	1,896	6.1	1.6	0.3	0.19
	Yes	738	6.2	1.4	4,233	5.8	1.7	0.4	*0.24**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 8. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Words in a Sentence Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,047	4.2	1.2	5,926	4.0	1.3	0.2	0.16
Age Group	3.5-4.0 yrs	176	3.5	1.5	716	3.1	1.5	0.4	*0.27**
	4.0+	871	4.3	1.1	5,210	4.1	1.2	0.2	0.17
Gender	Female	513	4.2	1.2	2,999	4.0	1.2	0.2	0.16
	Male	534	4.1	1.2	2,927	4.0	1.3	0.1	0.08
Ethnicity	Asian	32	3.8	1.5	324	4.3	1.1	-0.5	*-0.44**
	Black	532	4.4	1.0	2,250	4.0	1.3	0.4	*0.32**
	Hispanic	448	3.9	1.3	2,905	3.9	1.3	0.0	0.00
	Other	13	4.8	0.4	84	4.4	1.0	0.4	*0.42**
	White	22	3.9	1.4	363	4.3	1.0	-0.4	*-0.39**
Economically disadvantaged	No	11	3.9	1.6	520	4.4	1.0	-0.5	*-0.49**
	Yes	1,036	4.2	1.2	5,406	4.0	1.3	0.2	0.16
Special Education eligible	No	1,005	4.2	1.1	5,793	4.0	1.3	0.2	0.16
	Yes	42	3.1	1.4	133	3.5	1.5	-0.4	*-0.27**
Limited English Proficient (LEP)	No	954	4.2	1.2	4,768	4.0	1.3	0.2	0.16
	Yes	93	3.8	1.4	1,158	3.9	1.3	-0.1	-0.08
At risk	No	327	4.5	1.0	1818	4.2	1.2	0.3	*0.26**
	Yes	720	4.0	1.2	4,108	3.9	1.3	0.1	0.08

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Appendix D

Academic Achievement on HISD CIRCLE Spanish Language and Literacy Subtests

Table 1. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE ABC Names Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,112	45.9	13.0	3,986	45.4	12.8	0.5	0.04
Age Group	3.5-4.0 yrs	208	32.7	17.3	341	31.8	17.2	0.9	0.05
	4.0+	904	49.0	9.5	3,645	46.7	11.5	2.3	*0.21**
Gender	Female	580	45.5	13.3	2,061	45.7	12.8	-0.2	-0.02
	Male	532	46.3	12.7	1,925	45.1	12.9	1.2	0.09
Ethnicity	Asian	-	-	-	3	*	*	0.0	*
	Black	3	*	*	61	44.7	12.1	*	*
	Hispanic	1,101	45.9	13.0	3,892	45.4	12.8	0.5	0.04
	Other	4	*	*	4	*	*	*	*
	White	4	*	*	26	42.8	13.3	*	*
Economically disadvantaged	No	76	47.4	11.3	222	44.6	14.2	2.8	*0.21**
	Yes	1,036	45.8	13.1	3,764	45.4	12.7	0.4	0.03
Special Education eligible	No	1,098	45.8	13.1	3,918	45.4	12.8	0.4	0.03
	Yes	14	50.1	8.9	68	42.4	15.5	7.7	*0.50**
Limited English Proficient (LEP)	No	34	44.8	13.5	309	43.0	14.3	1.8	0.13
	Yes	1078	45.9	13.0	3,677	45.6	12.7	0.3	0.02
At risk	No	6	38.2	16.6	49	44.8	14.7	-6.6	*-0.44**
	Yes	1,106	45.9	13.0	3,937	45.4	12.8	0.5	0.04

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 2. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE ABC Sounds Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,094	44.7	13.8	3,899	44.0	13.5	0.7	0.05
Age Group	3.5-4.0 yrs	202	31.3	18.4	327	27.5	17.2	3.8	*0.21**
	4.0+	892	47.7	10.3	3,572	45.5	12.0	2.2	0.19
Gender	Female	573	44.0	14.3	2,012	44.5	13.3	-0.5	-0.04
	Male	521	45.4	13.1	1,887	43.5	13.7	1.9	0.14
Ethnicity	Asian	-	-	-	3	*	*	-	*
	Black	3	*	*	58	45.8	11.2	*	*
	Hispanic	1,083	44.7	13.8	3,810	44.0	13.5	0.7	0.05
	Other	4	*	*	4	*	*	*	*
	White	4	*	*	24	41.0	14.7	*	*
Economically disadvantaged	No	76	46.9	11.6	218	44.3	14.1	2.6	0.19
	Yes	1,018	44.5	14.0	3,681	44.0	13.4	0.5	0.04
Special Education eligible	No	1,080	44.7	13.8	3,833	44.1	13.4	0.6	0.04
	Yes	14	44.0	15.4	66	40.5	15.7	3.5	*0.22**
Limited English Proficient (LEP)	No	32	45.8	13.2	297	42.4	14.1	3.4	*0.24**
	Yes	1062	44.7	13.8	3,602	44.1	13.4	0.6	0.04
At risk	No	4	*	*	46	41.8	16.5	*	*
	Yes	1090	44.7	13.8	3,853	44.0	13.4	0.7	0.05

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 3. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Alliteration Spanish Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,097	5.8	1.6	3,934	5.7	1.5	0.1	0.07
Age Group	3.5-4.0 yrs	193	4.4	1.9	324	4.3	1.6	0.1	0.06
	4.0+	886	6.1	1.3	3,610	5.8	1.5	0.3	0.21*
Gender	Female	565	5.7	1.7	2,034	5.7	1.5	0.0	0.00
	Male	514	5.8	1.5	1,900	5.6	1.6	0.2	0.13
Ethnicity	Asian	-	-	-	2	*	*	*	*
	Black	1	*	*	54	5.9	1.3	*	*
	Hispanic	1,070	5.8	1.6	3,850	5.7	1.5	0.1	0.07
	Other	4	*	*	4	*	*	*	*
	White	4	*	*	24	5.0	1.8	*	*
Economically disadvantaged	No	75	6.2	1.3	219	5.6	1.5	0.6	0.41*
	Yes	1,004	5.7	1.6	3,715	5.7	1.5	0.0	0.00
Special Education eligible	No	1,068	5.8	1.6	3,868	5.7	1.5	0.1	0.07
	Yes	11	5.6	1.8	66	5.1	1.6	0.5	0.30*
Limited English Proficient (LEP)	No	22	6.0	1.6	283	5.7	1.5	0.3	0.20*
	Yes	1,057	5.8	1.6	3,651	5.7	1.5	0.1	0.07
At risk	No	6	6.0	1.3	46	5.8	1.7	0.2	0.12
	Yes	1,073	5.8	1.6	3,888	5.7	1.5	0.1	0.07

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 4. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Rapid Vocabulary Spanish-Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,110	21.1	8.8	3,995	21.3	9.8	-0.2	-0.02
Age Group	3.5-4.0 yrs	207	16.6	8.7	362	17.4	8.6	-0.8	-0.09
	4.0+	893	22.2	8.5	3,633	21.7	9.8	0.5	0.05
Gender	Female	574	21.4	8.8	2,069	21.4	9.7	0.0	0.00
	Male	526	20.8	8.8	1,926	21.2	9.8	-0.4	-0.04
Ethnicity	Asian	-	-	-	2	*	*	-	*
	Black	1	*	*	52	13.5	8.4	*	*
	Hispanic	1,091	21.2	8.8	3,914	21.5	9.7	-0.3	-0.03
	Other	4	*	*	4	*	*	*	*
	White	4	*	*	23	15.4	9.1	*	*
Economically disadvantaged	No	76	24.6	10.2	222	19.8	9.4	4.8	*0.50**
	Yes	1,024	20.9	8.6	3,773	21.4	9.8	-0.5	-0.05
Special Education eligible	No	1,086	21.2	8.8	3,928	21.3	9.7	-0.1	-0.01
	Yes	14	17.0	8.6	67	21.0	11.8	-4.0	*-0.35**
Limited English Proficient (LEP)	No	22	18.4	8.9	289	16.1	10.5	2.3	*0.22**
	Yes	1,078	21.2	8.8	3,706	21.7	9.6	-0.5	-0.05
At risk	No	6	16.5	5.4	48	19.4	10.9	-2.9	*-0.27**
	Yes	1,094	21.2	8.8	3,947	21.3	9.7	-0.1	-0.01

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 5. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Rhyming I Spanish-Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,084	7.4	1.9	3,979	7.3	1.9	0.1	0.05
Age Group	3.5-4.0 yrs	196	5.6	2.2	329	5.8	2.1	-0.2	-0.09
	4.0+	888	7.8	1.6	3,650	7.4	1.8	0.4	*0.23**
Gender	Female	569	7.3	2.0	2,054	7.3	1.8	0.0	0.00
	Male	515	7.4	1.8	1,925	7.2	1.9	0.2	0.11
Ethnicity	Asian	-	-	-	3	*	*	*	*
	Black	1	*	*	55	7.5	1.9	*	*
	Hispanic	1,076	7.4	1.9	3,893	7.3	1.9	0.1	0.05
	Other	3	*	*	4	*	*	*	
	White	4	*	*	24	6.9	2.2	*	*
Economically disadvantaged	No	76	7.7	1.8	225	7.4	1.8	0.3	0.17
	Yes	1,008	7.3	1.9	3,754	7.3	1.9	0.0	0.00
Special Education eligible	No	1,074	7.4	1.9	3,914	7.3	1.9	0.1	0.05
	Yes	10	7.3	2.1	65	6.8	1.8	0.5	*0.27**
Limited English Proficient (LEP)	No	22	7.6	1.7	289	7.1	1.9	0.5	*0.26**
	Yes	1,062	7.4	1.9	3,690	7.3	1.9	0.1	0.05
At risk	No	6	6.8	1.7	47	7.5	1.6	-0.7	*-0.43**
	Yes	1,078	7.4	1.9	3,932	7.3	1.9	0.1	0.05

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 6. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Syllabication Spanish-Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,079	6.2	1.4	3,914	6.1	1.5	0.1	0.07
Age Group	3.5-4.0 yrs	190	4.8	1.9	317	5.0	1.9	-0.2	-0.11
	4.0+	889	6.5	1.1	3,597	6.2	1.4	0.3	*0.22**
Gender	Female	565	6.1	1.5	2,022	6.1	1.4	0.0	0.00
	Male	514	6.3	1.3	1,892	6.0	1.5	0.3	*0.21**
Ethnicity	Asian	-	-	-	2	*	*	-	*
	Black	1	*	*	54	6.6	0.9	*	*
	Hispanic	1,070	6.2	1.4	3,830	6.1	1.5	0.1	0.07
	Other	4	*	*	4	*	*	*	*
	White	4	*	*	24	6.3	1.2	*	*
Economically disadvantaged	No	76	6.3	1.3	220	6.1	1.5	0.2	0.14
	Yes	1,003	6.2	1.4	3,694	6.1	1.5	0.1	0.07
Special Education eligible	No	1,068	6.2	1.4	3,849	6.1	1.5	0.1	0.07
	Yes	11	6.2	1.5	65	5.5	1.7	0.7	*0.41**
Limited English Proficient (LEP)	No	21	6.2	1.4	279	6.2	1.4	0.0	0.00
	Yes	1,058	6.2	1.4	3,635	6.1	1.5	0.1	0.07
At risk	No	5	6.0	1.7	46	6.2	1.4	-0.2	-0.14
	Yes	1,074	6.2	1.4	3,868	6.1	1.5	0.1	0.07

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 7. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Words in a Sentence Spanish-Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,034	3.6	1.4	3,755	3.5	1.4	0.1	0.07
Age Group	3.5-4.0 yrs	162	2.4	1.4	303	2.8	1.5	-0.4	*-0.27**
	4.0+	872	3.9	1.2	3,452	3.6	1.4	0.3	*0.22**
Gender	Female	540	3.6	1.4	1,956	3.6	1.4	0.0	0.00
	Male	494	3.7	1.3	1,799	3.5	1.4	0.2	0.14
Ethnicity	Asian	-	-	-	3	*	*	*	*
	Black	1	*	*	57	3.8	1.5	*	*
	Hispanic	1,026	3.6	1.4	3,667	3.5	1.4	0.1	*
	Other	3	*	*	4	*	*	*	*
	White	4	*	*	24	3.0	1.4	*	*
Economically disadvantaged	No	74	3.9	1.3	205	3.6	1.4	0.3	*0.22**
	Yes	960	3.6	1.4	3,550	3.5	1.4	0.1	0.07
Special Education eligible	No	1,024	3.6	1.4	3,693	3.6	1.4	0.0	0.00
	Yes	10	2.8	1.1	62	3.1	1.3	-0.3	*-0.23**
Limited English Proficient (LEP)	No	21	3.4	1.4	287	3.4	1.5	0.0	0.00
	Yes	1,013	3.6	1.4	3,468	3.5	1.4	0.1	0.07
At risk	No	5	3.2	1.1	47	3.9	1.6	-0.7	*-0.44**
	Yes	1,029	3.6	1.4	3,708	3.5	1.4	0.1	0.07

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.

Appendix E

Academic Achievement on HISD CIRCLE English Mathematics Subtests

Table 1. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Counting Sets Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		926	4.6	0.8	5,686	4.5	1.0	0.1	0.10
Age Group	3.5-4.0 yrs	146	4.1	1.2	836	3.8	1.2	0.3	*0.25**
	4.0+	780	4.8	0.6	4,850	4.6	1.4	0.2	0.15
Gender	Female	440	4.7	0.7	2,828	4.5	0.9	0.2	*0.23**
	Male	486	4.6	0.9	2,858	4.4	1.0	0.2	*0.20**
Ethnicity	Asian	33	4.6	0.9	318	4.8	0.5	-0.2	*-0.36**
	Black	526	4.8	0.7	2,255	4.5	0.9	0.3	*0.35**
	Hispanic	334	4.4	0.9	2,681	4.4	1.0	0.0	0.00
	Other	12	4.9	0.3	80	4.8	0.7	0.1	0.15
	White	21	4.7	0.8	352	4.6	0.9	0.1	0.11
Economically disadvantaged	No	13	4.2	1.1	510	4.7	0.8	-0.5	*-0.62**
	Yes	913	4.7	0.8	5,176	4.5	1.0	0.2	*0.21**
Special Education eligible	No	877	4.7	0.8	5,522	4.5	0.9	0.2	*0.23**
	Yes	49	4.0	1.2	164	4.0	1.3	0.0	0.00
Limited English Proficient (LEP)	No	830	4.6	0.8	4,598	4.5	0.9	0.1	0.11
	Yes	96	4.7	0.7	1,088	4.4	1.0	0.3	*0.31**
At risk	No	303	4.8	0.6	1,798	4.6	0.9	0.2	*0.31**
	Yes	623	4.6	0.9	3,888	4.4	1.0	0.2	*0.20**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 2. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Number Naming Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		894	4.2	1.1	5,448	3.9	1.2	0.3	*0.25**
Age Group	3.5-4.0 yrs	128	3.4	1.3	734	2.9	1.3	0.5	*0.38**
	4.0+	766	4.3	1.0	4,714	4.0	1.2	0.3	*0.26**
Gender	Female	425	4.1	1.1	2,702	3.9	1.2	0.2	0.17
	Male	469	4.2	1.1	2,746	3.9	1.3	0.3	*0.24**
Ethnicity	Asian	32	4.4	1.0	317	4.5	0.9	-0.1	-0.11*
	Black	518	4.3	1.0	2,171	3.9	1.2	0.4	*0.34**
	Hispanic	312	3.9	1.2	2,539	3.7	1.3	0.2	0.16
	Other	12	4.1	0.8	78	4.4	1.0	-0.3	*-0.30**
	White	20	4.0	0.8	343	4.2	1.1	-0.2	-0.18
Economically disadvantaged	No	12	4.1	1.4	502	4.4	1.0	-0.3	*-0.30**
	Yes	882	4.2	1.1	4,946	3.8	1.3	0.4	*0.31**
Special Education eligible	No	847	4.2	1.1	5,292	3.9	1.2	0.3	*0.25**
	Yes	47	3.8	1.3	156	3.7	1.3	0.1	0.08
Limited English Proficient (LEP)	No	803	4.2	1.1	4,394	3.9	1.2	0.3	*0.25**
	Yes	91	4.2	1.1	1,054	4.0	1.3	0.2	0.16
At risk	No	296	4.5	0.9	1,748	4.2	1.1	0.3	*0.28**
	Yes	598	4.0	1.1	3,700	3.7	1.3	0.3	*0.23**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 3. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Operations Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		880	2.8	0.5	5,293	2.6	0.6	0.2	*0.34**
Age Group	3.5-4.0 yrs	123	2.3	0.8	679	2.3	0.8	0.0	0.00
	4.0+	757	2.8	1.0	4,614	2.7	0.6	0.1	0.15
Gender	Female	421	2.8	0.5	2,677	2.6	0.6	0.2	*0.34**
	Male	459	2.7	0.6	2,616	2.6	0.7	0.1	0.15
Ethnicity	Asian	28	2.8	0.4	306	2.7	0.6	0.1	0.17
	Black	511	2.8	0.5	2,108	2.6	0.6	0.2	*0.34**
	Hispanic	308	2.7	0.6	2,457	2.6	0.7	0.1	0.15
	Other	12	3.0	0.0	79	2.8	0.5	0.2	*0.42**
	White	21	2.3	0.8	343	2.7	0.6	-0.4	*-0.65**
Economically disadvantaged	No	11	2.8	0.4	500	2.7	0.6	0.1	0.17
	Yes	869	2.8	0.5	4,793	2.6	0.7	0.2	*0.30**
Special Education eligible	No	846	2.8	0.5	5,170	2.6	0.6	0.2	*0.34**
	Yes	34	2.4	0.8	123	2.3	0.8	0.1	0.12
Limited English Proficient (LEP)	No	792	2.8	0.5	4,294	2.6	0.6	0.2	*0.34**
	Yes	88	2.6	0.6	999	2.6	0.7	0.0	0.00
At risk	No	291	2.9	0.4	1,687	2.7	0.6	0.2	*0.35**
	Yes	598	2.7	0.6	3,606	2.6	0.7	0.1	0.15

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.
Note: Insofar as a score of three (3) is both the proficiency benchmark and the maximum score for this subtest, total means for all groups but those with uniformly perfect scores will fall below it.

Table 4. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Patterns Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		918	3.5	0.8	5,191	3.3	0.9	0.2	*0.23**
Age Group	3.5-4.0 yrs	142	2.8	1.0	771	2.7	1.2	-0.1	0.09
	4.0+	776	3.6	0.7	4,420	3.4	0.8	0.2	*0.25**
Gender	Female	434	3.5	0.8	2,583	3.4	0.9	0.1	0.11
	Male	484	3.5	0.8	2,608	3.3	0.9	0.2	*0.23**
Ethnicity	Asian	33	3.5	0.8	304	3.7	0.7	-0.2	*-0.28**
	Black	520	3.6	0.7	2,076	3.3	0.9	0.3	*0.35**
	Hispanic	333	3.4	0.9	2,397	3.3	0.9	0.1	0.11
	Other	12	3.9	0.3	79	3.6	0.7	0.3	*0.45**
	White	20	3.6	0.6	338	3.5	0.8	0.1	0.13
Economically disadvantaged	No	13	3.3	0.8	484	3.6	0.7	-0.3	*-0.43**
	Yes	905	3.5	0.8	4,707	3.3	0.9	0.2	*0.23**
Special Education eligible	No	868	3.5	0.8	5,019	3.3	0.9	0.2	*0.23**
	Yes	50	3.1	0.9	172	2.9	1.1	0.3	0.19
Limited English Proficient (LEP)	No	827	3.5	0.8	4,313	3.3	0.9	0.2	*0.23**
	Yes	91	3.5	0.7	878	3.3	0.9	0.2	*0.23**
At risk	No	302	3.6	0.8	1,603	3.5	0.8	0.1	0.13
	Yes	616	3.5	0.8	3,561	3.3	0.9	0.2	*0.23**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 5. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Rote Counting Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		891	1.9	0.3	5,440	1.8	0.4	0.1	*0.29**
Age Group	3.5-4.0 yrs	126	1.6	0.5	708	1.5	0.5	0.1	*0.20**
	4.0+	765	1.9	0.3	4,732	1.9	0.3	0.0	0.00
Gender	Female	428	1.9	0.3	2,730	1.8	0.4	0.1	*0.26**
	Male	463	1.9	0.3	2,710	1.8	0.4	0.1	*0.26**
Ethnicity	Asian	33	1.9	0.4	317	1.9	0.3	0.0	0.00
	Black	516	1.9	0.3	2,156	1.8	0.4	0.1	*0.26**
	Hispanic	310	1.8	0.4	2,546	1.8	0.4	0.0	0.00
	Other	12	2.0	0.0	76	1.9	0.3	0.1	*0.35**
	White	20	1.9	0.3	345	1.9	0.4	0.0	0.00
Economically disadvantaged	No	13	1.7	0.5	505	1.9	0.3	-0.2	*-0.65**
	Yes	878	1.9	0.3	4,935	1.8	0.4	0.1	*0.26**
Special Education eligible	No	852	1.9	0.3	5,287	1.8	0.4	0.1	*0.26**
	Yes	39	1.7	0.5	153	1.7	0.5	0.0	0.00
Limited English Proficient (LEP)	No	800	1.9	0.3	4,421	1.8	0.4	0.1	*0.26**
	Yes	91	1.9	0.3	1019	1.8	0.4	0.1	*0.25**
At risk	No	294	1.9	0.3	1,743	1.9	0.3	0.0	0.00
	Yes	597	1.9	0.3	3,697	1.8	0.4	0.1	*0.26**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.
Note: Insofar as a score of two (2) is both the proficiency benchmark and the maximum score for this subtest, total means for all groups but those with uniformly perfect scores will fall below it.

Table 6. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Shape Naming Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		937	4.7	0.7	5,731	4.5	0.9	0.2	*0.23**
Age Group	3.5-4.0 yrs	152	4.3	1.0	857	4.0	1.2	0.3	*0.26**
	4.0+	785	4.8	0.6	4,874	4.6	0.8	0.2	*0.26**
Gender	Female	445	4.7	0.7	2,847	4.5	0.9	0.2	*0.23**
	Male	492	4.7	0.7	2,884	4.5	0.9	0.2	*0.23**
Ethnicity	Asian	33	4.9	0.4	319	4.8	0.7	0.1	0.15
	Black	528	4.8	0.5	2,270	4.5	0.9	0.3	*0.36**
	Hispanic	343	4.5	0.9	2,710	4.4	1.0	0.1	0.10
	Other	12	5.0	0.0	80	4.8	0.7	0.2	*0.30**
	White	21	4.8	0.7	352	4.7	0.7	0.1	0.14
Economically disadvantaged	No	13	4.9	0.4	510	4.7	0.7	0.2	*0.29**
	Yes	924	4.7	0.7	5,221	4.5	1.1	0.2	0.19
Special Education eligible	No	883	4.7	0.7	5,552	4.5	0.9	0.2	*0.23**
	Yes	54	4.2	1.3	179	4.3	1.1	-0.1	-0.08
Limited English Proficient (LEP)	No	840	4.7	0.7	4,640	4.5	0.9	0.2	*0.23**
	Yes	97	4.7	0.7	1,019	4.5	1.1	0.2	0.19
At risk	No	306	4.8	0.7	1,816	4.7	0.8	0.1	0.13
	Yes	631	4.7	0.3	3,915	4.4	1.0	0.3	*0.32**

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Appendix F

Academic Achievement on HISD CIRCLE Spanish Mathematics Subtests

Table 1. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Counting Sets Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,257	4.6	0.9	4,498	4.7	0.8	-0.1	-0.12
Age Group	3.5-4.0 yrs	256	4.0	1.2	371	4.1	1.2	-0.1	-0.08
	4.0+	1,001	4.7	0.7	4,127	4.7	0.7	0.0	0.00
Gender	Female	663	4.6	0.9	2,339	4.7	0.7	-0.1	-0.13
	Male	594	4.6	0.9	2,159	4.6	0.8	0.0	0.00
Ethnicity	Asian	-	-	-	18	4.7	0.5	*	*
	Black	15	4.3	1.3	203	4.6	0.7	-0.3	*-0.40**
	Hispanic	1,231	4.6	0.9	4,222	4.7	0.8	-0.1	-0.12
	Other	5	4.2	0.5	9	4.9	0.3	-0.7	*-1.73**
	White	6	4.8	0.4	46	4.9	0.4	-0.1	*-0.25**
Economically disadvantaged	No	76	4.9	0.4	249	4.7	0.8	0.2	*0.27**
	Yes	1,181	4.6	0.9	4,249	4.7	0.8	-0.1	-0.12
Special Education eligible	No	1,242	4.6	0.9	4,425	4.7	0.8	-0.1	-0.12
	Yes	15	4.6	0.6	73	4.5	1.0	0.1	0.10
Limited English Proficient (LEP)	No	184	4.3	1.1	724	4.7	0.7	-0.4	*-0.50**
	Yes	1,073	4.6	0.8	3,774	4.7	1.1	-0.1	-0.10
At risk	No	41	4.5	0.9	163	4.8	0.5	-0.3	-0.50*
	Yes	1,216	4.6	0.9	4,335	4.7	0.8	-0.1	-0.12

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 2. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Number Naming Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,192	4.1	1.2	4,291	4.0	1.2	0.1	0.08
Age Group	3.5-4.0 yrs	203	3.1	1.3	336	3.1	1.2	0.0	0.00
	4.0+	989	4.3	1.0	3,955	4.1	1.1	0.2	0.19
Gender	Female	621	4.0	1.2	2,214	4.0	1.1	0.0	0.00
	Male	571	4.1	1.1	2,077	4.0	1.1	0.1	0.09
Ethnicity	Asian	-	-	-	18	4.1	0.9	*	*
	Black	15	3.7	1.5	195	3.6	1.2	0.1	0.08
	Hispanic	1,166	4.0	1.2	4,025	4.0	1.1	0.0	0.00
	Other	5	4.4	0.9	9	4.1	1.3	0.3	*0.24**
	White	6	3.8	1.3	44	3.9	1.0	-0.1	-0.10
Economically disadvantaged	No	74	4.3	1.1	241	4.1	1.1	0.2	0.18
	Yes	1,118	4.0	1.2	4,050	4.0	1.2	0.0	0.00
Special Education eligible	No	1,179	4.1	1.2	4,221	4.0	1.1	0.1	0.09
	Yes	13	3.9	1.2	70	3.8	1.2	0.1	0.08
Limited English Proficient (LEP)	No	159	3.8	1.3	681	3.7	1.2	0.1	0.08
	Yes	1,033	4.1	1.1	3,610	4.0	1.1	0.1	0.09
At risk	No	37	4.0	1.1	158	4.1	1.0	-0.1	-0.10
	Yes	1,155	4.1	1.2	4,133	4.0	1.2	0.1	0.08

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 3. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Operations Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,171	2.7	0.6	4,320	2.7	0.6	0.0	0.00
Age Group	3.5-4.0 yrs	210	2.2	0.8	320	2.3	0.8	-0.1	-0.12
	4.0+	961	2.8	0.5	4,000	2.7	0.5	0.1	0.20*
Gender	Female	621	2.7	0.6	2,250	2.7	0.6	0.0	0.00
	Male	550	2.7	0.6	2,070	2.7	0.6	0.0	0.00
Ethnicity	Asian	-	-	-	14	2.7	0.5	*	*
	Black	10	2.6	0.7	193	2.7	0.6	-0.1	-0.16
	Hispanic	1,151	2.7	0.6	4,061	2.7	0.6	0.0	0.00
	Other	4	*	*	9	2.9	0.3	*	*
	White	6	2.5	0.8	43	2.8	0.4	-0.3	-0.64*
Economically disadvantaged	No	76	2.8	0.5	238	2.8	0.5	0.0	0.00
	Yes	1,095	2.7	0.6	4,082	2.7	0.6	0.0	0.00
Special Education eligible	No	1,158	2.7	0.6	4,256	2.7	0.6	0.0	0.00
	Yes	13	2.4	0.7	64	2.5	0.7	-0.1	-0.14
Limited English Proficient (LEP)	No	155	2.5	0.7	686	2.7	0.6	-0.2	-0.32*
	Yes	1,016	2.7	0.6	3,634	2.7	0.6	0.0	0.00
At risk	No	35	2.3	0.7	157	2.7	0.6	-0.4	-0.64*
	Yes	1,136	2.7	0.6	4,163	2.7	0.6	0.0	0.00

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.
Note: Insofar as a score of three (3) is both the proficiency benchmark and the maximum score for this subtest, total means for all groups but those with uniformly perfect scores will fall below it.

Table 4. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Patterns Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,246	3.3	0.9	4,413	3.4	0.8	-0.1	-0.12
Age Group	3.5-4.0 yrs	241	2.7	1.1	365	2.7	1.0	0.0	0.00
	4.0+	1,005	3.5	0.8	4,048	3.5	0.8	0.0	0.00
Gender	Female	653	3.3	0.9	2,303	3.5	0.8	-0.2	*-0.24**
	Male	593	3.4	0.9	2,110	3.4	0.9	0.0	0.00
Ethnicity	Asian	-	-	-	18	3.8	0.4	*	*
	Black	15	2.7	1.1	204	3.4	0.8	-0.7	*-0.90**
	Hispanic	1,220	3.3	1.1	4,136	3.4	0.8	-0.1	-0.11
	Other	5	3.2	1.3	9	3.7	0.7	-0.5	*-0.50**
	White	6	3.0	0.6	46	3.5	0.8	-0.5	*-0.63**
Economically disadvantaged	No	77	3.7	0.6	246	3.5	0.8	0.2	*0.26**
	Yes	1,169	3.3	0.9	4,167	3.4	0.8	-0.1	-0.12
Special Education eligible	No	1,232	3.3	0.9	4,343	3.4	0.8	-0.1	-0.12
	Yes	14	3.1	1.1	70	3.3	0.9	-0.2	*-0.21**
Limited English Proficient (LEP)	No	183	2.9	0.9	722	3.4	0.8	-0.5	*-0.61**
	Yes	1,063	3.4	0.9	3,691	3.4	0.9	0.0	0.00
At risk	No	41	2.9	0.7	164	3.6	0.7	-0.7	*-0.99**
	Yes	1,205	3.4	0.9	4,249	3.4	0.9	0.0	0.00

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children. Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.

Table 5. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Rote Counting Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,222	1.8	0.4	4,318	1.8	0.4	0.0	0.00
Age Group	3.5-4.0 yrs	235	1.6	0.5	328	1.6	0.5	0.0	0.00
	4.0+	987	1.9	0.3	3,990	1.9	0.4	0.0	0.00
Gender	Female	650	1.8	0.4	2,261	1.9	0.4	-0.1	*-0.25**
	Male	572	1.8	0.4	2,057	1.8	0.4	0.0	0.00
Ethnicity	Asian	-	-	-	18	1.7	0.5	0.0	*
	Black	14	1.8	0.4	191	1.8	0.4	0.0	0.00
	Hispanic	1,197	1.8	0.4	4,058	1.8	0.4	0.0	0.00
	Other	5	1.6	0.5	9	1.8	0.4	-0.2	*-0.43**
	White	6	1.7	0.5	42	1.8	0.4	-0.1	*-0.24**
Economically disadvantaged	No	76	1.9	0.3	245	1.8	0.4	0.1	*0.26**
	Yes	1,146	1.8	0.4	4,073	1.8	0.4	0.0	0.00
Special Education eligible	No	1,208	1.8	0.4	4,251	1.8	0.4	0.0	0.00
	Yes	14	1.8	0.4	67	1.7	0.5	0.1	*0.20**
Limited English Proficient (LEP)	No	174	1.6	0.5	684	1.8	0.4	-0.2	*-0.47**
	Yes	1,048	1.9	0.3	3,634	1.9	0.4	0.0	0.00
At risk	No	38	1.7	0.5	159	1.8	0.4	-0.1	*-0.24**
	Yes	1,184	1.8	0.4	4,159	1.8	0.4	0.0	0.00

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.
Note: Insofar as a score of two (2) is both the proficiency benchmark and the maximum score for this subtest, total means for all groups but those with uniformly perfect scores will fall below it.

Table 6. Academic Achievement of HISD Prekindergarten Students on the End-of-Year HISD CIRCLE Shape Naming Spanish Language Subtest Based on Prekindergarten Program and Demographic Group, 2016–2017

		Early Childhood Center			School-based Program				
Demographic characteristics		**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Mean difference**	**Effect size**
Overall Sample		1,265	4.5	0.9	4,510	4.4	1.0	0.1	0.10
Age Group	3.5-4.0 yrs	261	3.9	1.2	380	3.9	1.2	0.0	0.00
	4.0+	1,004	4.6	0.7	4,130	4.4	0.9	0.2	*0.23**
Gender	Female	664	4.5	0.9	2,341	4.4	1.0	0.1	0.10
	Male	601	4.5	0.9	2,169	4.4	1.0	0.1	0.10
Ethnicity	Asian	-	-	-	18	4.3	1.2	*	*
	Black	15	4.3	1.3	199	4.3	1.0	0.0	0.00
	Hispanic	1,239	4.5	0.9	4,238	4.4	1.0	0.1	0.10
	Other	5	4.8	0.5	9	4.7	0.7	0.1	0.15
	White	6	4.3	1.6	46	4.4	1.1	-0.1	-0.09
Economically disadvantaged	No	77	4.6	0.9	252	4.4	1.0	0.2	*0.20**
	Yes	1,188	4.5	0.9	4,258	4.4	1.0	0.1	0.10
Special Education eligible	No	1,250	4.5	0.9	4,436	4.4	1.0	0.1	0.10
	Yes	15	4.5	1.0	74	4.0	1.2	0.5	*0.42**
Limited English Proficient (LEP)	No	185	4.3	1.2	722	4.3	1.0	0.0	0.00
	Yes	1,080	4.5	0.9	3,788	4.4	1.0	0.1	0.10
At risk	No	40	4.3	1.2	165	4.5	0.9	-0.2	*-0.21**
	Yes	1,225	4.5	0.9	4,345	4.4	1.0	0.1	0.10

Source: HISD CIRCLE 2015–2016 student database; PEIMS 2015–2016 HISD student database.
Note: Effect size measures which meet or exceed the Hedges g cutoff of ≥2 are italicized and marked with an asterisk. Students who scored on average below cut points are highlighted in gold, with the exception of students in the 3.5-4.0 year old age group as proficiency benchmarks are adjusted down for younger children.
Caution should be used when interpreting effect size measures for populations with sample sizes below n = 30.