MEMORANDUM September 24, 2020

TO: Margarita Gardea
Officer, Elementary Curriculum and Instructional

FROM: Allison E. Matney, Ed.D.
Officer, Research and Accountability

SUBJECT: **COMPARISON OF ACADEMIC ACHIEVEMENT AND SOCIAL DEVELOPMENT OF PREKINDERGARTEN STUDENTS IN HISD EARLY CHILDHOOD CENTERS AND SCHOOL-BASED PROGRAMS, 2019–2020**

This multifaceted program evaluation used descriptive and inferential statistical analyses and models to examine the academic performance and social and emotional learning levels of students enrolled in Early Childhood Centers (ECCs) and School-Based Programs (SBPs) within the Houston Independent School District (HISD). The analyses also explored teachers' perceptions of social and emotional learning in the classroom and the enrollment trends of prekindergarten students. Non-academic performance in SEL and academic performance in language and literacy and mathematics were measured on the CIRCLE assessments for prekindergarten students. Results presented were disaggregated by demographic characteristics and prekindergarten program types.

Key findings include:

- The 2019–2020 school year enrollment showed approximately a 2 percent increase in the number of 3 to 3.5-years old, with 8.1 percent enrolled at an ECC and 7.8 percent at an SBP.
- The number of 3.5 to 4 years old enrolled in the 2019–2020 school year showed approximately a 5 percent increase, with 19.8 percent enrolled at an ECC and 13.6 percent at an SBP.
- The number of children 4 years and older enrolled in prekindergarten in the 2019–2020 school year showed approximately a 3.5 percent decrease.
- Of the teachers who completed the survey, 36.4 percent of teachers at ECCs and 39.0 percent at SBPs found SEL assessments to be too time-consuming.
- The highest increase in proficiency on the CIRCLE SEL assessments, across age groups, was found among students who attended an ECC.
- English-language test-takers who attended ECCs had a higher rate of proficiency across most language and literacy and mathematics subtests regardless of age group.
- For Spanish-language test-takers, the performance, on most subtests, was comparable for those who attended an ECC and SPB.
- In general, students who had lower achievement at the beginning of the year on the language and literacy, mathematics, and social and emotional assessments were less likely to achieve proficiency than their higher performing peers.
- Students' proficiency in SEL at the beginning of the year was a positive and significant predictor of students' proficiency in mathematics regardless of language version and age group.
- Spanish language test-takers in PK 3 and PK 4 who achieved proficiency in SEL at the beginning of the year were approximately 140 percent more likely to achieve proficiency in mathematics by MOY.

- English language test-takers in PK 3 who achieved proficiency in SEL at the beginning of the year were approximately 123 percent more likely to achieve proficiency in mathematics by MOY.
- English language test-takers in PK 4 who achieved proficiency in SEL at the beginning of the year were approximately 324 percent more likely to achieve proficiency in mathematics by MOY.
- Spanish language test-takers, both PK 3 and PK 4 students, who identified as special education were, on average, 73 percent less likely to achieve proficiency in language and literacy, and mathematics by MOY compared to their counterparts.
- Similarly, for English language test-takers, both PK 3 and PK 4 students who identified as special education were, on average, 54 percent less likely to achieve proficiency by MOY compared to students who were not special education.

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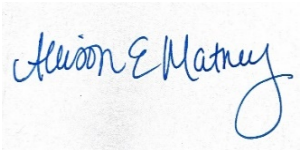

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Attachment

cc: Grenita Lathan, Ph.D.
Silvia Trinh
Yolanda Rodriguez
Marisol Castruita

HOUSTON INDEPENDENT SCHOOL DISTRICT

RESEARCH

Educational Program Report

COMPARISON OF ACADEMIC ACHIEVEMENT AND SOCIAL DEVELOPMENT OF PREKINDERGARTEN STUDENTS IN HISD EARLY CHILDHOOD CENTERS AND SCHOOL-BASED PROGRAMS, 2019-2020

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EVALUATION REPORT

BUREAU OF PROGRAM EVALUATION

Comparison of Academic Achievement and Social Development of Prekindergarten Students in HISD Early Childhood Centers and School-Based Programs, 2019–2020

Prepared by Georgia Graham, M.A.

Abstract

With the expansion of early childhood education, more studies have documented significant benefits of early learning and social and emotional learning on academic success. The evaluation used descriptive and inferential statistical analyses to examine HISD prekindergarten students' academic achievement in language and literacy, mathematics, and social and emotional learning (SEL) during the 2019–2020 school year, taking into consideration age and campus type. Proficiency levels in the specified social development and academic areas were measured at the beginning-of-year (BOY) and middle-of-year (MOY). The results from descriptive analyses indicated that while there was a high level of agreement among HISD teachers regarding the assessment of students'SEL, teachers found the administration of the assessment to be too time-consuming, especially in School-Based Programs (SBPs) that tend to have larger class sizes. At the student level, the evalaution found that there were increases in the percent of HISD prekindergaten students that attained proficiency in SEL, language and literacy and mathematics from BOY to MOY. Higher proficiency levels were, generally, found among SBP students compared to Early Childhood Center (ECC) students. Logistic regression models were used to examine the relationship between predictor variables and the likelihood that HISD prekindergarten students would achieve proficiency in language and literacy, and mathematics by the middle of the year. Results indicated that the largest effect on students' academic achievements was their BOY score. Although the effect size was small, students' proficiency on the social and emotional assessment at BOY was a positive and significant predictor of students' proficiency in mathematics regardless of language version and age group. Special education (SPED) students were less likely than their counterparts to be proficient on the mathematics and language and literacy assessments by the middle of the year across test language version and age group.

For over fifty years, there has been a belief that improved school readiness among low-income students by the time they enter kindergarten will propel them to achievement levels equivalent to their peers (Farran & Lipsey, 2016). While school readiness is essential for all children, it is especially important for vulnerable and disadvantaged populations, including children living in poverty, who tend to have lower school performance than children from higher-income families. The performance gap between disadvantaged students and their peers has grown exponentially to the point that it overshadows the racial achievement gaps that have historically been of concern (Reardon, 2013; 2011).

Over the years, there have been several reform measures in education for improved access to prekindergarten. The unprecedented expansion of the prekindergarten program was based on evidence-based practices that emphasized supporting those student populations most behind (Farran & Lipsey, 2016; Heckman, Lochner, & Todd, 2006). As part of the education reform, there was a growing movement to strengthen the prekindergarten continuum to early years education as the essential foundation for lifelong learning.

Recently, in 2019, House Bill (HB) 3 was passed by the 86th Texas Legislature and signed into law by Governor Abbott on June 11, 2019. Under HB 3 districts are required to offer full-day high-quality prekindergarten to eligible three-to-four-year-old children (TEA, 2019). HISD was one of the first districts in Texas to expand its free full-day prekindergarten program (Houston Independent School District [HISD], 2019a). The program provides more three- and four-year-old students with the opportunity to attend a high-quality program that will build a strong foundation of learning and support the needs of the families it serves (HISD, 2019a).

In fall 2019, a total of 14 elementary campuses throughout the district expanded prekindergarten classrooms for a total of 17 prekindergarten rooms. The elementary campuses are Neff Early Learning Center, Isaacs, R. Martinez, Rucker, Love, Browning, Shadowbriar, Askew, Mitchell, Garden Villas, DeAnda, and Wesley elementary schools. Two schools, Hillard Elementary and Oates Elementary were implementing prekindergarten for the first time (HISD, 2019b).

Background

In compliance with Texas Education Code (TEC) §29.153, the Houston Independent School District (HISD) has provided free prekindergarten classes to eligible Houston area four-year-old students since the 1985–1986 school year and began offering full-day free prekindergarten programs to all eligible children in 2006 (HISD, 2020). In 2015, the 84th Texas State Legislature passed House Bill 4 (HB4), which established

additional state support for early education programs, including authorization for the High-Quality Prekindergarten Grant (HQPG). The program assisted districts by providing funding for the implementation of new and the enhancement of existing HQPG programs (Morath, 2018). To ensure the quality of the program, the General Appropriations Act, Article III, Rider 78, was passed by the 85th Texas Legislature in 2017. Rider 78 was enacted to ensure that state-funded prekindergarten programs implement high-quality prekindergarten consistent with the HQPG program requirements under the TEC §29.167–29.171 and consistent with the provisions of TEC Chapters 41 and 42 (TEA, 2017a).

In HISD, children are enrolled in one of the four prekindergarten program models: (i) early childhood center (ECC); (ii) school-based program (SBP); (iii) Head Start; or (iv) Montessori. HISD offers full-day prekindergarten programs to all eligible students who reside within the district boundaries (HISD, 2018a). Three-and-four-year-old's are eligible for free, full-day prekindergarten based on any of the following criteria: (i) live within HISD boundaries; (ii) unable to speak and understand English; (iii) be economically disadvantaged, which means eligible to participate in the National School Lunch Program; (iv) be a child of a member of the U.S. Armed Forces; (v) has ever been in state foster care; and (vi) homeless (HISD, 2020). HISD also offers prekindergarten on a tuition basis to students who do not meet the eligibility requirements to attend prekindergarten.

Providing Houston's youngest learners with the best education requires beginning the learning process as early as possible (HISD, 2020). HISD policy on three-years-old gives priority for enrollment in the prekindergarten program to eligible students who are at least four years of age by September 1, 2020. If additional space is available and there is no waiting list for eligible four-year-old students and non-eligible tuition-paying four-year-old students who reside in HISD, schools have the option of enrolling students who are 3 years of age on September 1, 2020, provided they meet the eligibility requirements (HISD, 2020).

The mission of the HISD prekindergarten program is to prepare all students for academic success by building positive, supportive, caring learning communities that foster good self-esteem and encourage excellence through a structured learning environment, high expectations, and a never-give-up attitude (HISD, 2020). The vision of the program is high behavioral expectations, focus on skill and content mastery, and core values that develop positive, contributing citizens (HISD, 2020).

Literature Review

With the expansion of early childhood education, more studies have documented significant benefits of early learning on later academic success (Bierman & Motamedi, 2015). One study showed that the added hours of prekindergarten education was substantially effective at closing the achievement gap between urban children and their more advanced peers (Robin, Frede & Barnett, 2006). While early learning is important for all children, it is especially important for vulnerable and disadvantaged populations, including girls, children with disabilities, ethnic minorities, and students living in rural areas (UNICEF, 2012).

The literature also highlights that the beneficial effects of early childhood education are typically larger for disadvantaged youth compared to their non-disadvantaged peers (Brooks-Gunn, 2003; Currie, 2000; Gormley, Gayer, Phillips, & Dawson, 2005; Magnuson, Ruhm, & Waldfogel, 2007). Students who attended 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). Positive effects of high-quality early education have been found on cognitive, linguistic, social, and economic outcomes (Barnett, 1998; Barnett & Belfield, 2006). Research has also shown that high-quality education promotes students' school readiness (Butin & Woolums, 2009; Collett, 2013).

School readiness refers to children being prepared to succeed in a structured learning setting (United Nations Children's Fund [UNICEF], 2012). Social and emotional learning (SEL) is increasingly becoming an area of focus for determining children's school readiness and predicting their academic success (Denham, Bassett, Brown, Way, & Steed, 2015). SEL is the process through which "children understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions" (DePaoli, Atwell, & Bridgeland, 2020, p. 3). While social and emotional skills may seem intuitive to adults' children are at the experimental phase, going through trial and error of learning and perfecting social skills (Kostelnik, Whiren, Soderman, Rupiper, & Gregory, 2014).

To improve the academic achievement of students' research has identified explicit instruction in SEL as having a positive effect (Ashdown & Bernard, 2012; Kendziora & Yoder, 2016; McClelland, Tominey, Schmitt, & Duncan, 2017). The learning of related social skills is a predictor of future academic success (McClelland, Tominey, Schmitt, & Duncan, 2017). These skills include interest, participation, and attention which are directly related to an increase in academic performance for children in future grades (McClelland, Tominey, Schmitt, & Duncan, 2017).

Young children learning of SEL is strongly influenced by teacher training and educators' beliefs about the need for social and emotional development (Morris, Denham, Bassett, & Curby, 2013). Teachers who do not believe SEL is important to their pedagogy hinder the integration of SEL curriculum in classrooms, which leads to children not developing many of the foundational skills necessary for future success (Papadopoulou et al., 2014). More teachers have identified that students are not entering school with these skills, which can make it challenging for children to learn. This has led policymakers and practitioners to focus on SEL interventions (McClelland, Tominey, Schmitt, & Duncan, 2017).

In a national study of teachers across America, Bridgeland, Bruce, and Hariharan (2013) found that teachers understand, value, and endorse SEL for all students and believe that SEL

helps students achieve in school and life. The teachers also identify key accelerators for the implementation of the SEL curriculum in schools. These recommendations included school-wide programming that supports teachers in implementing SEL; embedding SEL into student learning standards; improving and increasing PD for SEL; and engaging parents and families in supporting their children to learn SEL at home (Bridgeland, Bruce, & Hariharan, 2013).

Research Questions

In the 2019–2020 school year, with the state-wide expansion to full-day prekindergarten programs, the district increased available classroom space for children three-to-four-year-old. The purpose of this study is twofold; first, to get an overview of teacher's perceptions of social and emotional learning pedagogy and assessment in the classroom. Second, the research examines the school readiness of prekindergarten children across three domains: social and emotional development, language and literacy development, and numeracy skills development. Taking into consideration the recent prekindergarten expansion and the effects of the prekindergarten program on children's academic and social development, the evaluation is guided by the following questions:

1. What were the demographic characteristics and enrollment trends of prekindergarten students in HISD for the 2019–2020 school year?

2. What were teachers' perception of the importance of social and emotional learning (SEL) on students' academic performance?

3. What differences in proficiency in social and emotional learning, language and literacy, and mathematics were observed among students enrolled in HISD early childhood centers and school-based programs during the 2019–2020 school year?

4. What variables predict the likelihood that HISD prekindergarten students would achieve proficiency in language and literacy, and mathematics by the middle of the 2019–2020 school year?

This report is according to the accountability requirements under Rider 78, which ensures that state-funded prekindergarten programs are consistent with the High-Quality Prekindergarten Grant (HQPG) program requirements in the Texas Education Code (TEC) §29.167–29.171. These requirements include the use of a curriculum aligned with the Texas Prekindergarten Guidelines, increased prekindergarten teacher training and qualifications, implementation of student progress monitoring, program evaluation, and development of a family engagement plan (TEA, 2017a).

Data and Methods

Currently, there is only one district-wide assessment administered to prekindergarten students. As a result, this evaluation was conducted using a single source of data for continuous improvement to examine how well HISD ECCs and SBPs are preparing young children for kindergarten. The analyses compared the performance of prekindergarten students who attended SBPs and ECCs across three measures of school readiness, which were language and literacy proficiency, mathematics proficiency, and social and emotional learning development. School readiness assessment "typically refers to the assessment of young children around school entry – right before kindergarten, at kindergarten entry, or very early in the kindergarten year" (Maxwell & Clifford, 2004, p. 43). As an early measure of school readiness progression, the research will focus on assessing students' skills to determine the effectiveness of early childhood programs (Maxwell & Clifford, 2004).

Data Collection

Teacher survey. The prekindergarten teachers completed an online survey that included measures on knowledge, experience, and perceptions of teaching and assessing social and emotional development on a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1). The survey was disseminated from February 18–March 26, 2020, through several online platforms. The HISD Elementary Curriculum & Development Office posted a link to the survey on the department dashboard in the HUB. Biweekly email reminders were sent out by lead teachers to their network of prekindergarten teachers and reminders were also posted in the HUB. The HUB is a district-wide online platform that is the center of collaboration, personalization, curriculum, instruction, and communication for all HISD staff and students.

Student demographics. The demographic data for HISD prekindergarten students used in this report were collected from the PEIMS 2019–2020 HISD student database. Demographic characteristics included gender, ethnicity, economically disadvantaged status, special education (SPED) 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 thirteen indicators (TEA, 2016b).

Academic performance. As a measure of progress toward school readiness, the evaluation used CIRCLE 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 standardized, criterion-referenced assessment to determine children's growth over time in the areas of language and literacy, mathematics, and social and emotional development. All CIRCLE assessments may be given in either English or Spanish except for the Onset-Rime subtest, which was only administered in English. **Appendix–A, Table A1**, p. 17, shows the list of subtests HISD administered to students during the 2019–2020 school year and associated cut points that were used in this evaluation. 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). For the 2019–2020 academic year, there was no EOY test administration due to the COVID–19 national pandemic that caused the district to move from in-person instruction to online instruction as of March 16, 2020. CIRCLE progress monitoring uses dichotomous benchmarks that indicate if a student is proficient or not proficient (Children's Learning Institute, 2019a).

Measures

To measure progress toward school readiness, the evaluation looked at two indicators to try and to capture the development of the whole child across academic and social skills. Academic development was measured based on students' performance on the CIRCLE assessment for mathematics and language and literacy. For this study, the mathematics measure consisted of six subtests (Counting Sets, Number Discrimination, Number Naming, Rote Counting, Shape Discrimination, and Shape Naming) while the language and literacy measure consisted of six subtests (Alliteration, Rapid Letter Naming, Rapid Vocabulary, Rhyming I, Syllabication, and Words in a Sentence). A math total score and language and literacy total score were calculated using the cut-point scores for the CIRCLE assessments to determine student proficiency in an academic domain (see **Appendix–B**, **Table B1**, p. 18–19). A binary measure of proficient (1) or not proficient (0) was created.

Social and emotional development was measured based on students' performance on the CIRCLE social and emotional screener. The screener is part of a set of observable checklists that are designed to assess growth in child behaviors that can be easily observed during day-to-day interactions between teachers and preschool students (Children's Learning Institute, 2019b). More importantly, the checklists include attention to social and emotional domains that are not assessed with the other direct measures in CIRCLE Progress Monitoring (Children's Learning Institute, 2019b).

The Positive Social Behaviors screener checklist contains nine-social skill-rating categories, for a maximum score of 27 points (see **Table B1**). On the observable checklist, the teacher reports a score of 1 for rarely (Emerging) which is reported as 0 points, 2 for sometimes (Developing) which is reported as 1 point, and a score of 3 for consistently (Proficient) which was reported as 2 points towards the benchmarks (Children's Learning Institute, 2016). A composite score was calculated by adding the totals from the nine-social skill-rating categories. The composite scores ranged from 0 to 27. Scores below 9 were considered as Emerging, from 9 to below 18 as Developing, and between 18 and 27 was Proficient (Children's Learning Institute, 2016).

The variables included in this research were program type, gender, race, economic status, SPED, LEP, and social and emotional learning. These predictors were included in the logistic regression models. Gender was a binary measure of male or female, with male being the reference group. As well, economic status, SPED, and LEP status were binary variables coded as 1= status present and 0= status absent. Race was measured with one variable consisting of three categories (0 = Other, 1=Hispanic, 2=Black). The Other racial category served as the reference group. Campus type was the predictor that was used to control for the school which the student attended (0 = SBP, 1 =ECC). The social and emotional learning subtest was used to measure the social skills level of the student (Emerging=0, Developing=1, Proficient=2). The variable was recoded as binary, with developing and proficient combined (1) and emerging (0).

Sample

Teacher. An online survey was emailed to 647 prekindergarten teachers. The sample for this evaluation consisted of prekindergarten teachers who completed the survey. A total of 307 teacher surveys were received, a response rate of 47.4 percent; only 303 were fully completed and included in this analysis. Of the sample of surveys received, 85.5 percent (n=259) were from teachers who taught at an SBP and 14.5 percent (n=44) from teachers who taught at an ECC. The sample of survey respondents taught across several prekindergarten age groups, with 73.9 percent (n=224) of respondents teaching in PreK 4, followed by 16.2 percent who taught in PreK 3–4 (n=49), 5.9 percent (n=18) taught three-years old (PreK 3), and 4 percent (n=12) taught a combined class of PreK 3–4 years old and kindergarten students, with the latter comprising a greater percentage of the

Table 1: Positive social behaviors screener checklist

	Indicators	
1. Talks to and interacts positively with adults 2. Talks to and interacts positively with peers 3. Initiates conversation and activities with peers	Emerging Minimum Points 0	Child never or rarely demonstrates the behavior (0 point)
4. Participates cooperatively in group activities 5. Shares materials with peers 6. Assists or comforts peers in need 7. Begins to solve problems in conflicts with peers	Developing Minimum Points 9	Child sometimes demonstrates the behavior, but it inconsistent or requires assistance (1 point)
8. Asks for adult help when cannot resolve peer conflict 9. Accepts compromise and input from others to solve problems	Proficient Minimum Points 18	Child consistently demonstrates the behavior (2 points)

Source: Children Learning Institute (2016). Retrieved from https://cliengage.org/user-guides/CPMSocial_ Emotional_ Checklist.pdf

class. Teacher respondents had an average of 14.1 years of teaching experience (S.D. 9.2). In terms of prekindergarten program type, most of the teachers who completed the survey were from Traditional English (33.3%), Traditional Bilingual (31.4%), ESL and Dual Language (12.5% and 12.9%, respectively), and PALS (6.3%).

Student. The sample of students used in this evaluation was drawn from the general population of students who participated in the HISD prekindergarten programs. The PEIMS 2019–2020 HISD student database was merged with the HISD CIRCLE 2019–2020 database to create a list of prekindergarten students that were tested in the 2019–2020 academic year. After merging the data, students who were removed had either multiple subtest administrations in English and/ or Spanish, incomplete or no scores, had not achieved a minimum score greater than zero on the literacy or mathematics subtests, or had not complete both BOY and MOY for a specific subtest. Of the 15,321 HISD prekindergarten students in the 2019–2020 academic year, 15,274 students completed the BOY and MOY wave of one or more of the thirteen CIRCLE subtests that comprise the sample used for this part of the analyses. The number of students varied by subtest and language (see **Appendix–C**, **Tables C1–C6**, p. 20–22).

Statistical Analyses

The evaluation used descriptive analysis and linear regression to examine the academic performance of prekindergarten students. Descriptive statistics included counts, means, standard deviations, and percentages of measures of academic proficiency, and social and emotional development of prekindergarten students who attended HISD ECCs or HISD SBPs. The evaluation provides descriptive results for beginning-of-year (BOY) and the middle-of-year (MOY) academic performance on the HISD CIRCLE English and Spanish mathematics and language and literacy subtests for the 2019–2020 cohort of prekindergarten students. The evaluation also used logistic regression to examine the probability that prekindergarten students would be proficient or not proficient by the MOY in mathematics and language and literacy.

The odds ratios are used as a *standardized* effect size statistic (Maher, Markey, & Ebert-May, 2013). Since the predictor is binary, the odds ratio for whether student academic performance was proficient or not proficient can be considered standardized. Interpretations derived solely from statistical significance testing have the potential to be flawed; therefore, the inclusion of effect size reporting helps to inform whether the findings are meaningful or important (Maher, Markey, & Ebert-May, 2013). Effect size and statistical significance provide complementary information: the effect size indicates the magnitude of the observed effect or relationship between variables, whereas the significance test indicates the likelihood that the effect or relationship is due to chance. Therefore, it was recommended that significance testing should be reported and followed by effect sizes (Plucker, 1997). To classify the effect size the research follows guidelines published by Chen, Cohen & Chen (2010), whereby an odds ratio 1.52 can be classified as a small effect size, 2.74 a medium effect size, and 4.72 a large effect size (Chen, Cohen, & Chen, 2010; Cohen, 1992).

Limitations

There are several limitations with the current study relating to the assessment tool, administration of the assessment, and populations tested. In terms of the instrument, the Social and Emotional Screener includes five measures (Positive Social Behaviors, Classroom Community and Safety, Emotion and Behavior Regulation, Self-care, and Approaches to Learning). The only Social and Emotional Screener administered by HISD is Positive Social Behavior, which is included in this evaluation. The use of one measure can guide the teacher on what activities can be used to support specific SEL needs, but these individual cut-points cannot be used as predictors of school readiness in isolation (CLI Learning, 2019). Similarly, for the academic measures, several measures were not included in this analysis (Patterns and Letter Sounds) as cut points were not provided. Listening was also not included in the analyses since this subtest is only administered in Wave 1 and the report used Wave 1 and Wave 2 results. As a result, underestimates of students' proficiency levels in language and literacy may be present (HISD, 2016). Therefore, the results of this evaluation need to be interpreted with caution as indicators of school readiness.

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). Caution should be exercised, therefore, when interpreting results in the context of special education status. Finally, the assessment data used in the report were not examined to determine if children participated in either an ECC or SBP in the years before 2017–2018. Thus, findings should be interpreted as the average impact of prekindergarten programs compared to each other and not over time (Zhai, Brooks-Gunn, & Waldfogel, 2011).

Results

What were the demographic characteristics and enrollment trends of prekindergarten students in HISD for the 2019–2020 school year?

The demographic composition of the prekindergarten student populations is outlined in **Table 2** (p. 6). Prekindergarten students enrolled in an HISD SBP comprised 82.5 percent (n=12,645) of the sample while 17.5% (n=2,676) attended an HISD ECC in the 2019–2020 school year. The HISD prekindergarten students who attended ECCs and SBPs were predominately Hispanic, 70.4 percent and 64.4 percent, respectively. A higher percentage of students who attended SBPs identified Spanish as their home language (52.2%) compared to students that indicated English (42.5%). The inverse held true at ECCs; 52.7 percent indicated English compared to 45.4 percent who identified Spanish as their home language. Regarding economic status, 99.3 percent of ECC and

97.2 percent of SBP prekindergarten students were identified as economically disadvantaged. Also, a higher proportion of prekindergarten students were identified as at-risk students. More specifically, 91.1 percent of prekindergarten students who attended SBPs and 94.3 percent of ECC students were identified as at-risk.

Table 2: Demographic characteristics HISD prekindergarten students by program type, 2019–2020

		HISD Early Childhood Center		HISD School Based Program	
		n	%	n	%
Overall Sample		2,676	17.5	12,645	82.5
Age	3.0 to 3.49	218	8.1	986	7.8
	3.5 to 3.99	531	19.8	1,716	13.6
	4 to 4.49	889	33.2	4,775	37.8
	4.5 and up	1,038	38.8	5,168	40.9
Gender	Female	1,376	51.4	6,410	50.7
	Male	1,300	48.6	6,235	49.3
Ethnicity	Black	721	26.9	3,553	28.1
	Hispanic	1,884	70.4	8,140	64.4
	White	71	2.7	952	7.6
Home Language	Spanish	1,216	45.4	6,600	52.2
	English	1,410	52.7	5,374	42.5
	Other	50	1.9	671	5.3
Economically Disadvantage	No	20	0.7	357	2.8
	Yes	2,656	99.3	12,288	97.2
Immigrant	No	2,524	94.3	11,833	93.6
	Yes	152	5.7	812	6.4
Homeless	No	2,484	92.8	12,063	95.4
	Yes	192	7.2	582	4.6
At-Risk	No	152	5.7	1,122	8.9
	Yes	2,524	94.3	11,523	91.1
Limited English Proficiency (LEP)	No	1,259	47.0	7,312	57.8
	Yes	1,417	53.0	5,333	42.2
Bilingual Program	No	1,313	49.1	7,989	63.2
	Yes	1,363	50.9	4,656	36.8
ESL	No	2,592	96.9	11,641	92.1
	Yes	84	3.1	1,004	7.9
SPED	No	2,597	97.0	12,309	97.3
	Yes	79	3.0	336	2.7

Source. 2019–2020 PEIMS student databases.

With the 2019 expansion of the prekindergarten program in Texas, many districts chose to delay implementation. However, HISD had previously been offering full-day prekindergarten instruction in many of the district schools. In 2018–2019, the number of prekindergarten students in the district showed a 1.66 percent increase from the previous year (14,568 vs. 14, 810, respectively). For the same year, the number of prekindergarten students increased statewide by 3.21 percent, from 231,485 to 238,921 (**Table 3**). With the expansion, the number of prekindergarten students in the district showed a 3.45 percent increase in 2019–2020 from the previous year (15,321 vs. 14,810, respectively) (Table 3).

Table 3: Prekindergarten student enrollment, HISD vs. statewide, 2015 to 2019

	HISD	Texas	HISD 4-YR change	Texas 4-YR change
2019	15,321	*	3.45%	*
2018	14,810	238,921	1.66%	3.21%
2017	14,568	231,485	-0.65%	3.29%
2016	14,664	224,114	-0.95%	1.57%
2015	14,804	220,640	0.00%	0.00%

Source: HISD PEIMS database, Texas Public Education Information Resource (TPEIR). * Data not yet released for the school year.

As part of the outreach strategy to increase the number of younger learners, 3-and-a-half-years old to four years old, the district provided campuses with recruitment tools and resources. A scan of the resources showed that all the communications and marketing materials focused on outreaching to parents of younger learners. Campuses were provided with recruitment templates and strategies to outreach to parents of younger learners, which included a sample introduction letter to prekindergarten, door hanger sample, event flyer sample, informational flyer sample, mailer sample, and yard sign sample (HISD, 2019).

There was an increase in the number of students in the younger age groups across program types. While there was a decrease in the percentage of older prekindergartners (four-years and older) enrolled at both campus types, there was an increase in the number of three-to-four-years old children enrolled in the 2019–2020 school year (**Table 4**). With ECCs showing a 2 percent increase for students 3-to-3.5-years old and 5.5 percent increase for students aged 3.5-to-3.99 years old compared to SPBs who showed a 0.5 and 4.0 percent increase, respectively, over the previous year.

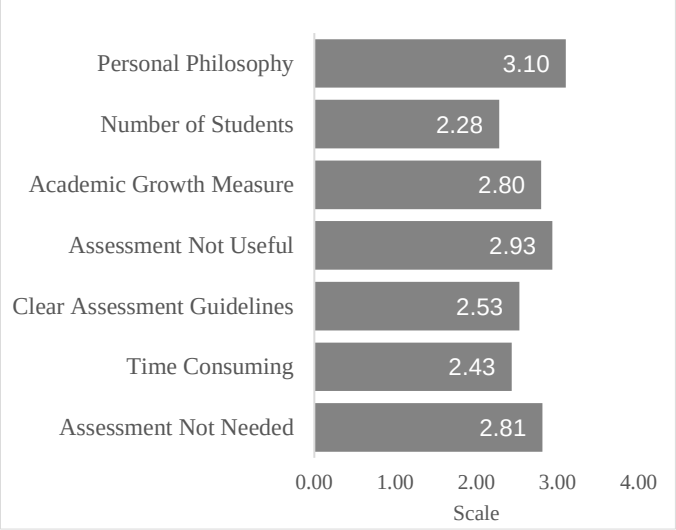
Table 4: Prekindergarten student enrollment by age group, 2015 to 2019

ECC	3.0 to 3.49	3.5 to 3.99	4 to 4.49	4.5+
2019	8.1%	19.8%	33.2%	38.8%
2018	6.1%	14.3%	36.9%	42.7%
2017	5.6%	12.3%	40.3%	41.8%
2016	5.2%	12.4%	40.6%	41.8%
2015	4.1%	11.2%	39.7%	44.9%
SBP	**3.0 to 3.49**	**3.5 to 3.99**	**4 to 4.49**	**4.5+**
2019	7.8%	13.6%	37.8%	40.9%
2018	6.3%	9.6%	39.6%	44.5%
2017	5.2%	8.8%	41.2%	44.8%
2016	5.4%	8.4%	41.7%	44.4%
2015	5.2%	8.0%	40.2%	46.5%

What were teachers' perception of the importance of social and emotional learning (SEL) on students' academic performance?

Most of the prekindergarten teachers (92.1%) reported that they were currently using the CIRCLE observation-based Social and Emotional Development assessment (**Figure 1**). The mean score for responses on the use of social and emotional learning in the classroom ranged from 2.93–3.10 (on a 1 to 4-point scale). Personal philosophy had the highest average score of 3.10, which suggested that teachers' willingness to do a formal assessment of students' SEL was based on their agreement with the philosophy of SEL (Figure 1). More than half of the teachers reported agreement with the SEL philosophy (56.9% of ECC teachers compared to 60.7% of SBP teachers) (see **Appendix–B, Table B1**, p. 18–19). Teachers also recognized that an assessment of SEL development among prekindergarten students was useful for students (59.1% ECCs and 59.4 % SBPs). Additionally, the information attained from an assessment of SEL was viewed by teachers as a useful measure of students' academic growth (59.1 % of ECCs and 54.5% of SBPs). With teachers, on average, somewhat agreeing that SEL was a useful measure of kindergarten students' academic growth (average score of 2.86).

Figure 1: Mean score for teachers' perception of SEL



When looking at teachers' level of agreement with the administration of SEL assessments in prekindergarten classrooms, 56.8 percent of teachers at ECCs and 50.6 percent of teachers at SPBs agreed that there was a need for a formal assessment of students' SEL learning. Similarly, 40.9 percent of teachers at ECCs compared to 35.1 percent of teachers at SBPs disagreed that administering an observational assessment for SEL was too time consuming. ECC classrooms tend to be smaller in size when compared to prekindergarten classrooms in school-based programs; this may explain the difference in the level of agreement for the administration of the observational checklist. When asked about classroom size, 36.4 percent of ECCs and 47.2 percent of SBPs agreed that the number of students in their classroom makes it difficult to complete an observational assessment.

Looking further into the administration of the observational assessments, clear assessment guidelines had an average score of 2.53, with most prekindergarten teachers reporting that they somewhat agreed that there was enough guidance on how to use the observational assessment effectively and efficiently (34.1% of ECCs and 35.9% of SBPs). In terms of training received, 40.9 percent of ECC prekindergarten teachers participated in a full-day course on SEL and 34.1 percent in college course(s). Among SBPs, college course(s) had the highest number of respondents, with 34.4 percent of teachers self-reported taking college course(s) on SEL, followed by 33.2 percent who self-reported participation in full-day training (see Appendix–B, Table B1 p. 19).

What differences in proficiency in social and emotional learning, language and literacy, and mathematics were observed among students enrolled in HISD early childhood centers and school-based programs during the 2019–2020 school year?

Descriptive statistics were used to analyze the performance of prekindergarten students on the 2019–2020 CIRCLE social behavior screener, language and literacy subtests, and math subtests. The results are analysed by campus type (SBP vs. ECC) and by age categories of students.

Social and Emotional Learning

The screener used in this assessment was Positive Social Behaviors, which focused on interpersonal skills with peers. A student received a benchmark of *emerging*, the child never or rarely demonstrated the behavior; *developing*, the child sometimes demonstrated the behavior, but was inconsistent or required assistance; or *proficient*, the child consistently demonstrated the behavior (CLI Learning, 2016).

Overall, most PK 3 English-language test-takers at BOY had a proficiency rating of '*developing*' on the CIRCLE Positive Social Behaviors observational subtest (48.6% at ECCs and 40.1% at SBPs) (see **Figure 2–A**, p. 8). A higher percentage of PK 3 students who attended an ECC achieved proficiency by the MOY compared to SBP students, 13.9 percent and 10.0 percent, respectively. PK 3 students who attended an ECC showed a larger increase in the number of students who were proficient from BOY to MOY, an increase of 9.5 percent compared to SBP students who showed a 5.4 percent increase in the number of students who scored proficient (see Appendix–C, Table C1, p. 19).

Similarly, for PK 4 students at BOY, more than half had a proficiency rating of '*developing*' (54.8% at ECCs and 52.9% at SBPs). PK 4 students who attended ECCs had a higher percentage of students who achieved proficiency by the MOY compared to SBP students (30.8 percent and 22.6 percent, respectively) (see **Figure 2–B**). PK 4 students who attended an ECC showed almost double the number of students who were proficient from BOY to MOY, an increase of 18.1 percent

Figure 2: Performance of English-test takers on 2019–2020 CIRCLE Positive Social Behaviors measures by age group

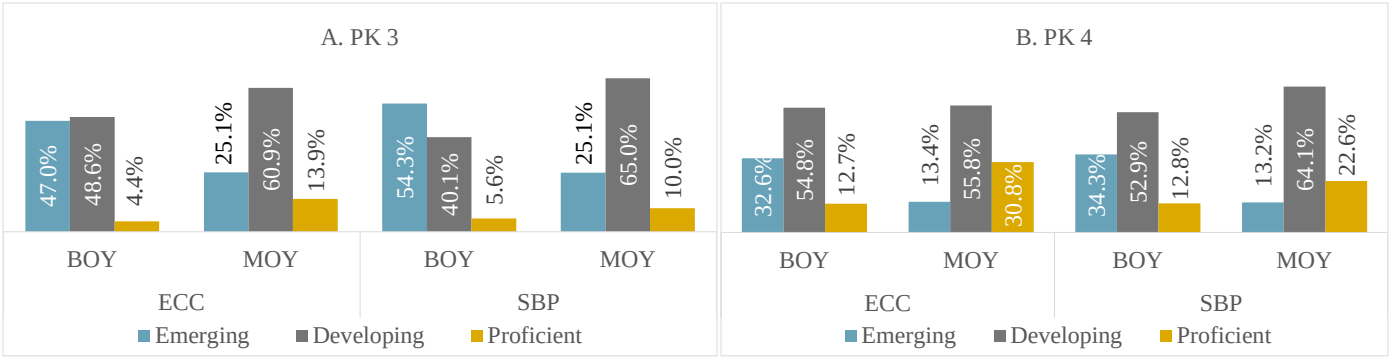
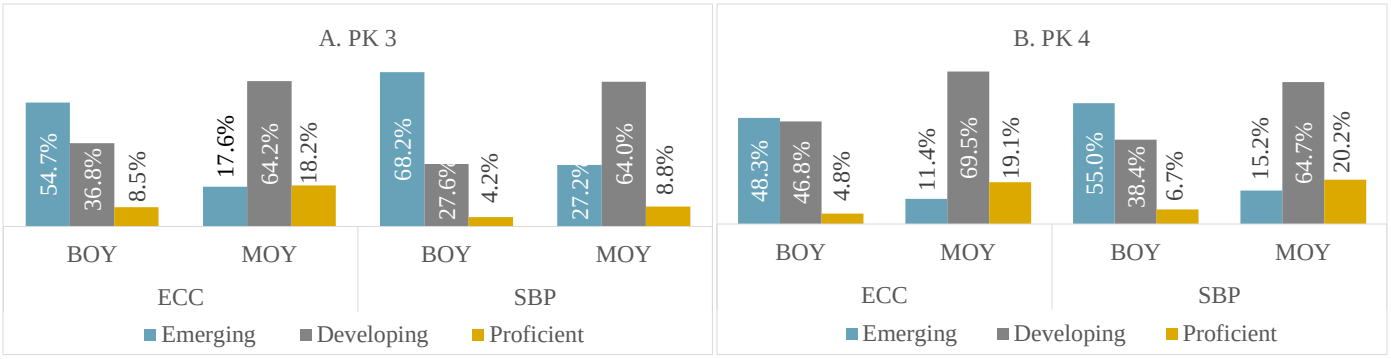


Figure 3: Performance of Spanish-test takers on 2019–2020 CIRCLE Positive Social Behaviors measures by age group



compared to SBP students who showed a 9.8 percent increase in the number of students who scored *proficient*.

For Spanish-language test-takers, the data shows that most PK 3 students at BOY scored '*emerging*' (54.7 percent at ECCs and 68.2 percent at SBPs). More than double the percentage of PK 3 students who attended an ECC achieved proficiency by the MOY compared to SBP students, 18.2 percent and 8.8 percent, respectively (see **Figure 3–A**). PK 3 students who attended an ECC showed an increase in the number of students who scored *proficient* from BOY to MOY. Comparatively, students who attended an ECC showed a 10 percent increase in the number of students who scored *proficient* compared to SBP students who showed a 4.6 percent increase (see **Appendix–C, Table C2**, p. 19).

Most of the PK 4 students at BOY were '*emerging*' (48.3% at ECCs and 55.0% at SBPs). A comparable percentage of PK 4 students who attended an ECC and SBP achieved proficiency by MOY, 19.1 percent and 20.2 percent, respectively (see **Figure 3–B**). PK4 students who attended an ECC showed an average growth of 14.3 percentage points compared to SBP students who showed a 13.5 percent increase in the number of students who scored proficient.

Language and Literacy

English-language test-takers who attended an ECC, across age groups showed higher growth in proficiency at MOY on four of the six language and literacy subtests. For PK 3 students who attended an SBP compared to an ECC, the growth was comparable on the Alliteration subtest (5.8 % at ECCs and 8.6% at SBPs) and Rapid Vocabulary subtest (14.2 % at ECCs and 16.8 % at SBPs) (see **Figure 4–A**). On the language and literacy assessments, PK 3 students who attended an ECC performed better on the Rapid Letter Naming subtest compared to SBP students. Students who attended an ECC showed an increase from 21.2 percent (BOY) to 52.5 percent (MOY); a difference of 31.3 percentage points from BOY to MOY compared to 24.1 percentage points increase for SBP students (see **Appendix–C, Table C3**, p. 20). Similarly, on the Syllabication subtest, students who attended an ECC increased from 1.3 percent (BOY) to 25.9 percent (MOY); a difference of 24.6 percentage points from BOY to MOY compared to 17.3 percentage points for SBP students.

PK 4 students who attended an ECC compared to an SBP attained a higher percentage of proficiency on Alliteration, which increased from 8.6 percent (BOY) to 38.5 percent (MOY); a difference of 29.9 percentage points compared to 24.0 percentage points for SBP students (see **Figure 4–B**). Proficiency on the Rhyming I subtest increased from 14.6 percent (BOY) to 49.1 percent (MOY), a difference of 34.5 percentage points compared to 28.8 percentage points for SBP. Additionally, students who attended an ECC had higher proficiency on the Syllabication subtest, which increased from 16.1 percent (BOY) to 54.4 percent (MOY); a difference of 38.3 percentage points compared to 30.9 percentage points for SBP students.

Figure 4: Percentage of growth in proficiency on 2019–2020 English CIRCLE language and literacy subtests by age group

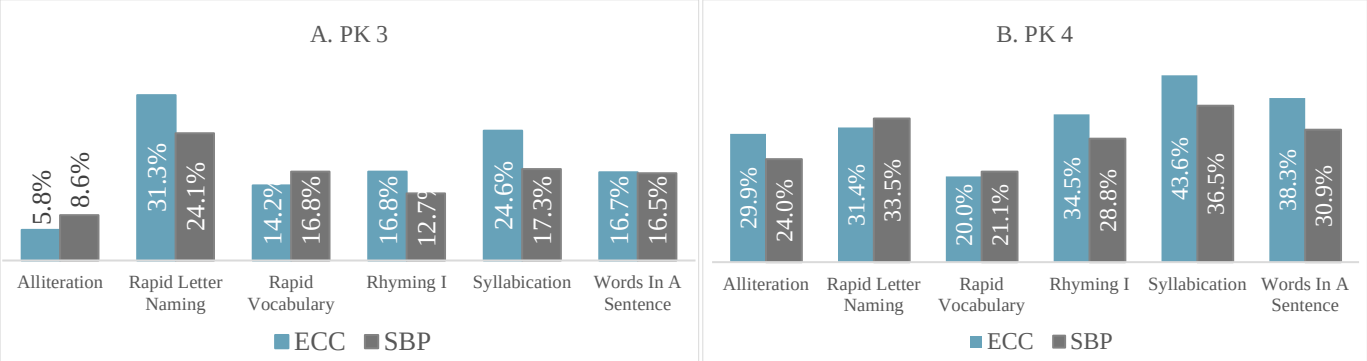
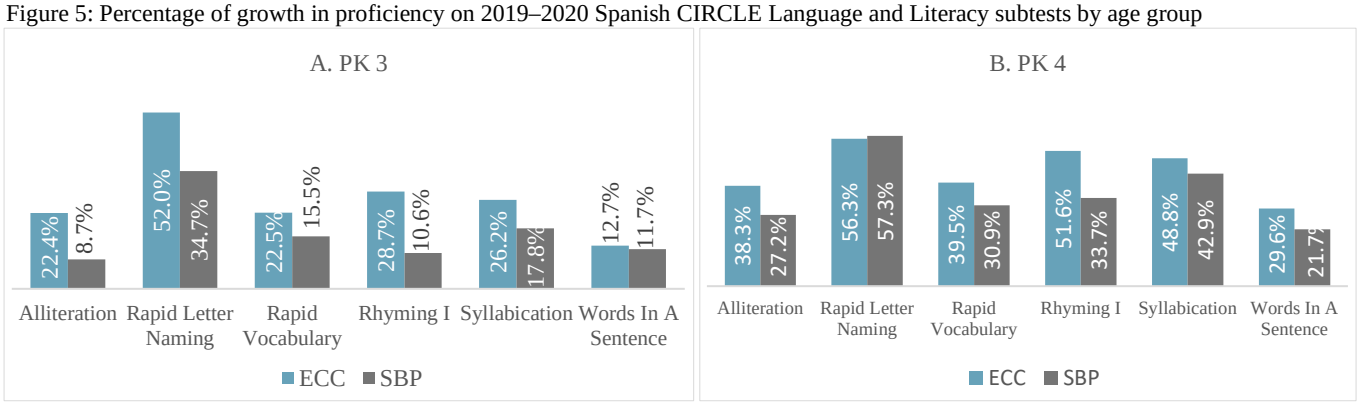


Figure 5: Percentage of growth in proficiency on 2019–2020 Spanish CIRCLE Language and Literacy subtests by age group



For Spanish-language test-takers, PK 3 students who attended an ECC showed growth in proficiency across all six language and literacy subtests (see **Figure 5–A**). The percentage of PK 3 students who attended an ECC and who had attained proficiency in language and literacy was highest on Rapid Letter Naming, which increased from 3.6 percent (BOY) to 55.6 percent (MOY), a difference of 52.0 percentage points from BOY to MOY(see **Appendix–C, Table C4**, p. 20). The performance on the Rhyming I subtest for students who attended an ECC increased from 0.3 percent (BOY) to 29.0 percent (MOY), a difference of 28.7 percentage points from BOY to MOY compared to 10.6 percentage points for SBP students. On the Syllabication subtest, students who attended an ECC showed an increase from 3.9 percent (BOY) to 30.1 percent (MOY), a difference of 26.2 percentage points from BOY to MOY compared to 17.8 percentage points for SBP students.

Similarly, PK 4 students who attended an ECC showed higher proficiency on all language and literacy subtests, except Rapid Letter Naming, which was comparable for ECC and SBP students (56.3% vs. 57.3%, respectively) (see **Figure 5–B**). For PK 4 students who attended an SBP, performance on the Rapid Vocabulary subtest increased from 10.9 percent (BOY) to 50.4 percent (MOY), a difference of 39.5 percentage points for ECC students compared to 30.9 percentage points for SBP students. Students who attended an ECC attained a higher percentage of proficiency on the Rhyming I subtest, which increased from 14.6 percent (BOY) to 49.1 percent (MOY), a difference of 34.5 percentage points from BOY to MOY compared to 28.8 percentage points for SBP students. As well, a high percentage of students who attended an ECC was proficient on the Syllabication subtest, which increased from 11.4 percent (BOY) to 60.2 percent (MOY), a difference of 48.8 percentage points from BOY to MOY compared to 42.9 percentage points for SBP students.

Mathematics

For English-language testers, the average growth among PK 3 students who attended an ECC vs. SBP was comparable across the mathematics subtest, with the highest growth performance being on the Counting Sets, Rote Counting, Shape Discrimination, and Shape Naming subtests (see **Figure 6–A**). The largest growth was found on the Counting Sets subtest. The percentage of PK 3 students who attended an ECC and achieved proficiency was 28.1 percent (BOY) to 65.4 percent (MOY); a growth of 37.3 percentage points from BOY to MOY compared to a growth of 30.2 percentage points for students who attended an SBP (see **Appendix–C, Table C5**, p. 21).

Similarly, PK 4 English-language test-takers who attended an SBP showed a slightly higher, though comparable, growth in proficiency MOY on four of the six mathematics subtests (see **Figure 6–B**). The largest growth was found on the Counting Sets subtest, which increased from 48.5 percent (BOY) to 86.2 percent (MOY); a growth of 37.7 percentage points from BOY to MOY compared to 30.2 percentage points for ECC students (see Appendix–C, Table C5, p. 21).

Figure 6: Percentage of growth in proficiency on 2019–2020 English CIRCLE math subtests by age group

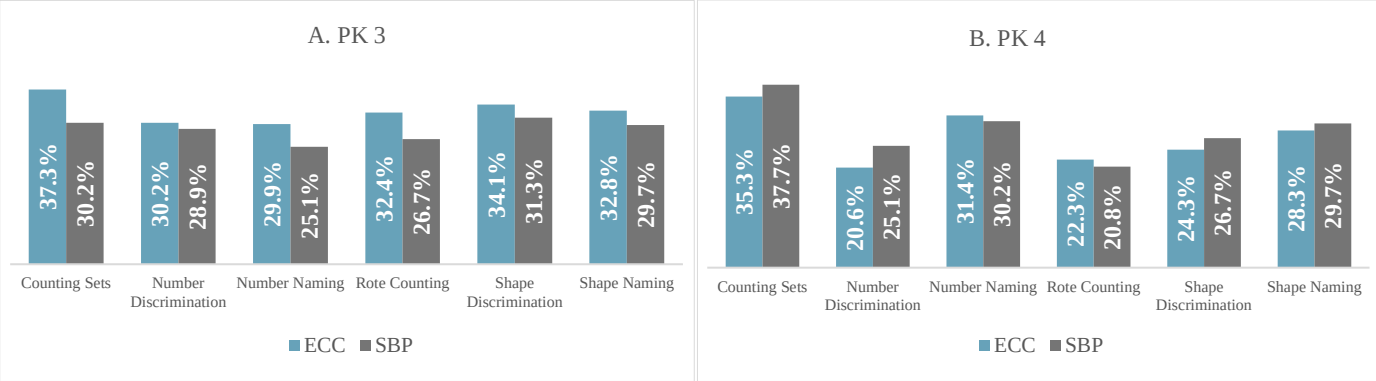
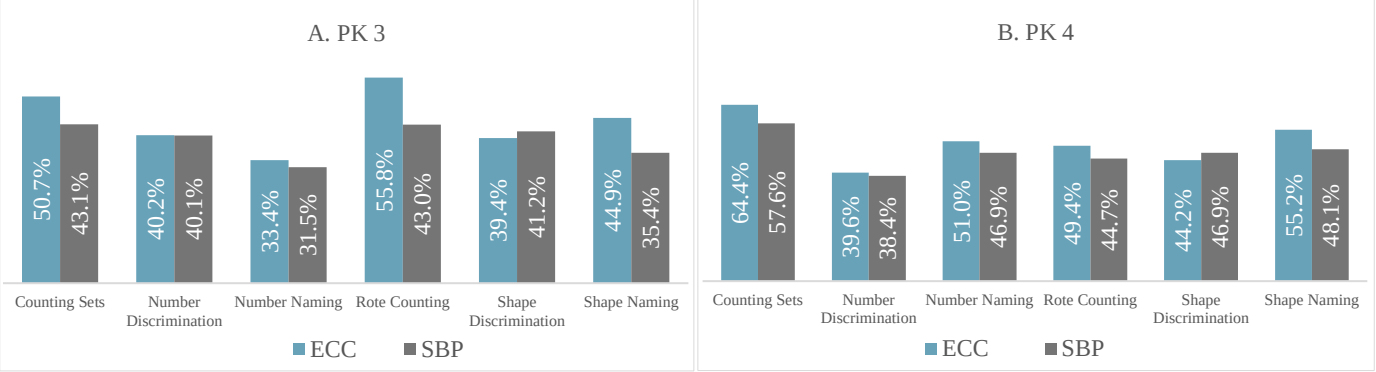


Figure 7: Percentage of growth in proficiency on 2019–2020 Spanish CIRCLE math subtests by age group



Spanish-language testers that attended an ECC showed growth in proficiency across five of the six math subtests for both age groups (see Figure 7). The percentage of PK 3 students who attended an ECC and had attained proficiency in math scored highest on Rote Counting, Counting Sets, and Shape Naming (see Figure 7–A). The percentage of PK 3 students who attended an ECC and attained proficiency in mathematics was highest for Rote Counting. Performance on the Rote Counting subtest increased from 18.3 percent (BOY) to 74.1 percent (MOY) for ECC students, a growth of 55.8 percentage points from BOY to MOY compared to a growth of 43.0 percentage points for SBP students (see **Appendix–C, Table C6**, p. 21). Similarly, Counting Sets showed a high rate of proficiency for PK 3 students who attended an SBP, which increased from 9.6 percent (BOY) to 60.3 percent (MOY), a difference of 50.7 percentage points from BOY to MOY compared to 43.1 percentage points for students who attended an SBP. Shape Naming increased from 7.9 percent (BOY) to 52.8 percent (MOY), a difference of 44.9 percentage points from BOY to MOY compared to 35.4 percentage points for SBP students.

For PK 4 Spanish-language testers, students who attended an ECC outperformed students who attended an SBP on five of the six subtests (see Figure 7–B). However, a slightly larger percentage of students who attended SBPs scored higher on the Shape Discrimination subtest. Performance on the Shape Discrimination subtest for PK 4 students who attended an SPB showed a growth of 46.9 percentage points compared to a growth of 44.2 percentage points for students who attended an ECC (see Appendix–C, Table C6, p. 21). The largest growth on the math subtests was on the Counting Sets subtest by students who attended an ECC, which increased from 26.6 percent (BOY) to 91.0 percent (MOY), a growth of 64.4 percentage points from BOY to MOY. Similarly, students who attended an ECE attained a higher proficiency for Shape Naming, which increased from 22.4 percent (BOY) to 77.6 percent (MOY), a growth of 55.2 percentage points from BOY to MOY. Rote Counting increased from 45.9 percent (BOY) to 95.3 percent (MOY), a growth of 49.4 percentage points from BOY to MOY.

What variables predict the likelihood that HISD prekindergarten students would achieve proficiency in language and literacy, and mathematics by the middle of the 2019–2020 school year?

To determine the impact of prekindergarten program type, demographic characteristics (gender, race, economic status, economic disadvantage status, SPED status, LEP status), and social and emotional learning on prekindergarten student academic performance outcomes, two models were conducted. The first model demonstrated the effect of the beforementioned variables on prekindergarten students' academic proficiency in mathematics (see **Table 5** for English-test takers and **Table 7** for Spanish-test takers). In the second model, the effects of the predictors on language and literacy proficiency outcomes are presented (see **Table 6** for English-test takers and **Table 8** for Spanish-test takers).

English Mathematics

Overall, the results of the first model for English-test takers was found to be significant ($p < .000$). The results for the model indicate that almost all of the variables included in the model were found to be significantly predictive (X^2=203.38, N= 2,147, p< .000) of PK 3 students' performance in math and PK 4 students' performance in math (X^2=560.57, N= 6,744, p< .000) (see Table 5). The model for PK 3 students explained 15.0% (Nagelkerke R^2) of the variance in math proficiency status, and correctly classified 82.1% of the cases. Likewise, for PK 4 students, the model explained 19.0% of the variance in math proficiency status, and correctly classified 92.1% of the cases.

In short, for PK 3 students attending an SBP (β= 0.34), being identified as LEP (β= 0.35), Black (β= 0.38), and Hispanic (β= 0.33) significantly decreased the likelihood of proficiency in math by the middle of the year (see Table 5). However, the odds of economically disadvantaged students who were in PK3 achieving proficiency by the MOY increased by a factor of 2.88, holding all other variables constant (B=1.06, S.E.=.12, p < .000), which can be classified as a medium effect. Prior score in math was a positive and significant predictor for PK 3 students' probability of proficiency by the middle of the year (see Table 5) (B=0.69, S.E.=.12, p < .000). This meant that the odds of PK 3 students who showed proficiency at BOY achieving proficiency by MOY in mathematics increased by a factor of 2.00, holding all other variables constant, which can be classified as a small effect. Also, having proficiency at BOY in SEL was a positive and significant predictor of the probability of proficiency by the middle of the year (B=0.92, S.E.=.17, p < .000). This indicated that for every one-unit increase on the social and emotional assessment, the odds of prekindergarten students achieving proficiency by the middle of the year increased by a factor of 2.51, holding all other variables constant, which can be classified as a small effect.

Similarly, in the case of PK 4 students, being SPED (β= 0.30), LEP (β= 0.49), Black (β= 0.54), and Hispanic (β= 0.44) significantly decreased the likelihood of proficiency in math by the middle of the year (see Table 5). The odds of economically disadvantaged students who were PK4 achieving proficiency by the MOY increased by a factor of 2.46, holding all other variables constant (B=0.90, S.E.=.27, p < .01), which can be classified as a medium effect. The prior score of PK 4 students in mathematics was a positive and significant predictor of the probability of proficiency by the middle of the year in mathematics (B=0.58, S.E.=.12, p < .000) (see Table 5). This meant that the odds of prekindergarten students achieving proficiency by the MOY increased by a factor of 2.00, holding all other variables constant, which can be classified as a small effect. Also, having proficiency at BOY in SEL was a positive and significant predictor of the probability of proficiency by the middle of the year (B=0.92, S.E.=.17, p < .000). This indicated that for every one-unit increase in SEL, the odds of prekindergarten students achieving proficiency by the middle of the year increased by 2.24.

Table 5: Logistic regression of likelihood of prekindergarten English-test takers achieving proficiency in mathematics by MOY

	B	S.E.	Wald	β	95% C.I. for β
		PK 3			
Lit BOY	0.69***	.12	32.75	2.00	1.58-2.53
Female	.13	.12	1.25	1.14	0.90-1.44
Econ. Dis.	1.06**	.41	6.56	2.88	1.28-6.49
SPED	-.42	.34	1.52	0.66	0.34-1.28
LEP	-1.05**	.15	51.21	0.35	0.26-0.47
Black	-0.97*	.33	8.57	0.38	0.20-0.73
Hispanic	-1.11***	.31	12.57	0.33	0.18-0.61
SBP	-1.07***	.19	31.81	0.34	0.24-0.50
SEL BOY	.92***	.17	29.10	2.51	1.80-3.51
Constant	1.44*	0.48	9.13	4.21	
- 2 Log likelihood		1834.49			
RL^2		0.15			
χ^2		203.38			
		PK 4			
Lit BOY	.58***	.10	261.07	4.85	4.00-5.87
Female	.13	.10	1.81	1.14	0.94-1.37
Econ. Dis.	.90**	.27	11.40	2.46	1.46-4.15
SPED	-1.19***	.18	43.26	0.30	0.21-0.43
LEP	-.71***	.11	40.43	0.49	0.40-0.61
Black	-.62*	.22	8.19	0.54	0.35-0.82
Hispanic	-.83***	.20	17.66	0.44	0.30-0.64
SBP	-.30	.18	2.96	0.74	0.52-1.04
SEL BOY	0.81***	.13	40.58	2.24	1.75-2.88
Constant	1.02**	0.31	10.94	2.77	
- 2 Log likelihood		3240.75			
RL^2		0.19			
χ^2		560.57			

*$p < .05$; **$p < .01$; ***$p < .000$

Note: Odds ratio (β) 0f 1.52 = small effect size, 2.74 = medium effect size, and 4.72= large effect size (Chen, Cohen & Chen, 2010).

English Language and Literacy

The results for the logistic regression model predicted the likelihood of HISD prekindergarten students achieving proficiency on the CIRCLE English language and literacy subtests by the middle of the year. The variables in the model were a statistically significant predictor of PK 3 students' performance in language and literacy (X^2=422.91, N= 2,081, p< .000) and PK 4 students' performance in language and literacy (X^2=869.15, N= 7,460, p < .000), indicating that the model was able to distinguish between children who achieved proficiency in English language and literacy by the MOY from children who did not. The model for PK 3 explained 26.0% (Nagelkerke R^2) of the variance in English language and literacy proficiency

status, and correctly classified 75.9% of the cases (see Table 6). Similarly, the model for PK 4 explained 23.0% (Nagelkerke R^2) of the variance and correctly classified 72.0% of the cases.

Only three of the independent variables made a unique statistically significant contribution to the PK 3 model ($p < .000$) and almost all the independent variables contributed to the PK 4 model ($p < .000$). For PK 3 students, significant, though negative, predictors of proficiency in language and literacy were being SPED (β=0.43) and Hispanic (β =0.45) (see Table 6). While for PK 4 students, negative and significant predictors of proficiency were being economically disadvantaged (β=0.08), SPED (β=0.44), LEP (β=0.70), and Hispanic (β =0.63). For female students in PK 4, though a small effect, the odds of achieving proficiency by the MOY increased by a factor of 1.25 compared to their male counterparts (B=0.58, S.E.=.12, $p < .000$), holding all other variables constant.

Prior proficiency on the language and literacy assessment was a positive and significant predictor of the probability of proficiency in language and literacy by the middle of the year for PK 3 students (*B= 2.15*, S.E.=.14, p=.000) and PK 4 students (*B= 2.35*, S.E.=.09, p=.000) (see Table 6). This indicated that for every one-unit increase on the total English language and literacy BOY score, the odds of students achieving proficiency by the middle of the year increased by a factor of 8.61 for PK 3 students and 9.27 for PK 4 students, holding all other variables constant, which can be classified as a large effect. Social and emotional learning was not a significant predictor of students' performance in language and literacy for either age categories.

Table 6: Logistic regression of likelihood of prekindergarten English-test takers achieving proficiency in language and literacy by MOY

	B	S.E.	Wald	β	95% C.I. for β
PK 3					
Lit BOY	2.15***	.14	242.00	8.61	6.57-11.30
Female	.17	.11	2.46	1.18	0.98-1.46
Econ. Dis.	.07	.54	0.02	1.07	0.37-3.10
SPED	-.85**	.33	6.63	0.43	0.22-0.82
LEP	.14	.16	0.85	1.16	0.85-1.57
Black	-.13	.29	0.20	0.88	0.50-1.54
Hispanic	-.79***	.27	8.42	0.45	0.26-0.77
SBP	-.01	.13	0.00	0.99	0.76-1.29
SEL BOY	.24	.13	3.31	1.28	0.98-1.66
Constant	0.34	0.59	0.34	1.41	
- 2 Log likelihood		2117.30			
RL^2		0.26			
χ^2		422.91			
PK 4					
Lit BOY	2.35***	.09	569.82	9.27	7.72-11.13
Female	.22**	.08	7.00	1.25	1.06-1.47
Econ. Dis.	-2.54**	1.01	6.30	0.08	0.01-0.57
SPED	-81***	.21	15.48	0.44	0.30-0.66
LEP	-.36***	.10	12.62	0.70	0.57-0.85
Black	-.20	.18	1.16	0.82	0.57-1.18
Hispanic	-.47**	.17	7.61	0.63	0.45-0.87
SBP	-.16	.14	1.27	0.85	0.65-1.12
SEL BOY	.099	.11	0.77	1.10	0.89-1.38
Constant	4.06***	1.03	15.66	57.89	
- 2 Log likelihood		4,009.65			
RL^2		0.23			
χ^2		869.15			

*$p < .05$; **$p < .01$; ***$p < .000$

Note: Odds ratio (β) 0f 1.52 = small effect size, 2.74 = medium effect size, and 4.72= large effect size (Chen, Cohen & Chen, 2010).

Spanish Mathematics

For Spanish-language test-takers, both models were largely found to be significant ($p < .000$). The results of the first model indicated that three of the variables included in the PK 3 model (X^2=100.08, N=953, $p < .000$) and six of the variables in the PK 4 model (X^2=444.25, N=4,574, $p < .000$) were found to be significantly predictive of Spanish language learners performance in mathematics. The model explained, for PK 3, 11.6% (Nagelkerke R^2) of the variance in mathematics proficiency status and for PK 4, 12.5% of the variance, and correctly classified 85.5% of the PK 3 cases and 95.7% of the PK 4 cases.

Overall, for PK 3 (β= 0.28) and PK 4 (β= 0.26), being identified as SPED was a negative and significant predictor of proficiency in mathematics (see Table 7, p. 13). Additionally, for students in PK 3 being LEP was a positive and significant predictor (B=1.11, S.E.=.30, $p < .000$) of the probability of proficiency in mathematics by the middle of the year (see Table 7). This meant that the odds of prekindergarten students with limited English proficiency (LEP) achieving proficiency in mathematics by the MOY increased by a factor of 3.03, holding all other variables constant, which can be classified as a medium effect.

For PK 4 students, being identified as SPED (β= 0.26) was a negative and significant predictor of proficiency in mathematics, while attending an SPB (β= 0.50) and being female (β= 1.12) were a positive and significant predictor of proficiency in mathematics (see Table 7). As with PK 3, for PK 4 students being LEP was a positive and significant predictor of the probability of proficiency (B=1.42, S.E.=.17, $p < .000$) in mathematics by the middle of the year. Therefore, the odds of prekindergarten students in PK 4 with limited English proficiency (LEP) achieving proficiency by the MOY increased by a factor of 4.16, holding all other variables constant, which can be classified as a medium effect. Also, being economically

disadvantaged was a positive and significant predictor (B=1.42, S.E.=.17, p < .000) of the probability of proficiency in mathematics by the middle of the year. Therefore, the odds of PK 4 students who were identified as economically disadvantaged achieving proficiency by the MOY compared to their counterpart increased by a factor 2.83, holding all other variables constant, which can be classified as a medium effect.

In general, prior score on the math assessment was a positive and significant predictor of the probability of proficiency in mathematics for PK 3 students (B=1.77, S.E.=.30, p < .000) and PK 4 students (B=1.71, S.E.=.16, p < .000) by the middle of the year. Therefore, for every one-unit increase on the total math BOY score, the odds of students achieving proficiency by the middle of the year increased by a factor of 5.87 for PK 3 students and 5.53 for PK 4 students, holding all other variables constant, which can be classified as a large effect. Similarly, prior score on the social and emotional assessment was a positive and significant predictor for the probability of proficiency for PK 3 students (B= .80, S.E.=.37, p < .05) and PK 4 students (B=1.45, S.E.=.24, p < .000) in mathematics by the middle of the year. Therefore, for every one-unit increase on the SEL BOY score, the odds of students achieving proficiency by the middle of the year increased by a factor of 2.23 for PK 3 students and 4.25 for PK 4 students, holding all other variables constant, which can be classified as a small and medium effect, respectively.

Spanish Language and Literacy

The results of the second model indicate that over half of the variables included in the model were found to be significantly predictive for PK 3 (X^2=64.61, N=931, p<0.000) and PK 4 (X^2=173.08, N=4,505, p<0.000) performance in language and literacy (see Table 8, p. 14). The model explained 16.6% (Nagelkerke R^2) of the variance for PK 3 and 24.6% of the variance for PK 4 in language and literacy proficiency status. The model also correctly classified 83.2% of the cases for PK 3 and 93.9% for PK 4.

For the most part, PK 3 students being identified as SPED (β=0.37) was a negative and significant predictor of proficiency in mathematics and being female (β=1.47) was a positive significant predictor (see Table 8, p. 14). Similarly, for PK 4 being identified as SPED (β=0.21) and attending an SBP (β=0.59) was a negative and significant predictor of proficiency in language and literacy and being female (β=1.44) was a positive significant predictor. Additionally, being identified as economically disadvantaged was a positive and significant predictor for PK 3 (B=1.01, S.E.=.43, p < .05) and PK 4, (B=1.41, S.E.=.25, p < .000) relative to the probability of proficiency in language and literacy by the middle of the year. This meant that the odds of PK 3 students who are economically disadvantaged achieving proficiency by the MOY compared to their counterpart increased by a factor of 2.74 and a factor of 4.11 for PK 4 students, holding all other variables constant, which can be classified as a medium and large effect, respectively.

As with the initial model, prior proficiency on language and literacy assessment was a positive and significant predictor for PK 3 students (*B*=1.35, S.E.=0.24, p=.000) and PK 4 students (*B*=1.57, S.E.=0.17, p=.000) relative to the probability of proficiency by the middle of the year (see Table 8). Therefore, for every one-unit increase on the total English language and literacy BOY score, the odds of achieving proficiency by the middle of the year increased by a factor of 3.86 for PK 3 students and 4.81 for PK 4 students, holding all other variables constant, which can be classified as a medium and large effect, respectively. For PK 4 students, the BOY score for social and emotional learning was a

Table 7: Logistic regression of likelihood of prekindergarten Spanish-test takers achieving proficiency in mathematics by MOY

	B	S.E.	Wald	β	95% C.I. for β
		PK 3			
Lit BOY	1.77***	.30	35.44	5.87	3.28-10.51
Female	.18	.18	1.00	1.20	0.84-1.72
Econ. Dis.	.66	.43	2.30	1.93	.83-4.50
SPED	-1.26*	.47	7.25	0.28	0.11-0.71
LEP	1.11***	.30	13.58	3.03	1.68-5.45
Black	-.85	1.13	0.57	0.43	0.05-3.90
Hispanic	.19	.89	0.04	1.20	0.21-6.86
SBP	.01	.20	0.00	1.01	0.68-1.49
SEL BOY	0.80*	.37	4.56	2.23	1.07-4.64
Constant	-1.41	0.96	2.13	0.25	
- 2 Log likelihood		781.94			
RL^2		0.17			
χ^2		100.08			
		PK 4			
Lit BOY	1.71***	.16	114.63	5.53	4.04-7.56
Female	0.12**	.13	0.76	1.12	0.86-1.46
Econ. Dis.	1.04***	.25	17.24	2.83	1.73-4.62
SPED	-1.36***	.33	16.61	0.26	0.13-0.49
LEP	1.42***	.17	67.73	4.16	2.96-5.84
Black	.02	.49	0.00	1.02	0.39-2.68
Hispanic	.12	.40	0.09	1.12	0.51-2.46
SBP	0.70**	.22	10.36	0.50	0.32-0.76
SEL BOY	1.45***	.24	37.46	4.25	2.68-6.76
Constant	-0.99*	0.46	4.67	0.37	
- 2 Log likelihood		1,718.83			
RL^2		0.25			
χ^2		444.25			

*p < .05; **p < .01; ***p < .000

Note: Odds ratio (β) 0f 1.52 = small effect size, 2.74 = medium effect size, and 4.72= large effect size (Chen, Cohen & Chen, 2010).

positive and significant predictor for the probability of proficiency by the middle of the year (B=0.76, S.E.=0.32, p <.05). Therefore, for every one-unit increment in SEL, the odds of PK 4 students achieving proficiency by middle of the year increased by a factor of 2.13, holding all other variables constant, which can be classified as a small effect.

Table 8: Logistic regression of likelihood of prekindergarten Spanish-test takers achieving proficiency in language and literacy by MOY

	B	S.E.	Wald	β	95% C.I for β
		PK 3			
Lit BOY	1.35***	.24	32.98	3.86	2.43-6.1
Female	.39*	.19	3.96	1.47	1.01-2.1
Econ. Dis.	1.01*	.43	5.40	2.74	1.17-6.4
SPED	-.99*	.49	4.16	0.37	0.14-0.9
LEP	.66	.29	5.11	1.93	1.09-3.4
Black	-.07	1.41	0.00	0.93	0.06 14.9
Hispanic	-.76	1.17	0.42	0.47	0.05-4.6
SBP	-.26	.21	1.62	0.77	0.51-1.1
SEL BOY	.22	.39	0.33	1.25	0.58-2.7
Constant	0.37	1.19	0.10	1.45	
- 2 Log likelihood		723.70			
RL^2		0.12			
χ^2		64.61			
		PK 4			
Lit BOY	1.57***	.17	90.47	4.81	3.48-6.6
Female	.36*	.15	5.61	1.44	1.06-1.9
Econ. Dis.	1.41***	.25	32.55	4.11	2.53-6.6
SPED	-1.56***	.34	20.68	0.21	0.11-0.4
LEP	.23	.26	0.83	1.26	0.77-2.0
Black	-.50	.75	0.43	0.61	0.14-2.6
Hispanic	-.69	.61	1.29	0.50	0.15-1.6
SBP	-.52*	.22	5.55	0.59	0.38-0.9
SEL BOY	.76*	.32	5.66	2.13	1.14-3.9
Constant	1.15	0.63	3.34	3.17	
- 2 Log likelihood		1,445.21			
RL^2		0.13			
χ^2		173.08			

*p < .05; **p < .01; ***p < .000

Note: Odds ratio (β) 0f 1.52 = small effect size, 2.74 = medium effect size, and 4.72= large effect size (Chen, Cohen & Chen, 2010).

Discussion

The prekindergarten program is a complex subsystem of early childhood education situated within the walls of elementary schools and childcare centers, charged with making and implementing decisions to promote the equitable development, learning, and school readiness of all children. Each child, whatever their abilities and differences, should fully be respected, and their needs are taken into careful consideration for them to be included in prekindergarten with the highest expectations (NAEYC, NAECS/SDE, 2003).

For this report, descriptive statistical analyses, effect size computations, and inferential statistical models were used to examine relationships between the academic achievement of prekindergarten students in language and literacy, and mathematics during the 2019–2020 school year. Proficiency levels in the specified social and academic areas were measured at the beginning-of-year (BOY) and middle-of-year (MOY). Students' age was also taken into consideration during this evaluation to determine appropriate proficiency level expectations as indicated in the CIRCLE Progress Monitoring Cut Points (Children's Learning Institute [CLI], 2016).

The district expansion of the prekindergarten program to younger students led to an increase in the number of prekindergarten students under the age of four. However, with the priority focus on the recruitment of younger learners, there was a decrease in the number of students above four years old. In its ongoing efforts to expand equitable access to high-quality, full-day prekindergarten programs for its youngest students, HISD conducted a targeted campaign to attract 3 to 4 years old children. As a result, the enrollment of prekindergarten students over four years old dropped. The Communications Department may need to provide recruitment tools that target students from different age categories.

With the increase in the number of younger learners, the research examined social and emotional learning on student academic outcomes. SEL at a young age has been shown to be a predictor of later classroom adjustment and academic readiness. Teacher's views on the use of social and emotional learning in the classroom were examined. In general, the teachers somewhat agreed with the administration of SEL learning and assessment in the classroom. There was a high level of agreement with the philosophy surrounding SEL, however, teachers found the administration of the SEL assessment to be too time consuming, especially in the SBPs which have larger classroom sizes.

Furthermore, the results from descriptive analyses indicated that there were increases in the percent of students who attended HISD prekindergarten that attained proficiency in social and emotional learning, language and literacy, and mathematics from BOY to MOY. The percent increase in students that were *proficient* was generally higher on the social and emotional assessment for PK 4 students compared to PK 3 students (see Figures 2 to 3). This difference in performance may be attributed, in part, to the development of children as they progress in age and instructional priorities for this age group. The highest increase in proficiency on the social and emotional learning assessment across age groups (PK 3 and PK 4) was found among students who attended an ECC. Similarly, English-language test-takers who attended ECCs had a higher rate of proficiency across most language and literacy and

mathematics subtests regardless of age group. While for Spanish-language test-takers, the performance was comparable between students who attended ECCs and SPBs on most subtests.

Logistic regression models were used to examine the relationship between predictor variables and the likelihood that HISD prekindergarten students would achieve proficiency in language and literacy, and mathematics by the middle of the year. The models each contained eight predictor variables (BOY total score in language and literacy or mathematics, prekindergarten program type, race and ethnicity, gender, economically disadvantaged status, LEP status, special education status, and SEL BOY score).

Results indicated that the largest effect on students' academic achievements was their prior year's score. There was a significant positive relationship between the BOY total score and students' proficiency in language and literacy, and mathematics by the MOY regardless of the language version of subtests. This finding indicates HISD early childhood educators should consider the implications of students' pre-existing knowledge as they enter prekindergarten for their first or second year. Results also implicate the presence of an achievement gap. Prekindergarten students who had lower achievement at the BOY had a decreased likelihood of achieving proficiency than their higher-performing peers.

Although having a small effect, students' proficiency in SEL at BOY was a positive and significant predictor of students' proficiency in mathematics regardless of language version and age group. Efforts to improve math education tend to focus on cognitive factors overlooking the very important role that the social and emotional factors play in math achievement (Beilock & Maloney, 2015). Improved SEL could have positive effects on students' overall achievement in mathematics. Increased literacy in mathematics is essential, as the subject has been applied extensively in a diverse number of fields.

It may benefit the district to administer additional SEL subtests, to get a better understanding of prekindergarten students' SEL development, while taking into consideration the impact of increased testing on teachers and students. Research has shown the importance of building teachers' capacity to incorporate social and emotional learning in classroom instruction would lead to improved student learning. The social and emotional learning checklist includes five measures: positive social behavior, classroom and community safety, emotion and behavior regulation, self-care, and approaches to learning. The district only administers the positive social behavior subtest.

In alignment with other research, the evaluation found that students identified as special education were less likely than their counterparts to be proficient on mathematics and language and literacy assessment by the middle of the year across language tested and age group. Spanish language test-takers who were identified as special education were, on average, 73% less likely to achieve proficiency by MOY compared to their counterparts. Similarly, English language test-takers were, on average, 54% less likely to achieve proficiency by MOY compared to students who were not identified as SPED.

Spanish language test-takers in PK 4 who attended an SBP were more likely than students who attended an ECC to be proficient on mathematics and language and literacy assessments by the middle of the year. Spanish language test-takers who were in PK 4 were 50% more likely to achieve proficiency in mathematics and 41% less likely to achieve proficiency in language and literacy by MOY compared to ECC students. Similarly, English language test-takers who were PK 3 were 66% less likely to achieve proficiency in mathematics by MOY compared to ECC students.

With the disparity in student performance, 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. Additionally, there is a growing agreement of the benefits of social and emotional learning in relation to young learners' academic achievements. The Early Childhood Department may want to identify and monitor academic and social development factors that impact the educational experiences of students once they enroll in HISD prekindergarten programs to improve student learning outcomes.

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APPENDIX–A

Table A1. Cut scores for CIRCLE subtests administered to HISD students in the 2019–2020 school year

		3.0 - <3.5		3.5 - <4.0		4.0 - <4.5		4.5 or Above	
	SUBTESTS	English	Spanish	English	Spanish	English	Spanish	English	Spanish
LANGUAGE AND LITERACY	Rapid Letter Naming	***	***	8	6	14	10	14	13
	Rapid Vocabulary	10	7	12	9	19	16	20	16
	Phonological Awareness Total Score*	9	7	12	11	15	13	17	15
	Syllabication*	***	***	6	5	6	5	6	5
	Alliteration*	***	***	6	5	6	5	6	5
	Words in a Sentence*	***	***	4	3	4	3	4	3
	Rhyming I*	***	***	7	5	7	5	7	5
MATHEMATICS	Math Total Score	11	10	13	13	18	17	20	20
	Rote Counting	***	***	2	2	2	2	2	2
	Shape Naming	***	***	4	4	4	4	4	4
	Number Discrimination	***	***	2	2	2	2	2	2
	Number Naming	***	***	3	3	3	3	3	3
	Shape Discrimination	***	***	5	5	5	5	5	5
	Counting Sets	***	***	4	4	4	4	4	4

Source. Adapted from Children's Learning Institute (August 2018). 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, they are considered proficient. If a student scores below the benchmark, they are considered 'developing' (refers to students younger than four years old) or 'emerging' (for students four years old and older). Those age groups with not cut points are identified as *** and those subtests that are not administered in Spanish have a dash (-).

APPENDIX–B

Table B1. Survey response for prekindergarten teachers by prekindergarten program type, 2019–2020

	HISD Early Childhood Center		HISD School Based Program	
	n	%	n	%
Administer SEL Test	*I am currently using the CIRCLE observation-based assessment for Social and Emotional Development.*			
No	7	15.9	24	9.3
Yes	37	84.1	235	90.7
SEL Assessment Needed	*I see a need for a formal assessment of students' SEL learning.*			
Strongly Agree	12	27.3	50	19.3
Agree	13	29.5	81	31.3
Neutral	11	25.0	62	23.9
Disagree	6	13.6	37	14.3
Strongly Disagree	2	4.5	29	11.2
SEL Time Consuming	*To do an observational assessment of SEL is too time consuming.*			
Strongly Agree	5	11.4	31	12.0
Agree	11	25.0	70	27.0
Neutral	10	22.7	67	25.9
Disagree	12	27.3	72	27.8
Strongly Disagree	6	13.6	19	7.3
SEL User Guidance	*I feel like there would be enough guidance on how to use observational assessments effectively and efficiently.*			
Strongly Agree	3	6.8	19	7.3
Agree	12	27.3	74	28.6
Neutral	16	36.4	86	33.2
Disagree	9	20.5	60	23.2
Strongly Disagree	4	9.1	20	7.7
SEL Not Useful	*An assessment of SEL development would not be useful for students.*			
Strongly Agree	1	2.3	17	6.6
Agree	6	13.6	24	9.3
Neutral	11	25.0	64	24.7
Disagree	17	38.6	112	43.2
Strongly Disagree	9	20.5	42	16.2

Table B1. Continued

	HISD Early Childhood Center		HISD School Based Program	
	n	%	n	%
Measure Academic Growth	*An assessment of SEL development would be a useful measure of students' academic growth.*			
Strongly Agree	9	20.5	39	15.1
Agree	17	38.6	102	39.4
Neutral	12	27.3	53	20.5
Disagree	4	9.1	42	16.2
Strongly Disagree	2	4.5	23	8.9
Number of Students	*The number of students in my classroom makes it difficult to do and observational assessment.*			
Strongly Agree	9	20.5	49	18.9
Agree	7	15.9	74	28.6
Neutral	13	29.5	53	20.5
Disagree	11	25.0	61	23.6
Strongly Disagree	4	9.1	22	8.5
Personal Philosophy	*My personal agreement with the philosophy of SEL increases my willingness to do a formal SEL assessment.*			
Strongly Agree	9	20.5	61	23.6
Agree	16	36.4	96	37.1
Neutral	13	29.5	73	28.2
Disagree	4	9.1	18	6.9
Strongly Disagree	2	4.5	11	4.2
SEL Training	*What type of training have you received on using SEL in the classroom?*			
College course(s)	15	34.1	89	34.4
Full Day	18	40.9	86	33.2
Half-day	5	11.4	39	15.1
Informal Training	6	13.6	45	17.4

Source: Prekindergarten Teacher Survey, 2019-2020

APPENDIX-C

Table C1. Proficiency of HISD Prekindergarten Students on 2019–2020 English CIRCLE Positive Social Behaviors subtest by prekindergarten program type and age group

		Early Childhood Center (ECC)						School Based Program (SBP)					
			BOY		MOY		Diff		BOY		MOY		Diff
		N	n	%	n	%	%	N	n	%	n	%	%
Emerging			172	47.0%	92	25.1%	-21.9%		762	54.3%	352	25.1%	-29.2%
Developing	PK 3	366	178	48.6%	223	60.9%	12.3%	1404	563	40.1%	912	65.0%	24.9%
Proficient			16	4.4%	51	13.9%	**9.6%**		79	5.6%	140	10.0%	**4.3%**
Emerging			260	32.6%	107	13.4%	-19.2%		1788	34.3%	690	13.2%	-21.1%
Developing	PK 4	798	437	54.8%	445	55.8%	1.0%	5208	2754	52.9%	3339	64.1%	11.2%
Proficient			101	12.7%	246	30.8%	**18.2%**		666	12.8%	1179	22.6%	**9.9%**

Table C2. Proficiency of HISD prekindergarten students on 2019–2020 Spanish CIRCLE Positive Social Behaviors subtest by prekindergarten program type and age group

		Early Childhood Center (ECC)						School Based Program (SBP)					
			BOY		MOY		Diff		BOY		MOY		Diff
		N	n	%	n	%	%	N	n	%	n	%	%
Emerging			174	54.7%	56	17.6%	-37.1%		358	68.2%	143	27.2%	-41.0%
Developing	PK 3	318	117	36.8%	204	64.2%	27.4%	525	145	27.6%	336	64.0%	36.4%
Proficient			27	8.5%	58	18.2%	**9.7%**		22	4.2%	46	8.8%	**4.6%**
Emerging			429	48.3%	101	11.4%	-36.9%		1723	55.0%	475	15.2%	-39.8%
Developing	PK 4	888	416	46.8%	617	69.5%	22.7%	3135	1203	38.4%	2027	64.7%	26.3%
Proficient			43	4.8%	170	19.1%	**14.3%**		209	6.7%	633	20.2%	**13.5%**

Table C3. Proficiency of HISD prekindergarten students on 2019–2020 English CIRCLE Language and Literacy subtests by prekindergarten program type and age group

		Early Childhood Center (ECC)						School Based Program (SBP)					
			BOY		MOY		Diff.		BOY		MOY		Diff.
		N	n	%	n	%	%	N	n	%	n	%	%
Alliteration	PK 3	1285	*	0.6%	23	6.4%	5.8%	5950	31	2.1%	155	10.7%	8.6%
	PK 4		73	8.6%	328	38.5%	29.9%		434	7.6%	1804	31.6%	24.0%
Rapid Letter Naming	PK 3	1285	80	21.2%	198	52.5%	31.3%	6830	330	20.0%	728	44.1%	24.1%
	PK 4		418	48.5%	688	79.9%	31.4%		2315	39.0%	4302	72.5%	33.5%
Rapid Vocabulary	PK 3	1231	68	18.2%	121	32.4%	14.2%	6802	262	16.5%	529	33.3%	16.8%
	PK 4		437	50.9%	608	70.9%	20.0%		2451	42.3%	3627	63.4%	21.1%
Rhyming I	PK 3	1194	5	1.4%	476	18.2%	16.8%	6721	38	2.7%	220	15.4%	12.7%
	PK 4		123	14.6%	64	49.1%	34.5%		594	10.4%	2241	39.2%	28.8%
Syllabication	PK 3	1285	5	1.3%	97	25.9%	24.6%	6298	65	4.4%	323	21.7%	17.3%
	PK 4		154	18.0%	527	61.6%	43.6%		671	11.6%	2780	48.1%	36.5%
Words in A Sentence	PK 3	1285	5	1.4%	64	18.1%	16.7%	7139	86	6.6%	299	23.1%	16.5%
	PK 4		137	16.1%	464	54.4%	38.3%		763	14.6%	2374	45.5%	30.9%

Table C4. Proficiency of HISD prekindergarten students on 2019–2020 Spanish CIRCLE Language and Literacy subtests by prekindergarten program type and age group

		Early Childhood Center (ECC)						School Based Program (SBP)					
			BOY		MOY		Diff		BOY		MOY		Diff
		N	n	%	n	%	%	N	n	%	n	%	%
Alliteration	PK 3	1253	6	1.8%	81	24.2%	22.4%	4172	30	4.7%	85	13.4%	8.7%
	PK 4		60	6.5%	411	44.8%	38.3%		215	6.1%	1179	33.3%	27.2%
Rapid Letter Naming	PK 3	1252	12	3.6%	185	55.6%	52.0%	4269	34	5.2%	261	39.9%	34.7%
	PK 4		221	24.0%	738	80.3%	56.3%		451	12.5%	2254	69.8%	57.3%
Rapid Vocabulary	PK 3	1247	14	4.3%	88	26.8%	22.5%	4224	36	5.5%	138	21.0%	15.5%
	PK 4		100	10.9%	463	50.4%	39.5%		442	12.4%	1544	43.3%	30.9%
Rhyming I	PK 3	1252	*	0.3%	97	29.0%	28.7%	4169	31	4.9%	98	15.5%	10.6%
	PK 4		68	7.4%	541	59.0%	51.6%		234	6.6%	1425	40.3%	33.7%
Syllabication	PK 3	1256	13	3.9%	101	30.1%	26.2%	4169	37	5.8%	151	23.6%	17.8%
	PK 4		105	11.4%	554	60.2%	48.8%		251	7.1%	1763	50.0%	42.9%
Words in A Sentence	PK 3	1230	*	1.3%	44	14.0%	12.7%	3957	19	3.2%	88	14.9%	11.7%
	PK 4		48	5.2%	319	34.8%	29.6%		120	3.6%	852	25.3%	21.7%

Table C5. Proficiency of HISD prekindergarten students on 2019–2020 English CIRCLE Mathematic subtests by prekindergarten program type and age group

		Early Childhood Center (ECC)						School Based Program (SBP)					
			BOY		MOY		Diff.		BOY		MOY		Diff.
		N	n	%	n	%	%	N	n	%	n	%	%
Counting Sets	PK 3	1285	86	28.1%	178	65.4%	37.3%	5950	405	29.8%	760	60.0%	30.2%
	PK 4		323	51.3%	616	86.6%	35.3%		2225	48.5%	4131	86.2%	37.7%
Number Discrimination	PK 3	1285	121	35.5%	224	65.7%	30.2%	6830	467	32.0%	888	60.9%	28.9%
	PK 4		513	64.0%	678	84.6%	20.6%		3209	59.7%	4553	84.8%	25.1%
Number Naming	PK 3	1285	63	18.5%	165	48.4%	29.9%	6802	233	16.0%	599	41.1%	25.1%
	PK 4		340	42.5%	591	73.9%	31.4%		2068	38.7%	3684	68.9%	30.2%
Operations	PK 3	1136	9	2.7%	83	24.5%	21.8%	6721	100	7.0%	292	20.4%	13.4%
	PK 4		154	19.3%	393	49.3%	30.0%		852	16.1%	2224	42.0%	25.9%
Rote Counting	PK 3	1155	177	50.4%	299	82.8%	32.4%	7139	799	52.0%	1206	78.7%	26.7%
	PK 4		577	71.8%	777	94.1%	22.3%		4104	73.7%	5411	94.5%	20.8%
Shape Discrimination	PK 3	1141	126	37.1%	242	71.2%	34.1%	6810	474	32.7%	929	64.0%	31.3%
	PK 4		486	60.7%	681	85.0%	24.3%		3040	56.7%	4471	83.4%	26.7%
Shape Naming	PK 3	1285	90	26.3%	202	59.1%	32.8%	6878	368	24.6%	813	54.3%	29.7%
	PK 4		391	48.7%	618	77.0%	28.3%		2496	46.4%	4095	76.1%	29.7%

Table C6. Proficiency of HISD prekindergarten students on 2019–2020 Spanish CIRCLE Mathematic subtests by prekindergarten program type and age group

		Early Childhood Center (ECC)						School Based Program (SBP)					
			BOY		MOY		Diff.		BOY		MOY		Diff.
		N	n	%	n	%	%	N	n	%	n	%	%
Counting Sets	PK 3	1170	33	9.6%	182	60.3%	50.7%	3994	107	16.7%	343	59.8%	43.1%
	PK 4		220	26.6%	746	91.0%	64.4%		921	27.5%	2626	85.1%	57.6%
Number Discrimination	PK 3	1340	84	22.8%	232	63.0%	40.2%	4459	175	25.8%	446	65.9%	40.1%
	PK 4		471	48.5%	856	88.1%	39.6%		1727	45.7%	3182	84.1%	38.4%
Number Naming	PK 3	1338	18	4.9%	141	38.3%	33.4%	4471	43	6.3%	256	37.8%	31.5%
	PK 4		242	24.9%	736	75.9%	51.0%		692	18.2%	2469	65.1%	46.9%
Operations	PK 3	1336	7	1.9%	100	27.2%	25.3%	4444	24	3.6%	119	17.9%	14.3%
	PK 4		109	11.3%	502	51.9%	40.6%		330	8.7%	1527	40.4%	31.7%
Rote Counting	PK 3	1338	66	18.3%	261	74.1%	55.8%	4497	220	31.6%	520	74.6%	43.0%
	PK 4		431	45.9%	898	95.3%	49.4%		1744	46.1%	3379	90.8%	44.7%
Shape Discrimination	PK 3	1340	79	21.5%	224	60.9%	39.4%	4488	126	18.6%	406	59.8%	41.2%
	PK 4		408	42.0%	838	86.2%	44.2%		1256	33.0%	3042	79.9%	46.9%
Shape Naming	PK 3	1341	29	7.9%	195	52.8%	44.9%	4498	55	8.1%	296	43.5%	35.4%
	PK 4		218	22.4%	754	77.6%	55.2%		587	15.4%	2423	63.5%	48.1%