TO: Board Members

FROM: Terry B. Grier, Ed.D. Superintendent of Schools

#### SUBJECT: PREKINDERGARTEN EDUCATION PROGRAM: A PERFORMANCE COMPARISON OF HEAD START PROGRAMS

CONTACT: Carla Stevens, (713) 556-6700

Attached is the 2011–2012 evaluation report examining the kindergarten performance of students who were enrolled in Head Start in 2010–2011. HISD collaborates with four federally-funded Head Start agencies: AVANCE, Gulf Coast Community Services Association (GCCSA), Harris County Department of Education, and Neighborhood Centers, Inc. (NCI). The purpose of this evaluation was to examine the variation in the 2011–2012 kindergarten performance of students across the four Head Start programs as assessed by both norm-referenced and criterion-referenced exams. In addition, the differences in kindergarten performance between students who attended Head Start versus their peers who were not enrolled in HISD prekindergarten or Head Start program are economically-disadvantaged, this attribute was taken into account when comparing students who attended Head Start versus students who attended start or HISD prekindergarten.

Findings suggest that kindergarten performance variations existed across the four Head Start programs. Specifically, on the 2011–2012 Stanford and Aprenda reading and math subtests, kindergarten students who attended NCI or GCCSA Head Start tended to perform better than students who attended AVANCE or Harris County Head Start.

Overall findings from this evaluation indicate that students who attended one of the local Head Start agencies performed better on the Stanford reading and math subtests compared to their economically-disadvantaged peers who did not attend HISD prekindergarten or Head Start.

For the most part, Head Start students score at the same levels as their peers who attended other HISD prekindergarten programs, not affiliated with Head Start. Because HISD kindergarten students may have been dually-enrolled in both Head Start and HISD prekindergarten or attended a Head Start standalone program, performance comparisons were also distinguished by these programs within each of the Head Start agencies. Stanford and Aprenda kindergarten performance results consistently indicated that students who were dually-enrolled in Head Start and HISD prekindergarten scored higher than their peers who were enrolled in a standalone Head Start program.

Jung B. Chien TBG

Attachment

cc: Superintendent's Cabinet Chief School Officers Nancy Gregory Mary Jane Gomez Alison Heath





PREKINDERGARTEN EDUCATION PROGRAM: A PERFORMANCE COMPARISON OF HEAD START PROGRAMS, 2011–2012

DEPARTMENT OF RESEARCH AND ACCOUNTABILITY HOUSTON INDEPENDENT SCHOOL DISTRICT



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#### Houston Independent School District

Hattie Mae White Educational Support Center 4400 West 18th Street Houston, Texas 77092-8501

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## PREKINDERGARTEN EDUCATION PROGRAM: A PERFORMANCE COMPARISON OF HEAD START PROGRAMS, 2011–2012

#### **Executive Summary**

#### **Program Description**

The purpose of Head Start is to prepare economically-disadvantaged children to enter the K-12 educational system by providing services that will enhance their cognitive skills, school readiness, and socio-emotional development. Presently, HISD collaborates with four federally-funded Head Start agencies: AVANCE, Gulf Coast Community Services Association (GCCSA), Harris County Department of Education, and Neighborhood Centers, Inc. (NCI). Collectively, all four agencies collaborate with thirty-one HISD schools (Appendix A). The purpose of this evaluation is to examine the variation in the performance of students enrolled in kindergarten during the 2011–2012 academic year who attended one of the four Head Start programs, as well as to examine the extent to which students' benefitted academically from attending Head Start. To determine the academic benefits of Head Start, the academic performance of students who attended Head Start were compared to students who were not enrolled in HISD prekindergarten or Head Start the previous year. Specific measures of student performance include:

- Stanford 10 and Aprenda 3 kindergarten reading and math scores;
- Reading comprehension levels on the TPRI Early Reading Assessment and Tejas LEE.

#### **Highlights**

- The 2011–2012 Stanford reading scores in kindergarten varied by the Head Start agency students attended in 2010–2011, with the largest difference between NCI and AVANCE (6 NCEs).
- The average 2011–2012 Stanford reading performance of students who attended NCI was slightly higher than the average score of all 2011–2012 economically-disadvantaged kindergarten students who were enrolled in HISD prekindergarten in 2010–2011 (district average; 0.3 NCEs).
- The 2011–2012 Stanford math scores in kindergarten varied by the Head Start agency students attended in 2010–2011, with the largest difference again between NCI and AVANCE (5 NCEs).
- The 2011–2012 Aprenda reading scores in kindergarten varied by the Head Start agency students attended in 2010–2011, with the largest difference between NCI and Harris County (13 NCEs).
- The average 2011–2012 Aprenda reading performance of students who attended NCI and GCCSA was higher by approximately four NCEs than the average score of all 2011–2012 kindergarten students who were enrolled in HISD prekindergarten in 2010–2011 (district average).

- The 2011–2012 Aprenda math scores in kindergarten varied by the Head Start agency students attended, with the largest difference between GCCSA and Harris County (7 NCEs).
- The average 2011–2012 Aprenda math performance of students who attended GCCSA and NCI in 2010–2011 was higher than the average score of all 2011–2012 kindergarten students who were enrolled in HISD prekindergarten in 2010–2011 by four NCEs and one NCE, respectively.
- All of the Head Start agencies had at least 80% of their students score at the "developed" level on the 2012 TPRI screening assessment.
- All of the Head Start agencies had at least 90% of their students score at the "developed" level on "Letter Naming" inventory and two agencies had this level of performance on the "Rhyming inventory.
- The average 2011–2012 Stanford reading performance of economically-disadvantaged kindergarten students who attended NCI and GCCSA in 2010–2011 was statistically significantly higher than economically-disadvantaged students who did not attend HISD prekindergarten or Head Start (8 NCEs, *p* < .001 and 6 NCEs, *p* < .001, respectively).</li>
- The average 2011–2012 Stanford math performance of economically-disadvantaged kindergarten students who attended NCI and GCCSA in 2010–2011 was statistically significantly higher than economically-disadvantaged students who did not attend HISD prekindergarten or Head Start (6 NCEs, *p* < .001 and 6 NCEs, *p* < .001, respectively).</li>
- The average 2011–2012 Aprenda reading performance of students who attended NCI, GCCSA, and AVANCE was statistically significantly higher than students who did not attend HISD prekindergarten or Head Start (19 NCEs, *p* < .001, 19 NCEs, *p* < .001, and 14 NCEs, *p* < .001, respectively).</li>
- The average 2011–2012 Aprenda reading performance of students who attended NCI and GCCSA was statistically significantly higher compared to students who attended HISD prekindergarten (non-Head Start) by 5 NCEs, *p* < .001, and 4 NCEs, *p* < .05, respectively.
- The average 2011–2012 Aprenda math performance of students who attended GCCSA, NCI, and AVANCE was statistically significantly higher than students who did not attend HISD prekindergarten or Head Start (18 NCEs, *p* < .001, 15 NCEs, *p* < .001, and 13 NCEs, *p* < .001, respectively).
- Head Start students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Stanford and Aprenda reading and math subtests compared to students enrolled in the Head Start standalone centers.

#### **Recommendations**

- 1. The Early Childhood Curriculum department and the Research & Accountability department should continue to work with the Head Start collaborative to provide student level identification information and improve the identification and follow-up of students in HISD.
- 2. In addition to their student enrollment information, collaborating Head Start agencies should provide HISD with a list of students who are assigned to their waiting list. These students serve as potentially good candidates for a comparison group in future evaluations given that they meet Head Start requirements and have parents motivated to enroll them in an early childhood education program.

#### **Administrative Response**

The Early Childhood Curriculum department will schedule quarterly meetings to have professional collaboration with each Head Start agency about the data presented in the performance comparison. The Early Childhood Curriculum department would also like to compare the curriculum used by each agency to understand their differences and to examine the extent to which these differences contribute to the variance in performance results.

#### Introduction

Head Start programs are publicly-funded and managed at the local level but must adhere to federal quality guidelines. These guidelines suggest that Head Start agencies provide a learning environment that promotes cognitive and social-emotional development to enhance the school-readiness of low-income students. In addition, Head Start agencies are expected to provide a wide array of social services to assist families.

Variations in the quality level of Head Start programs have been found to exist; however, previous research suggests that, on average, Head Start centers are of higher quality than other preschool programs and unregulated child-care (See Currie, 2001; Collaborative for Children, 2012). Past evaluations of Head Start programs suggest that a Head Start intervention can have short-term and long-term benefits for not only children, but also for their parents. For example, short-term benefits include improvements in academic performance, health and nutrition, and a reduction in the likelihood of children becoming victims of abuse and neglect. Longer-term benefits of Head Start include a reduction in the likelihood of special education placement, and a reduction in the incidence of early grade retention. In addition, some studies have found that a quality Head Start intervention increases the likelihood of high school graduation (See Currie, 2001; Currie & Neidell, 2007).

Variations in findings regarding the benefits of Head Start sometimes have to do with the selection of comparison groups (Zhai, Brooks-Gunn, & Waldfogel, 2011). Previous studies have compared students who received a formal preschool education to all other students who did not receive a formal preschool education without controlling for demographic characteristics, such as economic status, that influence student performance (Gormley et al., 2005). Given the negative effects of low socio-economic status on academic outcomes (e.g., Aikens & Barbarin, 2008; Brooks-Gunn, 2003; Chatterji, 2006), the current evaluation has taken into consideration a students' socioeconomic status when comparing the Stanford performance of Head Start students versus their peers who did not attend HISD prekindergarten or Head Start. The four Head Start agencies reviewed in this report are AVANCE, Gulf Coast Community Services Association (GCCSA), Harris County Department of Education, and Neighborhood Centers, Inc. (NCI).

#### Methods

#### **Data Collection and Analysis**

- Each of the four Head Start agencies provided a list of students enrolled in their program in 2010–2011. These lists included both students who were dually-enrolled in HISD prekindergarten and Head Start, and stand-alone Head Start students. The students were matched to the PEIMS 2011–2012 database of HISD kindergarteners by either social security number or by a composite of last name, first name, and date of birth, depending on the amount of information provided by the Head Start agency. For a portion of the analysis, students were disaggregated by whether they were enrolled in a Head Start dual-enrollment program or in one of the stand-alone programs. For AVANCE, 203 students were identified as 2011–2012 HISD kindergarteners; for GCCSA, 733 students; for Harris County, 100 students; and for NCI, 778 students.
- Data compiled for this report included student enrollment and individual identification numbers collected from the Texas Education Agency's (TEA) Public Education Information

Management System (PEIMS). Student performance data were collected from the following test assessments: the Stanford Achievement Test (Stanford 10), the Aprenda: La Prueba de Logros en Espanol (Aprenda 3), the Texas Primary Reading Inventory (TPRI), and El Inventario de Lectura en Español de Tejas (Tejas LEE).

- Stanford Achievement Test (Stanford 10). The Stanford 10 assesses students' academic achievement in various academic subjects across nine grade levels (kindergarten through grade 8). Kindergarten students take the Stanford at the end of the fall semester of the academic year. Normal curve equivalent scores (NCE; a normalized standard score) are reported in the current evaluation to assess student kindergarten performance.
- La prueba de logros en español, Tercera edición (Aprenda 3). The Aprenda 3 is a norm-referenced, standardized achievement test in Spanish, and is used to assess the level of content mastery for students who receive instruction in Spanish. The Aprenda assesses students' academic achievement in the same content areas as the Stanford (i.e., reading and math); however, the Aprenda is not a translation of the Stanford.
- Texas Primary Reading Inventory (TPRI, 2010). The Texas Primary Reading Inventory (TPRI) is a teacher-administered assessment of reading skills for children. The primary purposes of the TPRI are to facilitate a teacher's capacity to identify children at-risk for reading difficulties and to determine the appropriate instructional objectives and interventions for these students. The TPRI is also administered three times a year. Kindergarten students first take the TPRI screening test, which assesses their letter knowledge and phonemic awareness to determine whether they are developed (D) or are still developing (SD). Students classified as developed on the screening section are not likely at risk of developing reading difficulties. For students who score still developing on the screening section, additional portions of the inventory are administered. This evaluation gathered students' results on the Screening assessment, Phonological Awareness Inventory 1 (Rhyming) and Graphophonemic Knowledge Inventory 6 (Letter Name Identification).
- El Inventario de Lectura en Español de Tejas (Tejas LEE). The Tejas LEE measures reading skills important to the development of Spanish reading and comprehension in kindergarten through 3rd grade. The Tejas LEE is administered three times a year and is used to determine appropriate instructional interventions. The current evaluation examined students' beginning of the year performance levels on Inventory 1 (Identificación de las letras/Letter Naming) assessing graphophonemic knowledge and Inventory 3 (Conocimiento de rimas/Rhyming) assessing phonological awareness.
- Data analysis focused on the performance of the 2011–2012 HISD kindergarten students enrolled in four Head Start programs in 2010–2011. Table 1 (p. 22) provides a breakdown of the demographic characteristics of the 2011–2012 HISD kindergarteners by the Head Start program they attended in 2010–2011. The four programs were (1) AVANCE, (2) GCCSA, (3) Harris County, and (4) NCI. The HISD prekindergarten (non-Head Start) and the HISD nonprekindergarten cohort served as comparison groups. The HISD non-prekindergarten cohort included students who did not attend Head Start or HISD prekindergarten.
- Economic status has a strong effect on student achievement (Aikens & Barbarin, 2008);

therefore, student groups were disaggregated by economic status.<sup>1</sup>

- One-way ANOVA designs were used to compare the Stanford and Aprenda reading and math performance of 2011–2012 kindergarten students across the Head Start agencies they attended in 2010–2011. A one-way ANOVA design was also used to compare the performance of Head Start students to students who did not attend HISD prekindergarten/Head Start and to students who attended HISD prekindergarten but were not affiliated with a Head Start. Follow-up pairwise comparisons of mean scores on Stanford and Aprenda tests between these groups were also conducted.
- An overall "district average score" was included in the evaluation to capture the average score on the Stanford or Aprenda of all 2011–2012 kindergarten students who attended any of the HISD prekindergarten programs (including Head Start) in 2010–2011.

#### **Data Limitations**

The program evaluation has a few limitations that should be addressed. The first limitation is that it is not known whether students who did not attend Head Start or HISD prekindergarten received some other form of early childhood educational intervention. The second limitation is that comparison groups were not matched by prior performance levels because students within each of these groups are not administered the same assessments in prekindergarten. Controlling for performance levels at the beginning of kindergarten may help explain some of the variance in performance between groups. Another limitation is that the data provided by the Head Start agencies did not always contain a unique identifier for their students, which made it difficult to link students from Head Start to their HISD kindergarten enrollment data. It is possible that some students who attended Head Start were not captured as enrolled in Head Start in this analysis. Finally, differences in scores between Head Start programs (dual vs. standalone) should be interpreted with caution given that the number of students in some of the standalone programs was so small and the disparity in the number of students between programs was so large.

#### Results

# Did performance differences exist among the four Head Start Agencies (AVANCE, GCCSA, Harris County, and NCI) that partner with HISD?

#### **Stanford Reading**

- Stanford mean NCE reading scores for students who attended Head Start in 2010–2011 are displayed in **Figure 1**, p. 7. Table 2 (p. 23) presents the number of students who took the Stanford reading subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies.
- The 2011–2012 Stanford reading scores in kindergarten varied by the Head Start agency students attended, with the largest difference between NCI and AVANCE (6 NCEs).

<sup>&</sup>lt;sup>1</sup> Students who are eligible for free or reduced-price meals under the National School Lunch and Child Nutrition Program were classified as economically disadvantaged.



Figure 1. 2011–2012 mean Stanford reading scores for HISD kindergarten students enrolled in Head Start the previous year.

- Because over 95% of Head Start students were identified as economically-disadvantaged in kindergarten, the district average, which represents the average score of all 2011–2012 kindergarten students who were enrolled in any one of the HISD prekindergarten programs (including Head Start) in 2010–2011, only included economically-disadvantaged students.
- The average 2011–2012 Stanford reading performance of students who attended NCI was slightly higher than the average score of all 2011–2012 economically-disadvantaged kindergarten students who were enrolled in an HISD prekindergarten program in 2010–2011 (district average; 0.3 NCEs).
- The average 2011–2012 Stanford reading performance of students who attended NCI and GCCSA was statistically significantly higher than students who attended AVANCE (6 NCEs; p
   <.05 and 5 NCEs; p < .05, respectively).</li>

#### **Stanford Math**

- Stanford mean NCE math scores for students who attended Head Start in 2010–2011 are displayed in **Figure 2**, p. 8. Table 2 (p. 23) presents the number of students who took the Stanford math subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies.
- The 2011–2012 Stanford math scores in kindergarten varied by the Head Start agency students attended, with the largest difference again between NCI and AVANCE (5 NCEs).
- The average 2011–2012 Stanford math performance of all 2011–2012 economicallydisadvantaged kindergarten students who were enrolled in HISD prekindergarten in 2010–

2011 was higher than the average 2011–2012 Stanford math performance among students who attended one of the four Head Start programs. AVANCE students had the lowest score compared to the district average performance of economically-disadvantaged students (6 NCEs).

• The differences in the average 2011–2012 Stanford math performance of students across the four Head Start agencies were not statistically significant.

#### **Aprenda Reading**

- Aprenda mean NCE reading scores for students who attended Head Start in 2010–2011 are displayed in **Figure 3**, p. 9. Table 3 (p. 23) presents the number of students who took the Aprenda reading subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies.
- The 2011–2012 Aprenda reading scores in kindergarten varied by the Head Start agency students attended, with the largest difference between NCI and Harris County (13 NCEs).
- The average 2011–2012 Aprenda reading performance of students who attended NCI and GCCSA was higher by approximately four NCEs than the average score of 2011–2012 kindergarten students who were enrolled in HISD prekindergarten in 2010–2011 (district average).
- The average 2011–2012 Aprenda reading performance of students who attended NCI and GCCSA was statistically significantly higher than students who attended Harris County (13 NCEs, p < .01 and 12 NCEs, p < .05, respectively).







Figure 3. 2011–2012 mean Aprenda reading scores for HISD kindergarten students enrolled in Head Start the previous year.

#### **Aprenda Math**

- Aprenda mean NCE math scores for students who attended Head Start in 2010–2011 are displayed in Figure 4, p. 10. Table 3 (p. 23) presents the number of students who took the Aprenda math subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies.
- The 2011–2012 Aprenda math scores in kindergarten varied by the Head Start agency students attended, with the largest difference between GCCSA and Harris County (7 NCEs).
- The average 2011–2012 Aprenda math performance of students who attended GCCSA and NCI was higher than the average score of all 2011–2012 kindergarten students who were enrolled in HISD prekindergarten in 2010–2011 by four NCEs and one NCE, respectively.
- The differences in the average 2011–2012 Aprenda math performance of students across the four Head Start agencies were not statistically significant.



Figure 4. 2011–2012 mean Aprenda math scores for HISD kindergarten students enrolled in Head Start the previous year.

#### **TPRI Screening**

- The percentages of students scoring at the "developed" level on the 2011–2012 End-of-Year TPRI screening assessment by Head Start agencies are displayed in **Figure 5**, p. 11. Table 4 (p. 24) presents the number of students who took 2011–2012 End-of-Year TPRI screening assessment in each of the Head Start programs, and the percent scoring at the "developed" level.
- All of the Head Start agencies had at least 80% of their students score at the "developed" level on the TPRI screening assessment.
- Because it is optional for students who are classified as "developed" on the screening section to take Inventories 1 and 6, a very small number of students within each Head Start took the TPRI Inventory 1–Rhyming and Inventory 6–Letter Name Identification. Comparisons between Head Start programs were not made for these inventories.
- The percent "developed" out of all economically-disadvantaged kindergarten students enrolled in any one of the HISD prekindergarten programs (including Head Start) in 2010–2011 was 85.5% (district overall).

#### Tejas LEE Inventory 1: Letter Naming & Tejas LEE Inventory 3: Rhyming

- The percentage of students scoring at the "developed" level on the 2011–2012 End-of-year Tejas LEE inventories by Head Start agencies are displayed in Figure 6, p. 11. Table 5 (p. 24) presents the number of students who took 2011–2012 End-of-year Tejas LEE inventories in each of the Head Starts, and the percent scoring at the "developed" level.
- All of the Head Start agencies had at least 90% of their students score at the "developed" level on "Letter Naming" inventory and two agencies had this level of performance on the "Rhyming inventory.





Figure 6. Percent of kindergarten students identified as "Developed" on the 2011–2012 End-of-Year Tejas LEE Inventories by Head Start programs.



Did Stanford performance differences exist between economically-disadvantaged kindergarten students who were enrolled in Head Start compared to their economically-disadvantaged peers who attended HISD prekindergarten or who did not attend HISD prekindergarten or Head Start?

#### **Stanford Reading**

- Stanford mean NCE reading scores for economically-disadvantaged kindergarten students were disaggregated by whether students attended Head Start, an HISD prekindergarten program other than Head Start, or did not attend Head Start or HISD prekindergarten. The mean reading scores are displayed in Figure 7. Table 6 (p. 25) presents the number of students who took the Stanford reading subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies, HISD prekindergarten, and the HISD non-prekindergarten/Head Start group.
- The average 2011–2012 Stanford reading performance of economically-disadvantaged students who attended NCI and GCCSA was statistically significantly higher than economically-disadvantaged students who did not attend HISD prekindergarten or Head Start (8 NCEs; p < .001 and 6 NCEs; p < .001, respectively).</li>
- The average 2011–2012 Stanford reading performance of economically-disadvantaged students who attended HISD prekindergarten (non-Head Start) was statistically significantly higher than economically-disadvantaged students who attended AVANCE (7 NCEs; p < .05).</li>



# Figure 7. 2011–2012 mean Stanford reading scores for economically-disadvantaged HISD kindergarten students enrolled in Head Start the previous year versus economically-disadvantaged comparison groups.

#### **Stanford Math**

- Stanford mean NCE math scores for economically-disadvantaged kindergarten students were disaggregated by whether students attended Head Start, an HISD prekindergarten program other than Head Start, or did not attend Head Start or HISD prekindergarten in 2010–2011. The mean math scores are displayed in Figure 8. Table 6 (p. 25) presents the number of students who took the Stanford math subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies, HISD prekindergarten, and the HISD non prekindergarten/Head Start group.
- The average 2011–2012 Stanford math performance of economically-disadvantaged students who attended NCI and GCCSA was statistically significantly higher compared to economicallydisadvantaged students who did not attend HISD prekindergarten or Head Start by 6 NCEs, p < .001 and 6 NCEs, p < .001, respectively.</li>
- The average 2011–2012 Stanford math performance of economically-disadvantaged students who attended HISD prekindergarten (non-Head Start) was statistically significantly higher than economically-disadvantaged students who attended AVANCE (7 NCEs, *p* < .05).

### Figure 8. 2011–2012 mean Stanford math scores for economically-disadvantaged HISD kindergarten students enrolled in Head Start the previous year versus economicallydisadvantaged comparison groups.



Did Aprenda performance differences exist between kindergarten students who were enrolled in Head Start compared to their peers who attended HISD prekindergarten or who did not attend HISD prekindergarten or Head Start?

#### Aprenda Reading

- Aprenda mean NCE reading scores for kindergarten students were disaggregated by whether students attended Head Start, an HISD prekindergarten program other than Head Start, or did not attend Head Start or HISD prekindergarten. The mean reading scores are displayed in Figure 9, p. 15. Table 7 (p. 25) presents the number of students who took the Aprenda reading subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies, HISD prekindergarten, and the HISD non-prekindergarten/Head Start group.
- The average 2011–2012 Aprenda reading performance of students who attended NCI, GCCSA, and AVANCE was statistically significantly higher compared to students who did not attend HISD prekindergarten or Head Start by 19 NCEs, p < .001, 19 NCEs, p < .001, and 14 NCEs, p < .001, respectively.
- The average 2011–2012 Aprenda reading performance of students who attended NCI and GCCSA was statistically significantly higher compared to students who attended HISD prekindergarten (non-Head Start) by 5 NCEs, *p* < .001, and 4 NCEs, *p* < .05, respectively.

#### **Aprenda Math**

- Aprenda mean NCE math scores for kindergarten students were disaggregated by whether students attended Head Start, an HISD prekindergarten program other than Head Start, or did not attend Head Start or HISD prekindergarten. The mean math scores are displayed in Figure 10, p. 15. Table 7 (p. 25) presents the number of students who took the Aprenda math subtest in 2012, and the means and standard deviations of the NCE scores by the four Head Start agencies, HISD prekindergarten, and the HISD non-prekindergarten/Head Start group.
- The average 2011–2012 Aprenda math performance of students who attended GCCSA, NCI, and AVANCE was statistically significantly higher compared to students who did not attend HISD prekindergarten or Head Start by 18 NCEs, p < .001, 15 NCEs, p < .001, and 13 NCEs, p < .001, respectively.
- The average 2011–2012 Aprenda math performance of students who attended GCCSA was statistically significantly higher compared to students who attended HISD prekindergarten (non-Head Start) by 4 NCEs, *p* < .01.





Figure 10. 2011–2012 mean Aprenda math scores for HISD kindergarten students enrolled in Head Start the previous year versus comparison groups.



Did performance differences on the Stanford and the Aprenda exist among Head Start students who were dually-enrolled in HISD versus students enrolled in one of the four Head Start Agencies' stand-alone programs?

#### AVANCE

- Stanford and Aprenda mean NCE reading and math scores for kindergarten students who attended AVANCE's dual or standalone program in 2010–2011 are displayed in Figure 11. Table 8 (p. 26) presents the number of AVANCE students who took the Stanford and Aprenda mean reading and math subtests in 2012, and the means and standard deviations of the NCE scores by the AVANCE programs. Statistical significance was not tested by Head Start program (dual vs. standalone) given that some of these groups were so small when these splits were made (n < 30).</li>
- AVANCE students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Stanford reading and math subtests compared to students enrolled in AVANCE's standalone program by 6 NCEs and 7 NCEs, respectively.
- AVANCE students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Aprenda reading and math subtests compared to students enrolled in AVANCE's standalone program by 10 NCEs and 12 NCEs, respectively.



# Figure 11. 2011–2012 mean Stanford and Aprenda scores for HISD kindergarten students by AVANCE programs.

AVANCE HISD Dual Enrollment

AVANCE Standalone

#### GCCSA

- Stanford and Aprenda mean NCE reading and math scores for kindergarten students who attended GCCSA's dual or standalone program in 2010–2011 are displayed in Figure 12. Table 9 (p. 26) presents the number of GCCSA students who took the Stanford and Aprenda mean reading and math subtests in 2012, and the means and standard deviations of the NCE scores by the GCCSA programs.
- GCCSA students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Stanford reading and math subtests compared to students enrolled in GCCSA's standalone program by 3 NCEs and 2 NCEs, respectively.
- GCCSA students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Aprenda reading and math subtests compared to students enrolled in GCCSA's standalone program by 9 NCEs and 7 NCEs, respectively.

Figure 12. 2011–2012 mean Stanford and Aprenda scores for HISD kindergarten students by GCCSA programs.



GCCSA HISD Dual Enrollment GCCSA Standalone

#### **Harris County**

- Stanford and Aprenda mean NCE reading and math scores for kindergarten students who attended Harris County's dual or standalone program in 2010–2011 are displayed in Figure 13. Table 10 (p. 27) presents the number of Harris County students who took the Stanford and Aprenda mean reading and math subtests in 2012, and the means and standard deviations of the NCE scores by the Harris County programs.
- Harris County students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Stanford reading and math subtests compared to students enrolled in Harris County's standalone program by 4 NCEs and 5 NCEs, respectively.
- Harris County students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Aprenda reading and math subtests compared to students enrolled in Harris County's standalone program by 12 NCEs and 3 NCEs, respectively.

Figure 13. 2011–2012 mean Stanford and Aprenda scores for HISD kindergarten students by Harris County programs.



Harris County HISD Dual Enrollment
Harris County Standalone

#### NCI

- Stanford and Aprenda mean NCE reading and math scores for kindergarten students who attended NCI's dual or standalone program in 2010–2011 are displayed in Figure 14. Table 11 (p. 27) presents the number of NCI students who took the Stanford and Aprenda mean reading and math subtests in 2012, and the means and standard deviations of the NCE scores by the NCI programs.
- NCI students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Stanford reading and math subtests compared to students enrolled in NCI's standalone program by 2 NCEs and 2 NCEs, respectively.
- NCI students who were dually-enrolled in HISD prekindergarten in 2010–2011 score higher on both the Aprenda reading and math subtests compared to students enrolled in NCI's standalone program by 19 NCEs and 10 NCEs, respectively.

Figure 14. 2011–2012 mean Stanford and Aprenda scores for HISD kindergarten students by NCI programs.



NCI HISD Dual Enrollment NCI Standalone

#### **Discussion**

The purpose of Head Start is to help children from economically-disadvantaged backgrounds enter kindergarten at less of an academic disadvantage than if they had not received an early childhood educational intervention. Therefore, the current evaluation compared the performance of students who attended Head Start prior to entering kindergarten to their peers of similar economic-status levels who did not attend HISD prekindergarten or Head Start. Overall, findings from the evaluation suggest that students who attended one of the local Head Start agencies performed better on the Stanford reading and math subtests compared to their economically-disadvantaged peers who did not attend HISD prekindergarten or Head Start. In addition, students who attended one of the local Head Start agencies performed better on the Aprenda reading and math subtests compared to their peers who did not attend HISD prekindergarten or Head Start. Students' economic status was not taken into account when comparing Aprenda scores given that prior evaluations have found that economic status does not play a significant role on HISD students' performance on Spanish language exams.

Findings also suggested that kindergarten performance variations existed across the four Head Start programs. Specifically, on the 2011–2012 Stanford and Aprenda reading and math subtests, kindergarten students who attended NCI or GCCSA Head Start tended to perform better than students who attended AVANCE or Harris County Head Start. On the Stanford subtests, NCI students were also scoring slightly above or approximately equal to the average score of all 2011–2012 economically-disadvantaged kindergarten students who attended NCI or GCCSA had a higher average score compared to the average score of all kindergarten students who attended HISD prekindergarten in 2010–2011. In terms of the Aprenda subtests, students who attended NCI or GCCSA had a higher average score compared to the average score of all kindergarten students who attended HISD prekindergarten in 2010–2011. Some of the variations in scores that existed across the four Head Start programs may be explained by the HISD schools that collaborate with each Head Start agency. For example, approximately 16% of the students enrolled in NCI Head Start attended MLK Early Childhood Center (ECC), which was the ECC found to have the highest performing group of kindergarten students in 2011–2012.

For the most part, Head Start students score at the same levels as their peers who attended other HISD prekindergarten programs, not affiliated with Head Start. However, on the 2011–2012 Stanford reading and math exam AVANCE students scored significantly lower than their peers who attended HISD prekindergarten. Conversely, on the Aprenda reading exam, two of the Head Start programs (NCI and GCCSA) had significantly higher scores compared to their HISD prekindergarten counterparts. Nevertheless, because the majority of Head Start students are simultaneously enrolled in HISD prekindergarten, the effect of HISD prekindergarten on performance may act as a confounding factor in this analysis. Therefore, these findings should be interpreted with caution.

Because HISD kindergarten students may have been dually-enrolled in both Head Start and HISD prekindergarten or attended a Head Start standalone program, performance comparisons were also distinguished by these programs within each of the Head Start agencies. Stanford and Aprenda kindergarten performance results consistently indicated that students who were dually-enrolled in Head Start and HISD prekindergarten scored higher than their peers who were enrolled in a standalone program. This finding is likely given the fact that students dually-enrolled in HISD receive instruction and support from two instructors rather than one. In addition, all HISD teachers are certified and have a four-year degree.

This evaluation highlighted differences in student performance associated with the type of Head Start program that students attended (dual vs. standalone), thus, additional information (i.e., teacher certification requirements) regarding possible differences between the dual and standalone programs might help to understand the disparities in performance between these two groups.

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Table 1: 2011–2012 Demographic Characteristics of HISD Kindergarteners by Head Start Program									
	AV	AVANCE		CSA	Harris	County	NCI (N = 778)		
	(N :	= 203)	(N = 733)		(N =	100)			
	Ν	%	N	%	Ν	%	Ν	%	
Gender									
Female	94	46.3	368	50.2	47	47.0	361	46.4	
Male	109	53.7	365	49.8	53	53.0	417	53.6	
Race/Ethnicity									
African American	41	20.2	229	31.2	25	25.0	153	19.7	
Hispanic	159	78.3	499	68.1	75	75.0	599	77.0	
White							13	1.7	
Asian							10	1.3	
American Indian									
Pacific Islander									
More than 2 Races									
Limited English Proficient (LEP)	123	60.6	368	50.2	43	43.0	513	65.9	
Economically disadvantaged	198	97.5	710	96.9	99	99.0	748	96.1	
Special Education	3	1.5	57	7.8	6	6.0	42	5.4	

Note. All data retrieved from PEIMS 2011–2012. "--"denotes less than 5 students fell under this category.

 Table 2: Means and Standard Deviations of 2011–2012 Stanford 10 Reading and Math Normal Curve

 Equivalent (NCE) Scores by Head Start Program

		AVANCE		GCCSA		Harris County		NCI
Stanford	n	М	n	М	n	м	n	М
Reading	101	46.69 <sup>ab</sup>	379	51.53 <sup>b°</sup>	64	47.95	292	52.86 <sup>a^</sup>
		(15.49)		(18.65)		(17.85)		(17.28)
Math	101	44.16	379	49.12	64	46.42	292	49.24
		(18.59)		(21.72)		(21.37)		(18.75)

*Notes.* Standard deviations appear in parentheses below means. Differences in means with similar superscripts within rows were statistically significant. \*p < .05.

Table 3: Means and Standard Deviations of 2011–2012 Aprenda 3 Reading and Math Normal Curve Equivalent (NCE) Scores by Head Start Program

	AVANCE		GCCSA		Harris County			NCI
<u>Aprenda</u>	n	М	n	М	n	М	n	М
Reading	99	65.30	331	69.83 <sup>a*</sup>	32	57.39 <sup>ab</sup>	452	70.71 <sup>b**</sup>
		(21.33)		(21.88)		(26.23)		(22.85)
Math	99	72.18	331	76.83	32	70.12	452	73.95
		(22.17)		(19.55)		(24.19)		(20.39)

**Notes.** Standard deviations appear in parentheses below means. Differences in means with similar superscripts within rows were statistically significant. \*p < .05. \*\*p < .01.

Table 4: Percent of Students Identified as Developed on the 2012 End-of-Year TPRI Screening Assessment by HeadStart Programs									
	AVANCE GCCSA		Harris	County	NCI				
<u>TPRI</u>	n	%D	n	%D	n	%D	n	%D	
Screening	94	84.0	353	80.7	64	82.8	275	82.5	

*Note.* D = "Developed."

Table 5: Percent of Students Identified as Developed on the 2012 End-of-Year Tejas LEE Inventories by Head Start Programs									
	AV	ANCE	GCCSA		Harris County		NCI		
<u>Tejas LEE</u>	n	%D	n	%D	n	%D	n	%D	
INV-1 Letter Naming	96	97.9	318	95.6	32	90.6	430	98.4	
INV-3 Rhyming	96	84.4	318	87.4	32	90.6	430	90.9	

Note. D = "Developed."

Table 6: Means and Standard Deviations of 2011–2012 Stanford 10 Reading and Math Normal Curve Equivalent (NCE) Scores by Head Start Centers and Comparison Groups (for Economically Disadvantaged Students ONLY)

		AVANCE		GCCSA	Ha	rris County		NCI	HIS (non-F	D PreK lead Start)	H Prek	ISD Non- (/Head Start
Stanford	n	М	n	М	n	М	n	М	n	М	n	М
Reading	98	46.42 <sup>a</sup>	366	51.49 <sup>b***</sup>	63	48.37	266	52.97 <sup>c***</sup>	4,558	52.88 <sup>a*</sup>	1,788	45.37 <sup>bc</sup>
		(15.42)		(18.78)		(17.68)		(17.52)		(19.56)		(18.87)
Math	98	43.92 <sup>d</sup>	366	49.15 <sup>e***</sup>	63	47.05	266	49.30 <sup>†***</sup>	4,558	50.42 <sup>ď*</sup>	1,788	43.06 <sup>et</sup>
		(18.62)		(22.00)		(20.93)		(18.97)		(20.70)		(21.85)

**Note.** Standard deviations appear in parentheses below means. Differences in means with similar superscripts within rows were statistically significant. Statistically significant differences are only reported between Head Starts and the comparison groups. \*p < .05. \*\*\*p < .001.

Table 7: Means and Standard Deviations of 2011–2012 Aprenda 3 Reading and Math Normal Curve Equivalent (NCE) Scores by Head Start Centers and Comparison Groups

		AVANCE		GCCSA	На	rris County		NCI	HIS (non-H	D PreK lead Start)	l Pre	HSD Non- K/Head Start
<u>Aprenda</u>	n	м	n	М	n	Μ	n	м	n	М	n	М
Reading	99	65.30 <sup>a***</sup>	331	69.83 <sup>b*** d*</sup>	32	57.39	453	70.65 <sup>c***e***</sup>	4,251	65.51 <sup>de</sup>	861	51.19 <sup>abc</sup>
		(21.33)		(21.88)		(26.23)		(22.88)		(22.14)		(22.8)
Math	99	72.18 <sup>t***</sup>	331	76.83 <sup>g***i**</sup>	32	70.12	452	73.95 <sup>h***</sup>	4,256	72.62 <sup>'</sup>	865	59.19 <sup>tgh</sup>
		(22.17)		(19.55)		(24.19)		(20.39)		(20.90)		(25.32)

**Note.** Standard deviations appear in parentheses below means. Differences in means with similar superscripts within rows were statistically significant. Statistically significant differences are only reported between Head Starts and the comparison groups. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 8: Means and Standard Deviations of 2011–2012 Stanford 10Reading and Math Normal Curve Equivalent (NCE) Scores by AVANCEHead Start Program									
	AVANCE HISD Dual AVANCE Standalone								
Stanford	n	М	n	М					
Reading	59	49.34	42	42.96					
		(13.32)		(17.60)					
Math	59	47.19	42	39.90					
		(17.99)		(18.81)					
<u>Aprenda</u>									
Reading	63	69.05	36	58.74					
		(21.64)		(19.35)					
Math	63	76.56	36	64.52					
		(22.87)		(18.81)					

*Notes.* Standard deviations appear in parentheses below means.

Table 9: Means and Standard Deviations of 2011–2012 Stanford 10

Head Start Program									
	GCCSA	HISD Dual	GCCSA Standalone						
Stanford	n	М	n	М					
Reading	279	52.28	100	49.44					
		(18.44)		(19.16)					
Math	283	49.27	100	47.45					
		(21.88)		(22.08)					
Aprenda									
Reading	271	71.52	60	62.22					
		(21.66)		(21.37)					
Math	271	78.13	60	70.96					
		(18.79)		(21.92)					

Notes. Standard deviations appear in parentheses below means.

Reading and Math Norma County Head Start Progr	Reading and Math Normal Curve Equivalent (NCE) Scores by Harris County Head Start Program									
	Harris C	ounty HISD Dual	Harris County Standalone							
Stanford	n	М	n	М						
Reading	21	50.75 (18.10)	43	46.59 (17.78)						
Math	22	49.93 (22.36)	43	44.56 (20.62)						
<u>Aprenda</u>										
Reading	6	67.17 (29.20)	26	55.13 (25.58)						
Math	6	72.62 (26.69)	26	69.54 (24.11)						

 Table 10: Means and Standard Deviations of 2011–2012 Stanford 10

Notes. Standard deviations appear in parentheses below means.

Table 11: Means and Standard Deviations of 2011–2012 Stanford 10Reading and Math Normal Curve Equivalent (NCE) Scores by NCI HeadStart Program										
	NCI H	ISD Dual	NCI St	andalone						
Stanford	n	М	n	М						
Reading	201	53.51	91	51.41						
		(17.86)		(15.92)						
Math	201	49.91	91	47.75						
		(18.08)		(20.18)						
<u>Aprenda</u>										
Reading	404	72.77	48	53.39						
		(21.64)		(23.25)						
Math	404	75.00	48	65.12						
		(19.54)		(25.00)						

*Notes.* Standard deviations appear in parentheses below means.

#### **APPENDIX A**

SCHOOLS ATTENDED BY 2011–2012 KINDERGARTEN STUDENTS IN 2010–2011 HEAD START

Number	School Name	Head Start
120	BROWNING	AVANCE
182	JEFFERSON	AVANCE
389	KETELSEN	AVANCE
108	BASTIAN	GCCSA
154	FOSTER	GCCSA
155	FRANKLIN	GCCSA
162	GREGG	GCCSA
166	HARRIS, J R	GCCSA
216	PATTERSON	GCCSA
243	THOMPSON	GCCSA
244	SOUTHMAYD	GCCSA
279	TIJERINA	GCCSA
357	LAURENZO EARLY CHILDHOOD CTR	GCCSA
360	BELLFORT EARLY CHILDHOOD CENTER	GCCSA
140	DOGAN	Harris County
167	HARRIS, R P	Harris County
185	KASHMERE GARDENS	Harris County
223	PUGH	Harris County
238	SCOTT	Harris County
111	BONHAM	NCI
114	BRAEBURN	NCI
131	HALPIN EARLY CHILDHOOD CTR	NCI
151	BELL	NCI
153	FONDREN	NCI
215	PARKER	NCI
227	MCNAMARA	NCI
239	SHEARN	NCI
271	FOERSTER	NCI
295	BENAVIDEZ	NCI
355	KING EARLY CHILDHOOD CTR	NCI
372	RODRIGUEZ	NCI