

MEMORANDUM

February 10, 2021

TO: Kallie Benes
Curriculum Manager, Department of Library Services

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

SUBJECT: **LITERACY NOW READING INTERVENTION PROGRAM: A COHORT ANALYSIS OF READING ACHIEVEMENT AT SELECTED HISD CAMPUSES, 2020–2021**

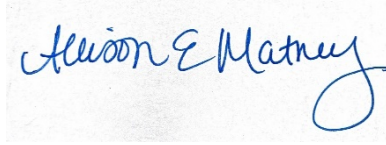
Since 2007, nineteen HISD campuses have partnered with Literacy Now to offer the Reading Intervention program to students in kindergarten to second grade who were at risk of failure. The evaluation employed a two-group quasi-experimental design, with an intervention group and a control group. The research used two cohorts of students who participated in the program in the 2015–2016 and the 2016–2017 academic year. Data were drawn from the post-reading intervention teacher survey administered between 2015–2016 and 2017–2018 and student academic performance on Istation's Indicator of Progress (ISSIP) Early Reading and STAAR grade 3 reading.

Key findings include:

- Between 2015 and 2019, 996 kindergarten to second-grade students from eleven HISD campuses participated in the Reading Intervention program.
- A post-program survey found that teachers observed that the program was beneficial to students (M = 2.62 out of 3.0), students' grades improved (M = 2.51 out of 3.0), and students displayed greater confidence in reading (M = 2.48 out of 3.0).
- First-grade students who participated in the Reading Intervention program showed a higher increase in the mean proficiency reading score compared to first-grade students who did not participate in the intervention.
- The percentage of Els students in the intervention reading at grade level increased by 56.1 percentage points in cohort 1 and 2.5 percentage points in cohort 2 compared to their campus-level peers who did not participate in the intervention (44.5 and 0.0 percentage points, respectively).
- The percentage of economically disadvantaged students who participated in the intervention reading at grade level increased by 45.7 percentage points in cohort 1 and 1.6 percentage points in cohort 2 compared to their campus-level peers who did not participate in the intervention (28.2 and -3.7 percentage points, respectively).
- The percentage of Hispanic students in the intervention reading at grade level increased by 53.6 percentage points in cohort 1 and 2.7 percentage points in cohort 2 compared to their campus-level peers who did not participate in the intervention (23.0 and -2.5 percentage points, respectively).
- The percentage of Black students who participated in the intervention reading at grade level increased by 42.5 percentage points in cohort 1 and 0 percentage points in cohort 2 compared to their campus-level peers who did not participate in the intervention (32.3 and 2.0 percentage points, respectively).
- The 3-year mean number of students in the intervention who met the Approaches grade-level benchmark score fell within 20 percentage points of their campus-level peers on

STAAR grade 3 reading at Ashford (18%), McGowen (15%), Ross, (11%), Walnut Bend (10%), and Piney Point (6%).

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



_____ AEM

Attachment

cc: Grenita Lathan, Ph.D.
Silvia Trinh
Yolanda Rodriguez
Margarita A Gardea



RESEARCH

Educational Program Report

**LITERACY NOW READING INTERVENTION
PROGRAM: A COHORT ANALYSIS OF
READING ACHIEVEMENT AT SELECTED
HISD CAMPUSES, 2020-2021**



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EVALUATION REPORT

BUREAU OF PROGRAM EVALUATION

Literacy Now Reading Intervention program: A cohort analysis of reading achievement at selected HISD campuses, 2020–2021

Prepared by Georgia Graham, PhD

Abstract

Since 2007, nineteen Houston Independent School District (HISD) campuses have partnered with Literacy Now to offer the Reading Intervention program. The Reading Intervention program provides individualized, small group reading tutorials for at-risk students in kindergarten to second grade to create proficient readers by the end of third grade. Literacy Now also supports literacy development at home (Parent Engagement Workshops, Book Distribution, Family Literacy Night, and monthly newsletters). Between 2015 and 2019, 996 students in kindergarten to second grade from 11 HISD campuses participated in the Reading Intervention program. During this period, results from a post-program survey, on a 3.0 scale, found that teachers observed that the program was beneficial to students ($M = 2.62$), grades improved ($M = 2.51$), and students displayed greater confidence in reading ($M = 2.48$). The evaluation employed a two-group quasi-experimental design with an intervention group and a control group to examine the effectiveness of the program on two cohorts of students from 2015–2016 and 2016–2017. The evaluation found that kindergarten and first-grade students in both cohorts who participated in the reading intervention program showed significant differences between the pre- and post-test scores on Istation for the average proficiency rate in reading immediately after completing the program. Compared to their grade-level peers, first graders, English language learners, Black, or economically disadvantaged students who participated in the Reading Intervention program showed higher percentage points increase in their reading performance on STAAR grade 3 reading assessment. The three-year mean percentage of the students who met the Approaches grade-level benchmark score fell within 15 percentage points of their campus-level peers on STAAR grade 3 reading at Piney Point (6%), Walnut Bend (10%), Ross (11%), Bruce (15%), and McGowen (15%).

There is an increasing number of middle school and high school students diagnosed with reading deficiencies (Scammacca, Roberts, Cho, Williams, Roberts, Vaughn, & Carroll, 2016). This has increased the need for access to effective interventions for struggling readers (Scammacca et al., 2016). For students with below-grade-level reading performance to catch up with their peers, their rate of growth must be accelerated; simply learning at an average rate will only maintain the deficit (Vaughn, Denton, & Fletcher, 2010). Intensive reading intervention programs are a salient strategy to ensure future student success (Vaughn et al., 2010).

Early intervention has shown to be the most effective approach to literacy (Lovett, Frijters, Wolf, Steinbach, Sevcik, & Morris, 2017). Ensuring that all children, regardless of their early experiences, can read by the third-grade positions them to absorb content in later elementary grades and establish a strong foundation for secondary school learning (Vaughn et al., 2010).

Although reading by third grade alone will not ensure success, research shows that children who are not reading proficiently by third grade are four times more likely than proficient readers to drop out of high school

(Hernandez, 2011; 2012). Students who cannot read are more likely to be unemployed and adjudicated, and require government support (Connor, Alberto, Compton, & O'Connor, 2014). Simply said, being able to read is the gateway to achievement in today's literacy-driven society.

Background

In 2006, Literacy Now, formerly Making It Better, was created to address the growing gap in achievement among HISD students in low-income Houston communities. Since its inception, Literacy Now has been providing opportunities to under-served children in the Houston Independent School District (HISD) that address the needs of the whole child (academic, social, and emotional) and includes their families in the process (Literacy Now, 2019).

The principal theoretical basis for the Literacy Now approach is that communities can be transformed by empowering children and families through literacy, leadership, and life skills (Literacy Now, 2019). The primary goal is to serve HISD students, their families,

schools, and the surrounding communities with excellence by offering quality support services to enhance students' social emotional learning and provide a foundation for academic success. The Literacy Now program aims to create proficient readers by the end of third grade (Literacy Now, 2019).

Program Elements

The Literacy Now flagship program is *Reading Intervention*, which provides individualized, small group reading tutorials for at-risk students in kindergarten to second grade. The Reading Intervention program consisted of 45-minute sessions delivered during the school day 2 or 4 times a week, with a trained reading interventionist. Students were leveled and grouped according to a comprehensive pre-assessment.

The Reading Intervention program was tailored to meet the individual needs of students using a pre-assessment. The pre-assessment provided a baseline measure of student progress and was used to build lessons. Mid-year results, in conjunction with ongoing monitoring of student progress, were used to drive lesson planning and develop instructional strategies. Post-testing in April measured students' progress and program success (Literacy Now, 2020). Ongoing evaluations were used to create lessons for individualized learning, as well as strategically group students to accelerate progress. Meetings were held with teachers and school administration to discuss progress and identified additional assistance that may be needed for specific students (Literacy Now, 2019).

The program operated on a low student to tutor ratio, maintaining a 4:1 (or lower) student to intervention ratio (Literacy Now, 2019). This low ratio provided students with individualized interventions and allowed interventionists to develop a meaningful relationship with each child. In terms of cost-effectiveness, the portion that a school paid towards the program depended upon the needs and funds available at each campus, the number of students to be served, and the length of the intervention. The program typically consisted of 25 weeks of instruction and served 64 students at a cost of approximately two thousand dollars per student (Literacy Now, 2019).

As part of the Reading Intervention program, the Literacy Now Interventionists are trained on the Neuhaus Reading Readiness program curriculum. The Neuhaus Reading Readiness program is based on the five components of reading as determined by the National Reading Panel: (i) Phonemic Awareness; (ii) Phonics; (iii) Fluency; (iv) Comprehension; and (v) Vocabulary (Literacy Now, 2019).

The Neuhaus Reading Readiness program curriculum is designed for students to learn the fundamentals of reading through multisensory activities. Through the curriculum, interventionists work with students on the five components of reading, which are used concurrently in daily lesson planning and supplemental materials (Program Administrator, personal communication, January 7, 2021). Activities included instant letter recognition skills, phonological awareness, oral language skills, sound-symbol correspondences, and handwriting.

The Reading Intervention program goes beyond the classroom by supporting literacy development at home through Parent Partnership programs and monthly newsletters that encourage literacy activities at home (Literacy Now, 2019). Students choose age-appropriate books throughout the program to help build their home libraries and receive books and materials at the end of the program to help reduce summer slide - the decline in reading ability that can occur over the summer months. Two workshops were held where parents met with interventionists and received materials, support, and additional skills to foster their child's literacy development and expand learning at home (Literacy Now, 2019).

In conjunction with the Reading Intervention program, as part of Literacy Now, HISD campuses were provided additional support and outreach activities. The *Parent Engagement Workshops* provide a space for parents to connect while participating in fun, free, hands-on activities that could also be used at home (Literacy Now, 2019). Parents also learned how their children could get the most benefit from the books they received each week. *GROW (now Book Distribution)* provided age-appropriate and culturally sensitive books to children in the Reading Intervention program as well as other programs (Literacy Now, 2019).

Several outreach events were incorporated into the Literacy Now model, geared towards fostering a community of learning. *Family Literacy Night* was a free, fun, and interactive outreach event that provided materials, education, and activities to encourage reading as a way of life (Literacy Now, 2019). Each Family Literacy Night included numerous literacy stations staffed by community volunteers and were geared towards engaging both parent and child(ren) in literacy-rich activities. *Read Aloud Month* is a national campaign focused on sharing the love of reading (Feb-Mar) (Literacy Now, 2019). Volunteers contributed to closing this gap by reading aloud for 30 minutes/week (3 times total) in a first grade or second grade classroom in one of the program schools. Finally, *Literacy Enrichment Events* provide an opportunity for

companies and community friends to serve together through 45-minute reading enrichment activities. They also provide Reading Intervention program students (kindergarten to second grade) with a fun learning opportunity (Literacy Now, 2019).

Literature Review

There is a need for policymakers and educators to focus on closing the achievement gap between disenfranchised student populations and their counterparts (Everson & Bussey, 2013). Research has shown that early intervention for students at-risk of failing due to their inability to read at grade level has allowed students to make reading gains that were sustained after the intervention (Lovett, Frijters, Wolf, Steinbach, Sevcik, & Morris, 2017).

There are various delivery arrangements for school-based reading interventions for struggling readers. Stentiford, Koutsouris, & Norwich (2018) conducted a systemic literature review (1970–2017) and found that interventions targeting students who did not respond well to whole-class instruction were almost exclusively delivered in pull-out sessions by people other than the classroom teacher. This practice was found to be prevalent in primary schools and suggests that students that were identified for pull-out tutoring supports have less access to their teacher’s time and expertise (Stentiford, Koutsouris, & Norwich, 2018).

In looking at group instruction rather than one-on-one tutoring, Harpine & Pazda (2019) found that students in the group-centered intervention group who were subject to hands-on teaching/counseling approach showed greater improvements than those in one-on-one tutoring. Those in the group-based tutoring continued to show growth 6-weeks after the 1-week intervention.

Researchers have found that interventions of small groups of three to five students might be more effective in addressing reading difficulties than those in groups of six or more students (e.g., Baker & Kosty, 2012). Providing reading interventions to at-risk students in small groups increases students’ participation, teachers’ monitoring, and provides appropriate response to students’ progress (Vaughn, Wexler, Leroux, Roberts, Denton, Barth, & Fletcher, 2012). When at-risk students, especially younger ones, receive interventions in small groups, and are provided extended opportunities for practice and daily feedback from teachers, they are better able to acquire the foundational skills needed for reading (Vaughn, Wanzek, Wexler, Barth, Cirino, Fletcher & Francis, 2010).

Early intervention is key to reading success (Lovett, Frijters, Wolf, Steinbach, Sevcik, & Morris 2017;

Vaughn et al, 2010). A study comparing the progress of kindergartners who received small group reading intervention for the full school year with those beginning the same intervention midyear found that explicit, systematic reading instruction provided early in the kindergarten year is more beneficial to students identified as at risk for reading failure than delaying reading intervention until midyear (Helf, 2017).

Enlisting parents to help teach reading had been found to be beneficial as well. Parents can assist with literacy instruction, providing critical pre-reading skills at home that increase vocabulary and performance on pre-reading skills sub-test in schools (McConnell & Kubina, 2016). Also looking at parental engagement, Jones and Christian (2020) evaluated SPARK; a Milwaukee based reading intervention program delivered by a community organization. The SPARK program paired one-on-one tutoring with parent engagement and was delivered over two years to low income and low performing Milwaukee Public Schools. The research found that there was a significant impact on participation, literacy, and school attendance. The greatest impact was on those students with the greatest need for additional reading support.

When parents engage in a partnership with the educational environment, they acquire tools that help them increase their knowledge on how best to support their children (Pong & Landale, 2012). In a study of academic performance of disenfranchised groups in U.S. schools, Carnoy and Garcia (2017) used individual student microdata gathered from NAEP over 10 to 17 years to estimate changes in race/ethnic gaps, controlling for English-language learner designation, gender, and socioeconomic status. The research found that English learners (ELs) were falling further behind white students in mathematics and reading achievement.

Additionally, it was found that the gaps between higher- and lower-income students persisted, with some changes that varied by subject and grade (Carnoy & Garcia, 2017). Meanwhile, the proportion of low-income students in U.S. schools had rapidly increased, as had the share of minority students in the student population. The chances of ending up in a high-poverty or high-minority school were highly determined by a student’s race/ethnicity and social class. For example, black and Hispanic students—even if they were not poor—were much more likely than white or Asian students to be in high-poverty schools (Carnoy & Garcia, 2017).

Differences in student’s socio-economic, demographic, and educational background explained approximately 15% of the variation in low performance across students (Organization for Economic Co-

operation and Development [OECD], 2016). While social and demographic background do not determine student achievement, they do create the conditions for opportunities – or the lack of them – that influence students’ progression through the school system (OECD, 2016). Early intervention is the key to mitigating these risk factors (Carnoy & Garcie, 2017).

Research Questions

Due to the importance of reading on students’ future academic success, the Literacy Now program was implemented at several HISD campuses. This evaluation examines the types of support offered to parents, the effect the Reading Intervention program had on student performance, and how these outcomes vary based on demographic characteristics. As such, the research questions are as follows:

1. What was the demographic and educational composition of students in the Literacy Now program between 2015–2016 and 2018–2019?
2. What Literacy Now support services were provided to HISD campuses from the 2015–2016 to the 2018–2019 academic year?
3. What were teachers’ observations of students’ progress in the Reading Intervention program from the 2015–2016 to the 2018–2019 academic year?
4. How did the performance of kindergarten to second grade students in the Reading Intervention program compare with their campus grade level peers on the Istation reading assessment?
5. What were the differences in reading performance between the students in the Reading Intervention program and their peers when demographic characteristics are taken into consideration?
6. What was the longitudinal effect of the Literacy Now program on the STAAR Reading performance of HISD third grade students?
7. How did students in the Reading Intervention program compare with their campus grade level peers on the STAAR grade 3 reading assessment when demographics are taken into consideration?

Based on the objective of the Literacy Now program, that students should be reading by grade three, this evaluation is predicated on the assumption that students who received the intervention would show increased

performance on measures of reading immediately following the intervention. Furthermore, it would be expected that those gains would remain through to third grade following participation in the program. Finally, it was hypothesized that Literacy Now would also promote reading skills among subgroups of disenfranchised students identified as limited English proficiency, Black, Hispanic, or economically disadvantaged.

Method

This evaluation used data on kindergarten to second grade students in one of the eleven schools that participated in the Literacy Now program between 2015–2016 and 2018–2019. Principals selected students for the Literacy Now program based on their reading performance on district-level assessments, standardized assessments, and principal / teacher recommendations.

Starting in October of each academic year, selected students would be provided with tutoring two to four times a week over 25 weeks using a pull-out model of instruction. Through various supplemental programs (Parent Engagement Workshops, Book Distribution, and Family Literacy Night), parents were provided with strategies to promote reading at home. The evaluation collected primary outcome data that were directly relevant to assess intervention effects and secondary support data that described the supports provided to students and parents.

Sample

The study employed a two-group quasi-experimental design with an intervention group and a control group. The sample was derived from the 11 campuses that had participated in the Literacy Now program between 2015–2016 and 2017–2018. During this period, 1,161 students participated in the 25-week reading program. Once duplicates were identified and students connected to their HISD Public Education Information Management System (PEIMS) data, the evaluation sample consisted of 996 students who participated in the Literacy Now program.

To measure the efficacy of the Literacy Now program, the evaluation used a subset sample of students from those campuses that participated in the program in 2015–2016 and 2016–2017. A comparative sample of schools was identified using the Texas Education Agency Comparison Campus Group Report (2019). Each campus in Texas is assigned to a unique comparison group of schools that were most similar (TEA, 2019).

TEA determined the campus comparison group by school type (elementary school, middle school,

elementary /secondary, and high school) then grouped them with similar campuses from anywhere in Texas. Campuses were grouped based on similarity in grade levels served, size, the percentage of economically disadvantaged students, mobility rate, the percentage of English learners, the percentage of students served by special education, and the percentage of students enrolled in an early college high school program (TEA 2019). A school could be a member of several comparison groups or none other than its own (TEA, 2019).

Comparable campuses to the Literacy Now program campuses were selected as the control group based on TEA criteria. Demographic information for the students from the comparison campuses were downloaded from the 2015–2016 and 2016–2017 PEIMS database. For cohort 1, the control sample consisted of 2,743 students; and for cohort 2, the control sample was 2,117 students.

From the sample, a match group of students were selected to balance the differences in the basic demographic and academic characteristics between students who participated in the reading intervention program and those who did not using Propensity Score Matching (PSM). Propensity scores were calculated using logistic regression analyses based on several covariates; including gender, ethnicity, economically disadvantaged status, special education status, and beginning of year scale score. Students who participated in the reading intervention and those who did not were matched 1:1 based on their propensity scores using nearest-neighbor matching and a matching tolerance of 0.2% for both cohorts.

After matching the balance of all observed covariates were examined. **Appendix A, Tables A1–A4**, pp. 17–18, compares the means of continuous baseline covariates and prevalence of dichotomous baseline covariates between treated and untreated subjects in the original unmatched sample. The prevalence of dichotomous variables was compared between treated and untreated subjects using a Chi-squared test, while a standard two-sample t-test was used to compare continuous baseline covariates.

The standardized difference was used to compare the mean of the continuous variable between two groups and to compare the prevalence of dichotomous variables between two groups (Austin, 2009a). For continuous variables, a standardized difference of less than 10% can indicate a negligible imbalance in a baseline covariate between treated and untreated subjects (Cohen, 1988).

The Phi Coefficient was used to measure the strength of the association between dichotomous variables (Austin, 2009b). Nearly no imbalances remained for both cohorts as assessed through univariate and

multivariate tests (Appendix A, Tables A1–A4, pp. 17–19). **Figure 1** and **Figure 2** show the actual propensity score distributions of both groups before and after matching. For cohort 1, some observations fell outside the area of common baseline test score (0.00; 0.20) and therefore were trimmed.

The final analytical sample for cohort 1 consisted of 388 students from 12 campuses ($M_{score} = 195.22$, $S.D. = 36.24$ at pre-test). The final analytical sample for cohort 2 consisted of 290 students from 12 campuses ($M_{score} = 197.41$, $S.D.=40.28$ at pre-test). Power calculations indicated that with 290 students, the evaluation would have a 95% power to detect a difference between groups equivalent to Cohen’s $d = 0.30$ ($p < 0.05$, two-tailed), which is a small but a substantively important effect in education.

Figure 1: Distribution of propensity scores of cohort 1 students who participated in reading intervention (“treated”) and students who did not (“control”) before and after matching

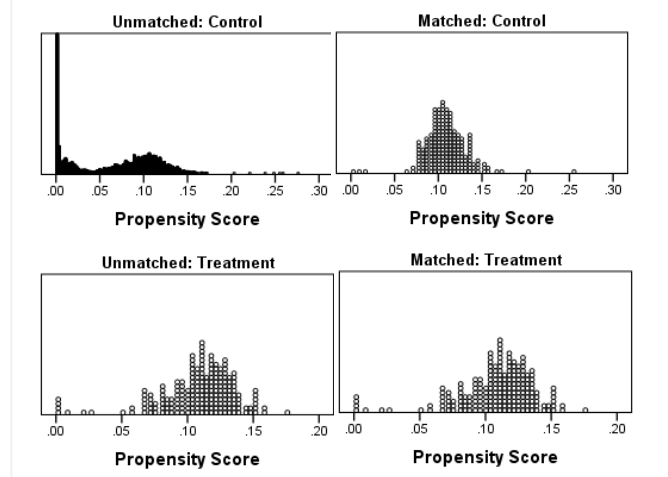
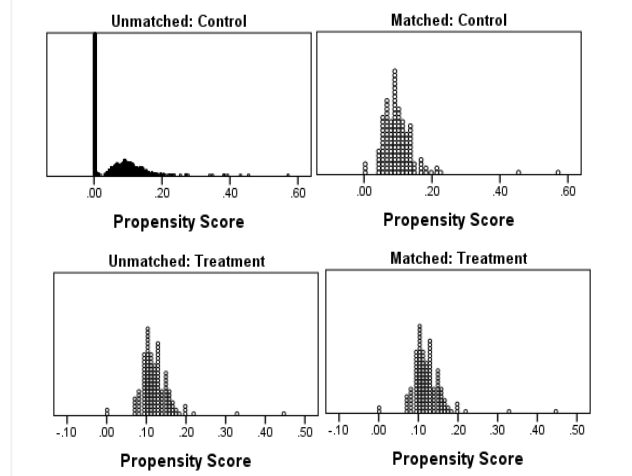


Figure 2: Distribution of propensity scores of cohort 2 students who participated in reading intervention (“treated”) and students who did not (“control”) before and after matching



Data Collection

Students' data were for more than two academic years (from kindergarten to third grade) downloaded and assessed, from a pre-intervention reading standardized tests (pre-test, t_1) and following the 23-week intervention (post-test, t_2). The standardized tests, nationally normed Istation's Indicators of Progress for Reading (ISIP™ Reading), measures student growth using computer-adaptive diagnostic and screening programs for prekindergarten to eighth grade (Istation, 2013). The objective was to identify students potentially at-risk of reading failure.

The Istation assessments can be administered monthly, with the skill goals and criteria becoming progressively more difficult with each assessment period (Istation, 2013). Students' progress was reported as follows: Tier 1 students performing at grade level; Tier 2 students performing moderately below grade level and in need of intervention; Tier 3 students performing seriously below grade level and in need of intensive intervention (Istation, 2013). ISIP reading measures are highly predictive of STAAR reading scores (Mathes, 2016; Patarapichayatham, 2017).

The final assessment used the spring administration of the STAAR Grade 3 reading scale scores from 2016, 2017, and 2018 as an academic outcome measure. The STAAR is an annual state-mandated criterion-referenced assessment that measures students' academic performance and achievement. Re-testers were not included in the study due to overexposure to both the program and outcome measures. Students' STAAR data used in this study were retrieved from the HISD Data warehouse using Cognos, a data querying platform.

Student demographics. The demographic characteristics of the intervention group ($n = 996$) and control group ($n = 344$) used for this report were downloaded from PEIMS 2015–2016 to 2018–2019 HISD student database. Characteristics included gender, ethnicity, economically disadvantaged status, special education status, English learner status, gifted/talented status, and home language. Each student was coded as '1' for those who participated in the Reading Intervention program and '0' for the control group.

Teacher survey. For students in the Reading Intervention program, their teacher completed a survey at the end of the 25-week program. There were 842 teacher survey responses between 2015–2016 and 2017–2018 academic year, with a response rate of 84.5%. The survey included a 3-point Likert scale ranging from *strongly agree* (3) to *disagree* (0). The questions included: (i) The students exhibited greater confidence in reading; (ii) I felt the Making it Better, now Literacy Now program, was beneficial to the students, and (iii)

The student's reading grades improved. Cronbach's alpha (α) was used to provide evidence that the components of the scale were sufficiently intercorrelated and that the grouped items measured the underlying variable (Sullivan & Artino, 2013). The result of Cronbach's alpha was .913, denoting a rating of excellent.

Data Analysis

Data were collected for the 2015–2016 (cohort 1) and 2016–2017 (cohort 2) students' reading scores. Students' BOY (pre-test) scores and EOY (post-test) scores on the Istation assessment were linked. Kindergarten to second grade students who had both scores were included in the analysis. The second part of the analysis further linked prekindergarten to second grade students' scores on STAAR grade 3 reading assessment. Pre and post differences in the mean reading scores by grade level and demographic characteristics were used as measures of program impact.

Limitations

One limitation was the administration of student reading assessments. In 2018, the district changed the standardized evaluation that was being administered. The administration of 2019–2020 assessments were limited due to the pandemic. Therefore, students' reading performance could not be traced over time. Also, there were various reading intervention programs that were being administered on HISD campuses. These other programs were not controlled for in this evaluation. As a result, there is a possibility that students in the Literacy Now program may have participated in other reading intervention programs.

Literacy Now is a community-based program, which presents several challenges relating to data collection. First, campuses were not involved in data collection. Data for program activities were provided by the organization. Only the data presented that followed sound data collection protocol were included. Second, the Literacy Now vendor did not have access to student information; therefore, students that comprised the intervention group self-reported their IDs, general demographic information (first and last name), and campus names. The student identification information collected by the vendor did not correspond with the district PEIMS data system. Therefore, students not identified in the PEIMS system were excluded from the analysis. To mitigate the risk of including students who participated in the program but whose IDs were not available in the control sample, a sample of students were taken from a similar campus that did not participate in the program using TEA criteria.

Results

What was the demographic and educational composition of students and campuses that participated in the Literacy Now program between 2015–2016 and 2018–2019?

In 2007, the Literacy Now program was first delivered at one HISD campus, Walnut Bend Elementary. The Literacy Now program consists of several components (Reading Intervention, Parent Engagement Workshops, Book Distribution, Family Literacy Night, and monthly newsletters).

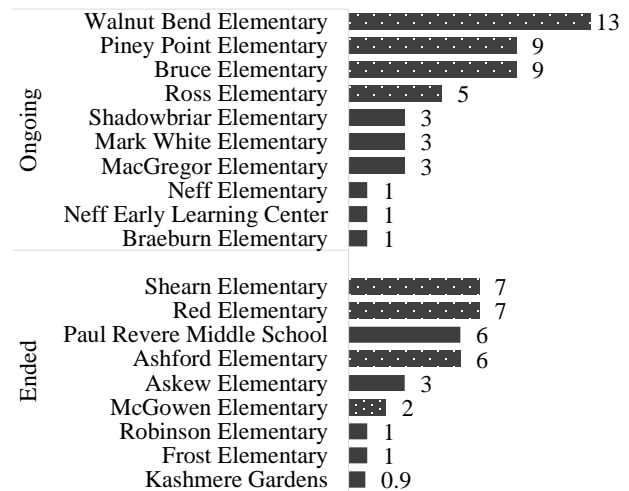
Over the years, there have been 18 additional HISD campuses that participated (see Figure 3). As of the 2019–2020 academic year, ten campuses participated in the Literacy Now program (see Figure 3). The average number of years in the program for campuses was 4.7. The campus that had the most years of participation in the program was Walnut Bend (n = 13), followed by Piney Point (n = 9) and Bruce (n = 9) elementary.

Most students in the Reading Intervention program performed “seriously below grade level and in need of intensive intervention” or “moderately below grade level and in need of intervention” (Istation, 2013, p. 1). In cohort 1, of the 388 students who received the intervention, 68.0 percent (n = 264) of students were at risk of reading failure, and 15.2 percent (n=59) were performing moderately below grade level and in need of intervention (see Figure 4). Similarly, in cohort 2, of the 290 students who received the intervention, 69.0 percent (n = 200) performed seriously below grade level and 11.4 percent (n=33) were moderately below grade level.

Between 2015–2016 and 2018–2019, the average number of students in the Reading Intervention program from each campus was 91. The campuses with the highest number of students in the program included Red (12.6%, n = 125), Walnut Bend (12.6%, n = 125), Piney Point (11.7%, n = 117), and Bruce (10.3%, n = 103) (see Figure 5).

The demographic composition of the students who participated in the Literacy Now Reading Intervention program between 2015–2016 and 2018–2019 was predominately male, with 52.5 percent of the population being male compared to 47.5 percent being female (see Table 1, p.8). Students in the program predominately were at-risk (81.7%) and economically disadvantaged (84.3%). There was a small percentage of students who were gifted/talented (1.9%) and who identified as special needs (3.8%). The ethnic composition of the group was 43.7 percent Black and 43.8 percent Hispanic. Participants in the Reading Intervention program

Figure 3: HISD Campus’ years of participation in program by current partnership status, 2007–2020



Note: Those campuses with white dots participated in the program between 2015 and 2018, comprising the analytical sample.

Figure 4: Students reading proficiency on Istation’s Indicators of Progress (ISIP) assessment by cohort

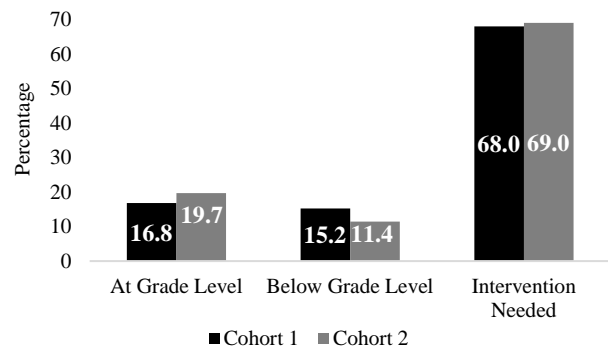
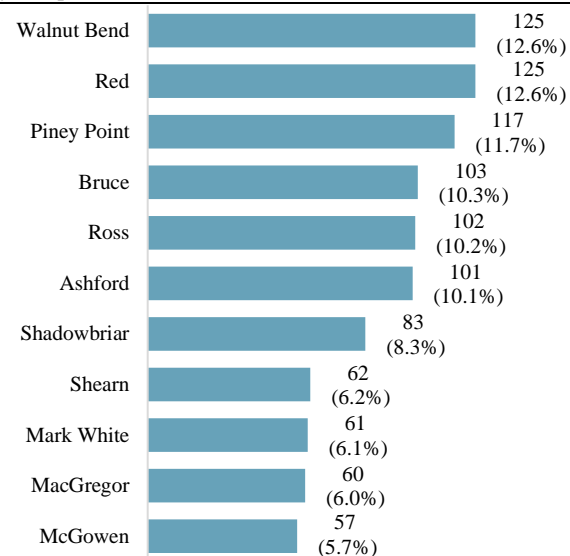


Figure 5: Distribution of students in reading intervention program by campus, 2015–2019



identified their home language as English (69.0%), followed by Spanish (21.8%).

Analysis of student distribution by grade level showed that for the four cohorts who participated in the Literacy Now program between 2015–2016 and 2018–2019, students were predominately in the first grade (see Table 1). There were 54.1 percent of students in first grade 1, followed by 30.5 percent kindergarten, and 15.4 percent were in the second grade.

When disaggregated by years in the program, 88.6 percent of students participated in the program for one year (n = 882), and 10.8 percent participated in the program for two years (n = 108) (see Table 2). A small percentage of students were in the program for 3-years (0.6%). Of the 108 students that participated in the program for two years, 53.7 percent were in kindergarten and 46.3 percent were in grade one.

What Literacy Now support services were provided to HISD campuses from the 2015–2016 to the 2018–2019 academic year?

The Literacy Now program provides several components (Reading Intervention, Parent Engagement Workshops, Book Distribution, Family Literacy Night, and monthly newsletters) to select HISD campuses between 2015–2016 to 2018–2019. For the book distribution, there was only campus-level data available for the 2016–2017 to 2018–2019 academic year. Based on descriptive analysis, there was a decrease in book distribution in 2018–2019 from the previous year (see Figure 6). In the 2017–2018 school year, the highest number of books was distributed to Walnut Bend (n = 463), Ross (n = 458), and Shadowbriar (n=454). In 2018–2019, the average number of books distributed was the same across campuses (M = 394).

Literacy Now supported parents to encourage reading at home through Parent Workshops and Family Literacy Nights. Two Parent Workshops were offered each academic year: one in the fall and another in the spring. The highest average workshop attendance was from parents whose children attended Walnut Bend / Belmont Place Apartments (M = 20.8), Red Elementary (M = 26.8), Mark White Elementary (M =17.0), and MacGregor Elementary (M = 16.5) (see Appendix A, Table A5, p. 19). Participants at Belmont Place Apartments were parents and students who attended Walnut Bend Elementary. The highest attendance for Family Literacy Night was at Walnut Bend Elementary / Belmont Place Apartments, with an average attendance of 106.7 parents and students (see Appendix A, Table A6, p. 19). Belmont Place Apartments was the only location with a community-after-school program.

Table 1: Demographic characteristics of reading intervention program participants, 2015–2016 through 2018–2019

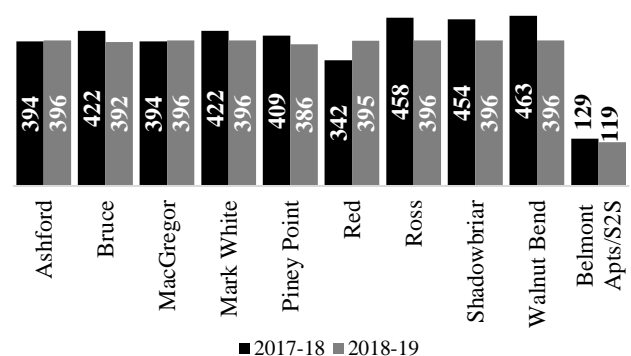
		n	%
Grade	Kindergarten	304	30.5
	Grade 1	539	54.1
	Grade 2	153	15.4
Gender	Female	473	47.5
	Male	523	52.5
Ethnicity	Black	435	43.7
	Hispanic	436	43.8
	Other	124	12.4
Home Language	Spanish	217	21.8
	English	687	69.0
	Other	92	9.2
Economically Disadvantaged	No		
	Yes	156	15.7
At-Risk	No	840	84.3
	Yes	182	18.3
Limited English Proficiency	No	814	81.7
	Yes	717	72.0
English Learner	No	279	28.0
	Yes	865	86.8
Gifted/ Talented	No	131	13.2
	Yes	977	98.1
Special Education	No	19	1.9
	Yes	958	96.2
		38	3.8

Source: 2015–2019 PEIMS student databases. Percentages may not total 100 due to rounding. N=996 students.

Table 2. Number of students in each grade who participated in the program by years in the program, 2015–2016 through 2018–2019

Years in program	KG		Grade 1		Grade 2		Total	
	n	%	n	%	n	%	n	%
1	245	80.6	484	89.8	153	100	882	88.6
2	58	19.1	50	9.3	-	-	108	10.8
3	1	0.3	5	0.9	-	-	6	0.6

Figure 6: Total book distribution by campus, 2015–2016 through 2018–2019



What were teachers’ observation of student’s progress in the Reading Intervention program from the 2015–2016 to the 2018–2019 academic year?

Teachers’ mean ratings of observed improvements in student performance once they completed the Reading Intervention program is displayed in **Table 3**. The highest mean rating across grade levels was for teachers reporting that they felt that the intervention program was beneficial to their students. Teachers' observations of the program being beneficial had a mean rating of 2.69 for kindergarten students, 2.66 for second grade, and 2.53 for first grade.

Mean ratings for greater confidence in reading were higher for second-grade students (2.54), followed by kindergarten (2.49), and then first grade students (2.40) (see **Table 3**). Teachers agreed that there were improvements in the students’ grades after completing the intervention. There was a mean rating of 2.57 for kindergarten, 2.50 for second grade, and 2.47 for first grade students.

There was a strong statistically significant association between teacher observation that students exhibited greater confidence in reading and teachers’ feelings that the intervention was beneficial to the students ($r = .85$) (see **Table 4**). There was also a statistically significant association between teachers reporting that students’ reading grades improved with increased confidence in reading, and that the program was beneficial to the students ($r = .75$).

There was a weak negative (downhill sloping) linear relationship between being in the program for one year or more than one year (see **Table 4**). There was a weak negative association between years in the program with students exhibiting increased confidence ($r = -.20$), the program being beneficial to students ($r = -.17$), and improvement in reading grades ($r = -.19$). The longer a student participated in the program, the weaker the association between years of participation and teachers’ observations of students’ confidence, benefits, or reading improvements.

How did the performance of kindergarten to second grade students in the Reading Intervention program compare with their campus grade level peers on the Istation reading assessment?

A paired sample t-test was conducted comparing the pre-and post-academic performance for each grade level (kindergarten, grade 1, and grade 2) (see **Appendix A, Table A7** for cohort 1 and **Table A8** for cohort 2, p. 20). In both cohort 1 and cohort 2, there were significant differences between the pre-and post-test mean

Table 3: Mean rating of teacher perception of reading intervention program on students, teacher post-program survey responses 2015–2018

		N	Mean	S.D.
Kindergarten	Q1. Increased confidence	254	2.49	0.80
	Q2. Beneficial to students	254	2.69	0.78
	Q3. Reading grades improved	254	2.57	0.82
Grade 1	Q1. Increased confidence	468	2.40	0.85
	Q2. Beneficial to students	469	2.53	0.80
	Q3. Reading grades improved	470	2.47	0.86
Grade 2	Q1. Increased confidence	120	2.54	0.78
	Q2. Beneficial to students	120	2.66	0.73
	Q3. Reading grades improved	120	2.50	0.88

Note: Teacher survey questions: Q1. The students exhibited greater confidence in reading. Q2. I felt the Making it Better Reading Intervention program was beneficial to the students. Q3. The student’s reading grades improved.

Table 4: Correlation of teacher perception of student performance after reading intervention program, 2015–2018

	Q1	Q2	Q3	Q4
Q1. Increased confidence	1.00			
Q2. Beneficial to students	.845**	1.00		
Q3. Reading grades improved	.747**	.748**	1.00	
Q4. Years in Program	-.195**	-.172**	-.185**	1.00

proficiency scored in reading in the intervention group for kindergarten and first grade at the .01 level. In cohort 1, kindergarten students’ pre-test results (M = 173.5, S.D. = 13.7) and post-test results (M = 186.3, S.D. = 12.4) indicated that participation in the intervention resulted in an improvement in the mean reading proficiency, $t(44) = 6.5, p < .001$ (see **Appendix A, Table A7, p. 20**). Similarly, kindergarten students in cohort 2 showed a significant increase in the mean reading proficiency score by the end of the intervention (M = 185.2, S.D. = 13.2) compared to students’ scores prior to starting the intervention (M = 168.9, S.D. = 14.6), $t(37) = 6.6, p = .000$ (see **Appendix A, Table A8, p. 20**). The post-test score for both cohorts is slightly lower than the grade-level expected score (>200) (Istation 2013).

For first-grade students in cohort 1, results from the pre-test (M = 187.6, S.D. = 10.9) and post-test (M = 201.9, S.D. = 21.5) indicated that participation in the intervention resulted in an improvement in the mean reading proficiency, $t(96) = 7.2, p = .000$ (see **Appendix A, Table A7, p. 20**). Comparably, first-grade students in

cohort 2 showed a significant increase in the mean reading proficiency score at the end of the intervention ($M = 215.7$, $S.D. = 93.5$) compared to students' scores prior to starting the intervention ($M = 196.7$, $S.D. = 46.3$), $t(87) = 3.5$, $p = .001$ (see Appendix A, Table A8, p. 20). The post-test score for both cohorts was slightly lower than the grade-level expected score (>221) (Istation, 2013).

For second grade students in cohort 1, results from the pre-test ($M = 208.7$, $S.D. = 11.5$) and post-test ($M = 226.8$, $S.D. = 12.3$) indicated that participation in the intervention resulted in an improvement in the mean reading proficiency, $t(47) = 9.5$, $p = .000$ (see Appendix A, Table A7, p. 20). However, second grade students in cohort 2 did not show a significant increase in the mean reading proficiency score at the end of the intervention ($M = 211.5$, $S.D. = 21.2$) compared to students' scores prior to starting the intervention ($M = 203.1$, $S.D. = 10.2$), $t(18) = 1.6$, $p = .122$ (see Appendix A, Table A8, p. 20). The post-test score for both cohorts was lower than the grade-level expected score (>238) (Istation 2013).

Based on these results, though not reading at grade level, students in both cohorts that were in kindergarten and first grade who participated in the reading intervention benefitted more from the program. To test this conclusion the pre- and post-means for students in the intervention were compared to the pre-and post-means for those that were not in the intervention.

Post-hoc analysis of pair-wise group comparisons indicated that, across cohorts, first-grade students who participated in the Reading Intervention program performed better than their peers who did not (see **Figure 7** and **Figure 8**). In cohort 1, first-grade students who participated in the reading intervention program showed a statistically significant increase in mean proficiency reading score ($M = 14.3$, $S.E. = 7.2$) (see Figure 7). While their grade-level peers who did not participate in the intervention also showed a significant increase in mean proficiency reading score ($M = 13.5$, $S.E. = 4.2$), it was lower than that of their peers who received the intervention (see Figure 7).

For cohort 2, there was also an observed difference between first-grade students who participated in the reading intervention program and those who did not (see Figure 8). First-grade students who participated in the Reading Intervention program showed an increase in mean proficiency reading score ($M = 19.1$, $S.E. = 5.4$) (see Figure 8). Their grade-level peers who did not participate in the program also showed a significant increase in mean proficiency reading score ($M = 13.9$, $S.E. = 1.2$) (see Figure 8). However, it was lower than that of their peers who received the intervention.

Figure 7: Reading proficiency rate for cohort 1 by grade level, 2015–2016

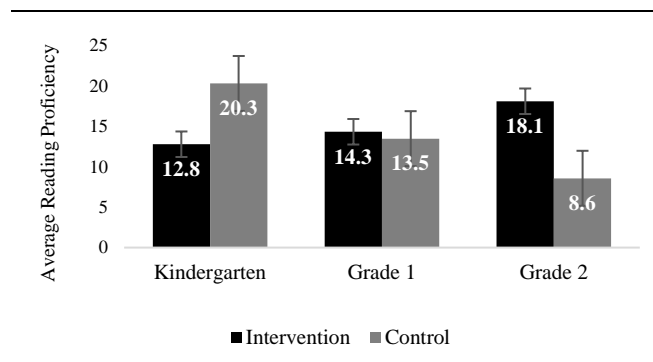
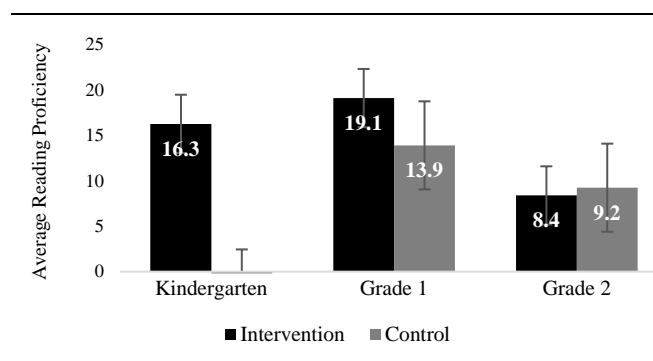


Figure 8: Reading proficiency rate for cohort 2 by grade level, 2016–2017



What were the differences in reading performance between the students in the Reading Intervention program and their peers when demographic characteristics are taken into consideration?

When disaggregated further by demographic characteristics, there was a greater increase in percentage points in the number of students at grade level on Istation's Indicators of Progress (ISIP) assessment for English learners, economically disadvantaged, or Black students compared to their peers who did not receive the intervention (see **Appendix A, Table A9** for cohort 1 and **Table A10** for cohort 2, p. 21).

The largest increase in the number of students that were at grade level was among ELs for both cohorts (see **Figure 9** and **Figure 10**). In cohort 1, the number of ELs that were at grade level increased by 56.1 percentage points from the pre-test (2.4%) to the post-test (58.5%) (see Figure 9). This was higher than the 44.5 percentage points increase for ELs not in the intervention, from pre-test (11.1%) to post-test (55.6%).

In cohort 2, the number of ELs that were at grade level increased by 2.5 percentage points from the pre-

test (10%) to the post-test (12.5%) (see Figure 10). The number of EL students who did not participate in the intervention that were at grade level did not increase from the pre-test (17.6%) to the post-test (17.6%) (see Figure 10).

For Black students in cohort 1, the number of Reading Intervention program participants that were at grade level increased by 42.5 percentage points from the pre-test (3.0%) to the post-test (45.5%) (see Figure 9). While the number of Black students who did not participate in the intervention that were at grade level increased by 32.3 percentage points from the pre-test (26.5%) to the post-test (58.8%) (see Figure 9).

In cohort 2, the increase in reading performance between Black students who participated in the Reading Intervention program and their peers was on par. The number of Black students who participated in the Reading Intervention program that was at grade level increased by 2.7 percentage points from the pre-test (4.2%) to the post-test (6.9%) (see Figure 10). Likewise, the number of Black students who did not participate in the intervention that were at grade level increased by 2.0 percentage points from the pre-test (31.3%) to the post-test (33.3%) (see Figure 10).

The difference in the pre-test (4.3%) and post-test (50.0%) results for economically disadvantaged students, in cohort 1, showed a 45.7 percentage points increase in the number of students that were reading at grade level (see Figure 9). There was a 28.2 percentage points increase from pre-test (29.8%) to post-test (58.0%) for their peers who did not receive the intervention.

For cohort 2, there was a 1.6 percentage-point increase in the number of economically disadvantaged students reading at grade level from pre-test (7.3%) to post-test (8.9%) compared to a 3.7 percentage points decrease for those who did not receive the intervention from the pre-test (33.8%) to the post-test (30.1%) (see Appendix A, Table A10, p. 21).

Hispanic students who participated in the intervention did not outperform their peers in both cohorts, they showed a higher increase in percentage points in cohort 1 (see Figure 9) and no change in cohort 2 (see Figure 10). The number of Hispanic students who participated in the Reading Intervention program that was at grade level increased by 53.6 percentage points from the pre-test (5.6%) to the post-test (59.2%) (see Figure 9). However, the number of Hispanic students who did not participate in the intervention that were at grade level increased by 23.0 percentage points from the pre-test (32.2%) to the post-test (55.2%) (see Figure 10).

Figure 9: Percentage of students at grade level on Istation's Indicators of Progress (ISIP) assessment for cohort 1 by demographics, 2015–2016

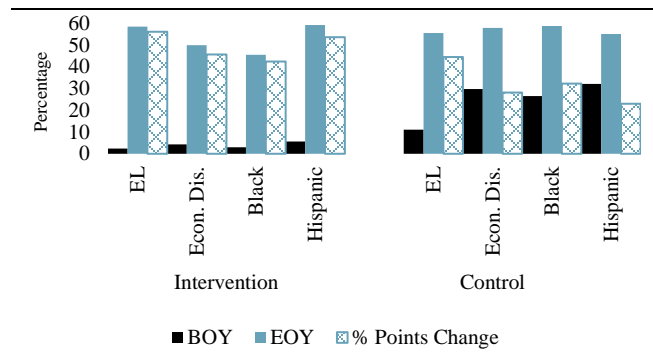
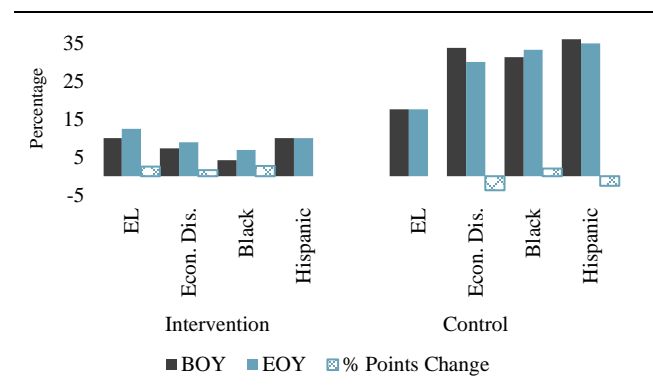


Figure 10: Percentage of students at grade level on Istation's Indicators of Progress (ISIP) assessment for cohort 2 by demographics, 2016–2017



What was the longitudinal effect of the Literacy Now program on the STAAR Reading performance of HISD third grade students?

Independent sample t-tests were conducted to test the efficacy of the reading intervention program in helping to create proficient readers by the end of grade 3 (see **Appendix A, Table A11**, p. 22). Overall, when examined by grade-level, the analysis found that students did not show significant long-term benefit from the reading intervention program once they got to grade three based on STAAR reading results. The test was found to be statistically significant [$t(269) = -3.23, p < .001$]. The effect size ($d = .39$) was found to meet Cohen's (1988) convention for a small but substantively important effect in education. The Reading Intervention program had a small effect on students' grade 3 reading performance.

For cohort 1, the results indicated that the reading performance of third-grade students in the Reading

Intervention program component ($M = 4662.1$, $S.D. = 796.9$) was lower than students who did not participate in the reading intervention program ($M = 4979.7$, $S.D. = 819.9$). However, for cohort 2 there was no significant effect on the third-grade reading performance, $t(149) = 1.2$, $p = .306$, despite students who participated in the reading intervention attaining higher grade 3 reading proficiency scores ($M = 5032.7$, $S.D. = 759.2$) than those who did not participate in the program ($M = 4876.9$, $S.D. = 801.7$).

Analysis by grade level showed that of the three grades (kindergarten to grade 2) in cohort 1, there was a significant effect for kindergarten students that participated in the reading intervention program. The test was statistically significant [$t(69) = -2.5$, $p < .015$], and the effect size was small ($d = .39$) (see **Appendix A, Table A12**, p. 22). Though the difference between the scores for each group was significant, the third-grade reading performance was lower for kindergarten students who participated in the Reading Intervention program ($M = 5236.7$, $S.D. = 622.7$) than for students who did not participate in the reading intervention program ($M = 5591.5$, $S.D. = 564.2$) (see **Figure 11**).

Cohort 2 included only first-grade and second-grade students who wrote the STAAR grade 3 reading assessment during the period under study (see **Appendix A, Table A13**, p. 22). Students who participated in the Reading Intervention program attained lower grade 3 reading proficiency scores ($M = 3859.3$, $S.D. = 337.7$) than those who did not participate in the program ($M = 4212.9$, $S.D. = 467.1$) (see **Figure 12**). There was not a significant effect on third grade reading performance for this cohort, [$t(49) = -1.2$, $p = .241$] (see **Appendix A, Table A13**, p. 22).

How did students in the Reading Intervention program compare with their campus grade level peers on the STAAR grade 3 reading assessment when demographics are taken into consideration?

Although analyses of the overall third grade reading performance found that the Reading Intervention program did not have a significant effect, certain grades and demographic groups showed moderate benefits from program participation. Further analyses were conducted to examine the difference in third grade reading performance by demographic characteristics (see **Appendix A, Table A14** for cohort 1 and **Table A15** for cohort 2, p. 22).

The results for cohort 1 showed that for economically disadvantaged students, there was a statistically significant difference between the mean reading performance of those students who participated in the

Figure 11: Average proficiency rate on STAAR grade 3 reading for cohort 1 by grade level, 2015–2016

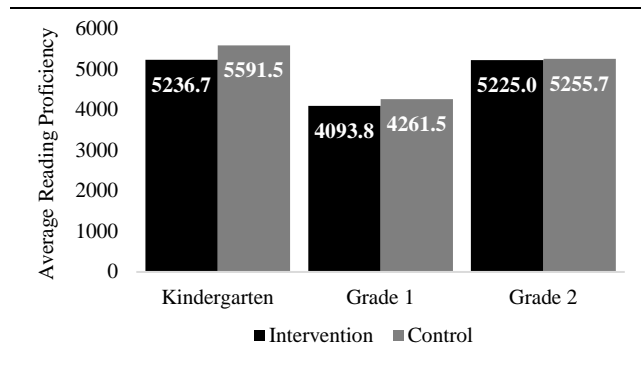
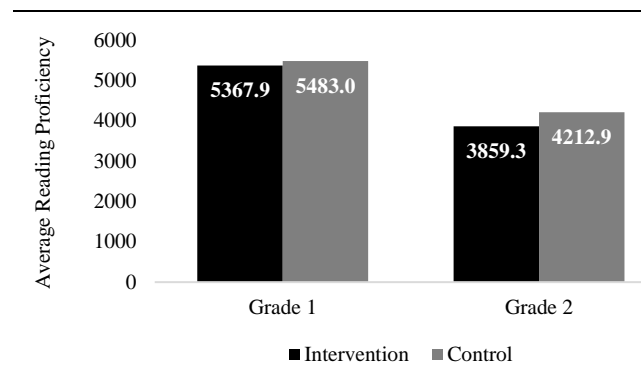


Figure 12: Average proficiency rate on STAAR grade 3 reading for cohort 2 by grade level, 2016–2017

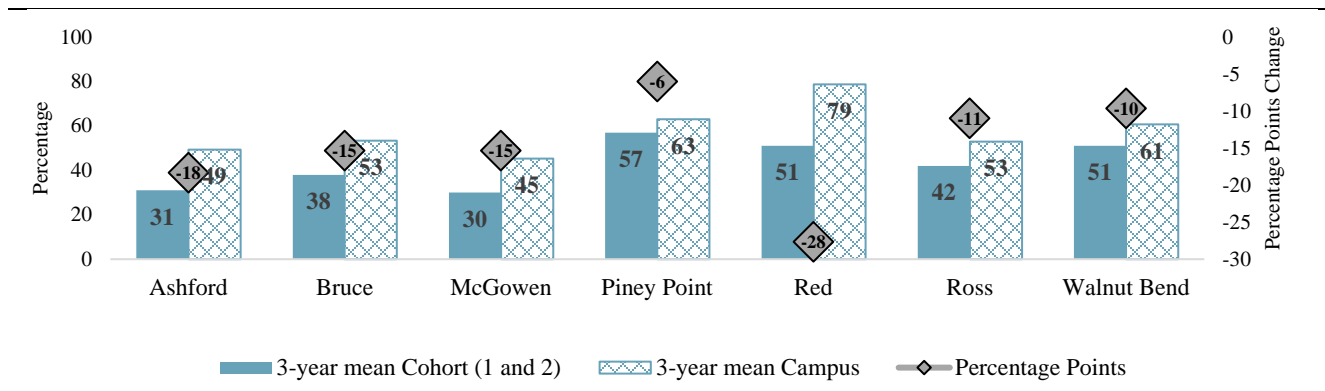


Reading Intervention program and those who did not [$t(240) = -3.17$, $p = .002$] (see **Appendix A, Table A14**, p. 22). The results indicated that the reading performance of economically disadvantaged students in third grade in the Reading Intervention program ($M = 4761.2$, $S.D. = 786.1$) was higher than students who did not participate in the reading intervention program ($M = 4709.6$, $S.D. = 790.6$).

For Black students in cohort 2, there was a statistically significant difference [$t(240) = 3.42$, $p = .001$] between the mean reading performance of those students who participated in the Reading Intervention program and those who did not (see **Appendix A, Table A15**, p. 22). The results indicated that Black students in the Reading Intervention program ($M = 5064.9$, $S.D. = 767.4$) had a higher third grade reading performance than students who did not participate in the reading intervention program ($M = 4434.76$, $S.D. = 727.5$). The effect of the reading intervention program for Black students was large ($d = .84$).

A campus-level analysis was conducted for seven of the ten campuses involved in the Reading Intervention program during the period under study (2015–2017).

Figure 14: Percentage of students at or above STAAR grade 3 'approaches' grade level benchmark at campuses participating in Literacy Now program, 3-year mean (2016, 2017, 2018)



Except for Walnut Bend Elementary, students participated in the Reading Intervention program twice a week. Students at Walnut Bend Elementary participated in the program four times a week.

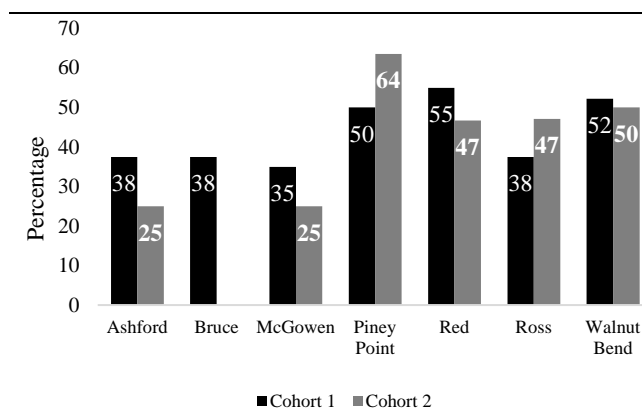
Across cohorts, a higher percentage of students at Piney Point, Red, and Walnut Bend were at or above 'Approaches' grade level standard on the STAAR Grade 3 reading assessment. Piney Point Elementary had the highest number of students who participated in the reading intervention that were at or above 'Approaches' grade level standard on the STAAR reading assessment, with 50 percent of students in cohort 1 and 64 percent of students in cohort 2 (see Figure 13).

Both cohorts at Red Elementary and Walnut Bend Elementary also had a high percentage of students of students who participated in the intervention that were at or above 'Approaches' grade level standard on the STAAR reading assessment. At Red Elementary, 55 percent of students in cohort 1 and 47 percent of students in cohort 2 were at or above 'Approaches' grade level standard on the STAAR reading assessment (see Figure

13). Similarly, at Walnut Bend Elementary, 52 percent of students in cohort 1 and 50 percent of students in cohort 2 were at or above 'Approaches' grade level standard on the STAAR reading assessment.

For five of the seven campuses that participated in the Reading Intervention program students in the intervention reading performance were within 15 percentage points of their campus peers (see Appendix A, Table A16, p. 23). The difference in 3-year mean percentage of students who met at or above 'Approaches' reading level benchmark on the STAAR grade 3 reading was within 15 percentage points of the 3-year mean for their campus peers at Piney Point (6%), Walnut Bend (10%), Ross (11%), Bruce (15%), and McGowen (15%) (see Figure 14).

Figure 13: Percentage of reading intervention students that were at or above STAAR grade 3 'approaches' grade level benchmark, 2016, 2017, 2018



Discussion

The Literacy Now program has been implemented at nineteen HISD schools since 2007. The program incorporates activities for students, parents, and the community that are aimed at improving student reading. The cornerstone of the Literacy Now program is the Reading Intervention program, which targets low-performing readers from kindergarten to second grade. The Reading Intervention program is tailored to meet the student's individual needs through a low student-to-tutor ratio built on partnerships with parents and the wider community. The goal is to create proficient readers by the end of third grade (Literacy Now, 2019).

The Literacy Now early intervention program focused on several key elements for the implementation of effective reading intervention for young learners. These elements included (i) use of evidence-based curriculum and instructional materials for use in early intervention; (ii) scheduling time for intervention; (iii) selecting, training, and supporting interventionists; and

(iv) locating space and maintaining open communications among interventionists, teachers, and parents (Foorman, Lee, & Smith, 2020).

The program also incorporated several key elements to engage parents and the community by offering Parent Workshops and Family Literacy Night at several campuses and within the community. Those campuses with the highest mean number of parents participating in the Parent Workshops included Red Elementary (M = 26.8), Mark White (M = 17.0), and MacGregor (M = 16.5).

Family Literacy Night participation was high for Belmont Apartments, with an average attendance of 106.7 parents and students, and Shadowbriar Elementary, with an average attendance of 99 parents and students. Participants at Belmont Apartments were parents and students who attended Walnut Bend elementary. At these events, students and parents received books to support reading at home.

However, there was a lack of cohesiveness across data collection for the various components of the program and student performance, making it challenging to measure the program's effectiveness based on the level of participation in each activity. This lack of cohesiveness across program components limited the capacity of the program to ensure adherence to the level of fidelity needed for successful program implementation.

As pointed out by Foorman, Lee, and Smith (2020), these additional elements (parent support, small group size, evidence-based curriculum) are important aspects that are critical to the successful implementation of early literacy intervention. It is necessary to ensure that students have received research-based interventions implemented with high levels of fidelity to assess the effectiveness of the intervention (Austin, Vaughn, & McClelland, 2017).

In terms of the Reading Intervention program, data were collected from the teachers of students who participated in the program. The results of the post-program survey administered to teachers revealed that instructors observed that students displayed greater confidence in reading after participation in the program. Across grade levels, teachers reported that the program was beneficial for students. The highest mean rating, on a 3.0 scale, was for kindergarten students (M = 2.69), followed by second grade (M = 2.66), and first grade (M = 2.53).

The evaluation found that for both cohorts of kindergarten and grade 1 students who participated in the Reading Intervention program, there was a significant difference between the pre-and post-test scores for the average rate of proficiency in reading.

However, when compared to students who did not participate in the Reading Intervention program, students in grade 1 showed a higher mean difference across cohorts.

The evaluation found that certain demographic groups responded better to the reading intervention. The pre-test and post-test results for students who were English learners, economically disadvantaged, or Black indicated that participation in the intervention resulted in an improvement in the mean reading proficiency. The largest average increase was among EL students for both cohorts. Pull-out interventions have been found to have transformative effects on students' reading performance, especially in high-poverty schools and among English learners (Everson & Bussey, 2013).

A campus-level analysis was conducted to examine the third-grade reading performance of students who participated in the Reading Intervention program. It was found that campuses involved in the Literacy Now program, apart from Piney Point, had fewer students who performed at or above the 'Approaches' grade level standard on STAAR grade 3 reading assessment compared to their campus-level peers.

There was a fifteen mean percentage points difference between the number of students who were at or above the 'Approaches' grade level standard on STAAR grade 3 reading assessment compared to their campus-level peers at several campuses. These campuses included: Piney Point (6%), Walnut Bend (10%), Ross (11%), Bruce (15%), and McGowen (15%).

Students who participated in the Literacy Now Reading Intervention program have shown pre-and post-test improvements. A significant goal of an intervention is to accelerate student progress to reduce the gap between students' current reading level and grade-level expectations (Vaughn, Denton, & Fletcher, 2010). However, caution should be taken when interpreting the findings of this evaluation since it was not feasible to identify the interaction between the components of the Literacy Now program (Reading Intervention, Parent Engagement Workshops, Book Distribution, Family Literacy Night, and monthly newsletters) offered to HISD students and the fidelity of the intervention to accelerate reading performance.

Since the period under study, Literacy Now has made several changes to the program. One of which is the integration of the Collaborative Classroom SIPPS (Systematic Instruction in Phonological Awareness, Phonics, and Sight Words) curriculum with the Neuhaus Reading Readiness program. SIPPS is a research-based foundational skills program proven to help both new and struggling readers build skills and confidence for fluent and independent reading (Literacy Now, 2020). Literacy

Now Interventionists are trained on SIPPS and Neuhaus Reading Readiness. Additionally, Literacy Now has started the process of implementing some of the recommendations from this evaluation relating to data collection, assessment, and fidelity. Therefore, it would be beneficial to further examine the impact of the program on the long-term reading performance of HISD kindergarten to grade three students.

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APPENDIX A

Table A1. Comparison of baseline characteristics between treated and untreated subjects in the original unmatched sample, 2015–2016

		non-Participant (N = 2,743)		Participant (N = 199)		p-value	Standardized differences
		n	%	n	%		
BOY Score		2,743	376.68 (250.89)	199	205.72 (90.91)	0.00	0.69
Grade	Kindergarten	889	32.4	49	24.6	0.00	0.08
	Grade 1	946	34.5	99	49.7		
	Grade 2	938	34.2	51	25.6		
Gender	Female	1,369	49.9	90	45.2	0.12	0.02
	Male	1,374	50.1	109	54.8		
Ethnicity	Black	710	25.9	104	52.3	0.00	0.16
	Hispanic	1,838	67.0	76	38.2		
	Other	195	7.1	19	9.5		
Home Language	Spanish (1)	1,237	45.1	36	18.1	0.00	0.14
	English (98)	1,375	50.1	146	73.4		
	Other (99)	131	4.8	17	8.5		
Economically Disadvantaged	No	466	17.0	29	14.6	0.22	0.02
	Yes	2,277	83.0	170	85.4		
At-Risk	No	796	29.0	21	10.6	0.00	0.10
	Yes	1,947	71.0	178	89.4		
EL	No	1,431	52.2	153	76.9	0.00	-0.12
	Yes	1,311	47.8	46	23.1		
Gifted/ Talented	No	2,579	94.0	196	98.5	0.00	-0.05
	Yes	164	6.0	3	1.5		
SPED	No	2,579	94.0	189	95.0	0.28	0.01
	Yes	164	6.0	10	5.0		

Source: 2015–2019 PEIMS student databases. Percentages may not total 100 due to rounding.

Notes: Continuous variables are reported as mean ± standard deviation. Dichotomous variables are reported as N (Per cent).

Phi Coefficient: 0 is no relationship; 1 is a perfect positive relationship; -1 is a perfect negative relationship.

Table A2. Comparison of baseline characteristics between treated and untreated subjects in the original matched sample, 2015–2016

		non-Participant (N = 2,743)		Participant (N = 199)		p-value	Standardized differences
		n	%	n	%		
BOY Score		199	201.72 (49.65)	199	205.72 (90.91)	0.08	-0.05
Grade	Kindergarten	66	33.2	49	24.6	0.06	0.12
	Grade 1	77	38.7	99	49.7		
	Grade 2	56	28.1	51	25.6		
Gender	Female	91	45.7	90	45.2	0.50	0.01
	Male	108	54.3	109	54.8		
Ethnicity	Black	102	51.3	104	52.3	0.06	0.12
	Hispanic	89	44.7	76	38.2		
	Other	8	4.0	19	9.5		
Home Language	Spanish (1)	-	0.0	36	18.1	0.00	0.32
	English (98)	181	91.0	146	73.4		
	Other (99)	18	9.0	17	8.5		
Economically Disadvantaged	No	9	4.5	29	14.6	0.00	-0.17
	Yes	190	95.5	170	85.4		
At-Risk	No	103	51.8	21	10.6	0.00	0.45
	Yes	96	48.2	178	89.4		
EL	No	181	91.0	153	76.9	0.00	0.19
	Yes	18	9.0	46	23.1		
Gifted/ Talented	No	198	99.5	196	98.5	0.31	0.05
	Yes	1	0.5	3	1.5		
SPED	No	194	97.5	189	95.0	0.15	0.07
	Yes	5	2.5	10	5.0		

Source: 2015–2019 PEIMS student databases. Percentages may not total 100 due to rounding.

Notes: Continuous variables are reported as mean ± standard deviation. Dichotomous variables are reported as N (Per cent).

Phi Coefficient: 0 is no relationship; 1 is a perfect positive relationship; -1 is a perfect negative relationship.

Table A3. Comparison of baseline characteristics between treated and untreated subjects in the original unmatched sample, 2016–2017

		non-Participant (N = 2,117)		Participant (N = 145)		p-value	Standardized differences
		n	%	n	%		
BOY Score		2,117	392.71 (249.37)	145	190.23 (39.09)	0.00	0.82
Grade	Kindergarten	697	32.9	38	26.2	0.00	0.16
	Grade 1	671	31.7	88	60.7		
	Grade 2	749	35.4	19	13.1		
Gender	Female	1,065	50.3	68	46.9	0.24	-0.02
	Male	1,052	49.7	77	53.1		
Ethnicity	Black	541	25.6	72	49.7	0.00	0.14
	Hispanic	1,456	68.8	60	41.4		
	Other	120	5.7	13	9.0		
Home Language	Spanish (1)	977	46.2	30	20.7	0.00	0.14
	English (98)	1,052	49.7	100	69.0		
	Other (99)	88	4.2	15	10.3		
Economically Disadvantaged At-Risk	No	258	12.2	22	15.2	0.18	-0.02
	Yes	1,859	87.8	123	84.8		
EL	No	446	21.1	19	13.1	0.01	0.05
	Yes	1,671	78.9	126	86.9		
Gifted/ Talented	No	1,086	51.4	105	72.4	0.00	-0.10
	Yes	1,028	48.6	40	27.6		
SPED	No	2,049	96.8	140	96.6	0.51	0.00
	Yes	68	3.2	5	3.4		
SPED	No	2,050	96.8	138	95.2	0.33	0.02
	Yes	67	3.2	7	4.8		

Source: 2015–2019 PEIMS student databases. Percentages may not total 100 due to rounding.

Notes: Continuous variables are reported as mean ± standard deviation. Dichotomous variables are reported as N (Per cent).

Phi Coefficient: 0 is no relationship; 1 is a perfect positive relationship; -1 is a perfect negative relationship.

Table A4. Comparison of baseline characteristics between treated and untreated subjects in the original matched sample, 2016–2017

		non-Participant (N = 145)		Participant (N = 145)		p-value	Standardized differences
		n	%	n	%		
BOY Score		145	204.60 (40.30)	145	190.23 (39.09)	0.07	0.36
Grade	Kindergarten	32	22.1	38	26.2	0.00	0.26
	Grade 1	62	42.8	88	60.7		
	Grade 2	51	35.2	19	13.1		
Gender	Female	67	46.2	68	46.9	0.50	0.01
	Male	78	53.8	77	53.1		
Ethnicity	Black	48	33.1	72	49.7	0.02	0.17
	Hispanic	80	55.2	60	41.4		
	Other	17	11.7	13	9.0		
Home Language	Spanish (1)	-	0.0	30	20.7	0.00	0.34
	English (98)	126	86.9	100	69.0		
	Other (99)	19	13.1	15	10.3		
Economically Disadvantaged At-Risk	No	12	8.3	22	15.2	0.05	-0.11
	Yes	133	91.7	123	84.8		
EL	No	49	33.8	19	13.1	0.00	0.24
	Yes	96	66.2	126	86.9		
Gifted/ Talented	No	127	88.2	105	72.4	0.00	0.20
	Yes	17	11.8	40	27.6		
SPED	No	143	98.6	140	96.6	0.22	0.07
	Yes	2	1.4	5	3.4		
SPED	No	140	96.6	138	95.2	0.39	0.04
	Yes	5	3.4	7	4.8		

Source: 2015–2019 PEIMS student databases. Percentages may not total 100 due to rounding.

Notes: Continuous variables are reported as mean ± standard deviation. Dichotomous variables are reported as N (Per cent).

Phi Coefficient: 0 is no relationship; 1 is a perfect positive relationship; -1 is a perfect negative relationship.

Table A5: Number of participants in Literacy Now Parent Workshops by campus, 2015–2019

	2015-16	2016-17	2017-18	2018-19	Mean
Ashford	16	16	18	14	16.0
Bruce	6	6	7	4	5.8
MacGregor	-	-	15	18	16.5
Mark White	-	-	19	15	17.0
McGowen	2	2	-	-	2.0
Piney Point	9	9	11	10	9.8
Red	29	29	20	29	26.8
Ross	7	7	8	17	9.8
Shadowbriar	-	-	15	14	14.5
Shearn	3	3	-	-	3.0
Walnut Bend	5	5	13	19	10.5
Belmont Apartments	5	10	16	10	10.3

Note: Data provided by the Literacy Now Program; '-' indicates no data were provided for that year / campus.

Table A6: Number of participants in Literacy Now Family Literacy Night by campus, 2015–2019

	2015-16	2016-17	2017-18	2018-19	Mean
Ashford	-	-	-	-	
Bruce	-	-	86	-	86.0
MacGregor	-	-	-	-	
Mark White	-	-	-	253	253.0
McGowen	-	-	-	-	
Piney Point	82	-	-	-	82.0
Red	-	-	-	-	
Ross	-	-	-	162	162.0
Shadowbriar	-	-	111	87	99.0
Shearn	-	-	-	-	
Walnut Bend	-	-	-	-	
Belmont Apartments	113	-	136	71	106.7

Note: Data provided by the Literacy Now Program; '-' indicates no data were provided for that year / campus.

Table A7: Paired sample t-test results for cohort 1 pre- and post-intervention test results, 2015–2016

	Intervention							Control						
	Mean	S.D.	Paired <i>t</i> -test				Mean	S.D.	Paired <i>t</i> -test					
			mean diff	95% C.I.	<i>t</i> -value	<i>df</i>	<i>p</i>			mean diff	95% C.I.	<i>t</i> -value	<i>df</i>	<i>p</i>
Kindergarten	(n = 45)							(n = 64)						
<i>t</i> 1	173.5	13.7	12.8	8.8, 16.8	6.5	44	0.00	186.9	64.2	20.3	15.9, 24.6	9.27	63	0.000
<i>t</i> 2	186.3	12.4						207.1	73.0					
Grade 1	(n = 97)							(n = 76)						
<i>t</i> 1	187.6	10.9	14.3	10.4, 18.3	7.2	96	0.00	198.6	20.8	13.5	11.0, 15.9	10.87	75	0.000
<i>t</i> 2	201.9	21.5						212.0	21.5					
Grade 2	(n = 49)							(n = 56)						
<i>t</i> 1	208.7	11.5	18.1	14.3, 21.9	9.5	47	0.00	213.4	19.0	8.6	6.0, 11.2	6.63	55	0.000
<i>t</i> 2	226.8	12.3						222.0	20.2					

Source: 2015–2016, 2016–2017, and 2018–2019 STAAR database and HISD District and School Profiles publication

Table A8: Paired sample t test results for cohort 2 pre- and post-academic performance results, 2016–2017

	Intervention							Control						
	Mean	S.D.	Paired <i>t</i> -test				Mean	S.D.	Paired <i>t</i> -test					
			mean diff	95% C.I.	<i>t</i> -value	<i>df</i>	<i>p</i>			mean diff	95% C.I.	<i>t</i> -value	<i>df</i>	<i>p</i>
Kindergarten	(n = 38)							(n = 31)						
<i>t</i> 1	168.9	14.6	16.3	11.3, 21.3	6.6	37	0.000	199.3	18.6	-2.4	-27.9, 23.0	-0.2	30	0.85
<i>t</i> 2	185.2	13.2						196.9	72.8					
Grade 1	(n = 88)							(n = 63)						
<i>t</i> 1	196.7	46.3	19.1	8.3, 29.8	3.5	87	0.001	196.9	17.9	13.9	11.6, 16.2	11.9	61	0.00
<i>t</i> 2	215.7	93.5						210.8	17.4					
Grade 2	(n = 19)							(n = 51)						
<i>t</i> 1	203.1	10.2	8.4	-2.5, 19.3	1.6	18	0.12	219.9	19.7	9.2	6.73, 11.8	7.4	50	0.00
<i>t</i> 2	211.5	21.2						229.1	20.8					

Source: 2015–2016, 2016–2017, and 2018–2019 STAAR database and HISD District and School Profiles publication

Table A9: Students' performance tier on Istation's Indicators of Progress (ISIP) assessment for cohort 1 by demographics, 2015–2016

ISIP Tier	Intervention					Control				
	t1 (pre-test)		t2 (post-test)		Percentage points change	t1 (pre-test)		t2 (post-test)		Percentage points change
	n	%	n	%		n	%	n	%	
English Learner (ELs)										
At grade level	1	2.4	24	58.5	56.1	2	11.1	10	55.6	44.5
Moderately below grade level	2	4.9	5	12.2	7.3	5	27.8	1	5.6	-22.2
Seriously below grade level	38	92.7	12	29.3	-63.4	11	61.1	7	38.9	-22.2
Economic Disadvantaged										
At grade level	7.0	4.3	81.0	50.0	45.7	56	29.8	109	58.0	28.2
Moderately below grade level	16.0	9.9	33.0	20.4	10.5	36	19.1	35	18.6	-0.5
Seriously below grade level	139.0	85.8	48.0	29.6	-56.2	96	51.1	44	23.4	-27.7
Black										
At grade level	3.0	3.0	46.0	45.5	42.5	27	26.5	60	58.8	32.3
Moderately below grade level	12.0	11.9	15.0	14.9	3.0	16	15.7	14	13.7	-2.0
Seriously below grade level	86.0	85.1	40.0	39.6	-45.5	59	57.8	28	27.5	-30.3
Hispanic										
At grade level	4.0	5.6	42.0	59.2	53.6	28	32.2	48	55.2	23.0
Moderately below grade level	8.0	11.3	17.0	23.9	12.6	22	25.3	22	25.3	0.0
Seriously below grade level	59.0	83.1	12.0	16.9	-66.2	37	42.5	17	19.5	-23.0

Note: Bolded numbers are the at or above 'Approaches' Grade Level Standard on STAAR Grade 3 Reading discussed in the report.

Table A10: Students' performance tier on Istation's Indicators of Progress (ISIP) assessment for cohort 2 by demographics, 2016–2017

ISIP Tier	Intervention					Control				
	t1 (pre-test)		t2 (post-test)		Percentage points change	t1 (pre-test)		t2 (post-test)		Percentage points change
	n	%	n	%		n	%	n	%	
English Learner (ELs)										
At grade level	4	10.0	5	12.5	2.5	3	17.6	3	17.6	0.0
Moderately below grade level	4	10.0	7	17.5	7.5	1	5.9	1	5.9	0.0
Seriously below grade level	32	80.0	28	70.0	-10.0	13	76.5	13	76.5	0.0
Economic Disadvantaged										
At grade level	9.0	7.3	11.0	8.9	1.6	45	33.8	40	30.1	-3.7
Moderately below grade level	8.0	6.5	21.0	17.1	10.6	20	15.0	35	26.3	11.3
Seriously below grade level	106.0	86.2	91.0	74.0	-12.2	68	51.1	58	43.6	-7.5
Black										
At grade level	3.0	4.2	5.0	6.9	2.7	15	31.3	16	33.3	2.0
Moderately below grade level	4.0	5.6	13.0	18.1	12.5	10	20.8	12	25.0	4.2
Seriously below grade level	65.0	90.3	54.0	75.0	-15.3	23	47.9	20	41.7	-6.2
Hispanic										
At grade level	6.0	10.0	6.0	10.0	0.0	30	37.5	28	35.0	-2.5
Moderately below grade level	4.0	6.7	11.0	18.3	11.6	14	17.5	25	31.3	13.8
Seriously below grade level	50.0	83.3	43.0	71.7	-11.6	36	45.0	27	33.8	-11.2

Note: Bolded numbers are the at or above 'Approaches' Grade Level Standard on STAAR Grade 3 Reading discussed in the report.

Table A11: Independent sample t test results for cohort 1 and cohort 2 grade 3 STAAR English Reading, 2015–2016 and 2016–2017

	Intervention			Control			<i>t</i> -value	<i>df</i>	<i>p</i>
	N	M	S.D.	N	M	S.D.			
Cohort 1	130	4662.1	796.3	141	4979.7	819.9	-3.23	269	0.001
Cohort 2	63	5032.7	759.2	88	4876.9	801.7	1.204	149	0.306

Table A12: Independent sample t test results for cohort 1 grade 3 STAAR English Reading by grade level, 2015–2016

	Intervention			Control			<i>t</i> -value	<i>df</i>	<i>p</i>
	N	M	S.D.	N	M	S.D.			
Kindergarten	30	5236.7	622.7	41	5591.5	564.2	-2.505	69	0.015
Grade 1	65	4093.8	563.3	53	4261.5	449.8	-1.757	116	0.081
Grade 2	35	5225.0	493.0	47	5255.7	731.2	-0.215	80	0.830

Table A13: Independent sample t test results for cohort 2 grade 3 STAAR English Reading by grade level, 2016–2017

	Intervention			Control			<i>t</i> -value	<i>df</i>	<i>p</i>
	N	M	S.D.	N	M	S.D.			
Kindergarten	-	-	-	-	-	-	-	-	-
Grade 1	49	5367.9	444.2	46	5483.0	506.6	-1.179	93	0.241
Grade 2	14	3859.3	337.7	42	4212.9	467.1	-2.608	54	0.012

Table A14: Independent sample t test results for cohort 1 grade 3 STAAR English Reading by demographics, 2015–2016

	Intervention			Control			<i>t</i> -value	<i>df</i>	<i>p</i>
	N	M	S.D.	N	M	S.D.			
English Learner	30	4651.8	809.3	16	4792.7	979.5	-0.522	44	0.604
Econ. Dis.	109	4640.3	814.1	133	4973.5	812.1	-3.172	240	0.002
Black	67	4761.2	786.1	77	4709.7	790.6	0.391	142	0.696
Hispanic	48	4511.6	789.0	59	5292.1	703.9	-5.403	105	0.000

Table A15: Independent sample t test results for cohort 2 grade 3 STAAR English Reading by demographics, 2016–2017

	Intervention			Control			<i>t</i> -value	<i>df</i>	<i>p</i>
	N	M	S.D.	N	M	S.D.			
English Learner	15	4884.0	713.4	10	4912.7	707.7	-0.099	23	0.922
Econ. Dis.	55	5039.3	750.7	81	4894.8	815.0	1.048	134	0.297
Black	30	5064.9	767.4	36	4434.7	727.5	3.418	64	0.001
Hispanic	28	5026.1	712.1	42	5183.5	723.4	-0.897	68	0.373

Table A16: Percentage of students that attained ‘Approaches’ on STAAR grade 3 reading, 2016–2018

	Intervention					Overall Campus			
	Cohort 1		Cohort 2		3-year Mean %	2016	2017	2018	3-year Mean
	n	%	n	%		%	%	%	%
Ashford	8	38	4	25	31	48	50	50	49
Bruce	16	38	-	-	38	57	49	54	53
McGowen	20	35	4	25	30	30	48	58	45
Piney Point	18	50	11	64	57	57	65	67	63
Red	20	55	15	47	51	75	82	79	79
Ross	24	38	17	47	42	46	60	53	53
Shadowbriar	-	-	2	0	0	60	62	59	60
Shearn	2	0	-	-	0	47	59	58	55
Walnut Bend	23	52	10	50	51	69	63	50	61