MEMORANDUM September 30, 2021

TO: Khalilah Campbell, Ed.D.
Officer, Special Populations

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

SUBJECT: **TEACHER AND PARENT PERCEPTIONS OF TRAINING, SUPPORTS AND LEARNING GAINS AMONG HISD STUDENTS WITH DYSLEXIA, 2020–2021**

The purpose of this evaluation was to explore the perception of parents and teachers on the effectiveness of the Reading by Design (RbD) program and on the reading performance of students with dyslexia. A univariate analysis was used to explore teachers' and parents' perceptions relative to training and supports provided at HISD campuses. The effectiveness of the RbD program on the reading performance of students with dyslexia was examined using a gain-based model. Student gains were based on the change in performance levels from beginning-of-year to end-of-year on the Renaissance 360 reading assessment. STAAR reading assessments were used to measure student gains from pre-intervention (2019) to post-intervention (2021).

Key findings include:

- There was a slight increase in the percentage of the HISD student population identified as having dyslexia in 2020 (2.4%) compared to the previous year (2.3%).
- Sixty-six percent of parents reported not participating in district training, 65.8 percent reported they were the first to identify that their child had a learning difficulty, and 43.8 percent reported the process of obtaining identification and support for their child was easy.
- Between January 2020 and April 2021, 785 teachers were trained to use RbD.
- Fifty-one percent of trained teachers indicated they always used RbD.
- For elementary school, 21.5 percent of students with dyslexia showed growth in reading performance on the Renaissance assessment from beginning-of-year to end-of-year compared to 17.1 percent of their peers at campuses where teachers reported not using RbD.
- For middle school campuses where teachers reported using RbD, 16.2 percent of students with dyslexia showed growth in reading performance on the Renaissance assessment from beginning-of-year to end-of-year compared to 13.3 percent of their peers at campuses where teachers reported not using RbD.
- For high school students, 75.4 percent of students with dyslexia whose teacher reported using RbD showed no growth in reading performance on the Renaissance assessment from beginning-of-year to end-of-year compared to campuses where teachers reported not using RbD.
- A higher proportion of elementary school students with dyslexia who received the RbD intervention and who did not meet the Approaches Grade Level standard in pre-intervention reading (2019 STAAR) met the standard on the STAAR 2021 reading assessment (24.1%) compared to students with dyslexia who received other interventions (13.8%), or no intervention (7.7%).
- A lower proportion of middle school students with dyslexia who did not meet Approaches Grade Level standard on STAAR reading pre-intervention (2019) did so on their post-intervention reading assessment (6.3%) compared to 9.3 percent who received other intervention, and 11.9 percent who received no intervention.

- A higher proportion of high school students with dyslexia who received RbD intervention met Grade Level standard post-intervention on STAAR EOC English I (11.8%) compared to their peers who received other interventions (6.7%), or no intervention (1.9%).
- A lower proportion of high school students with dyslexia who received RbD intervention met Grade Level standard post-intervention on STAAR EOC English II (16.7%) compared to their peers who received no intervention (20.0%), or other intervention (1.6%).

Should you have any further questions, please contact Allison Matney in Research and Accountability at 713-556-6700.

Allison E Matney AEM

Attachment

cc: Millard L. House II
Cicely H Bailey
Angie Maxey

HOUSTON INDEPENDENT SCHOOL DISTRICT

RESEARCH

Educational Program Report

TEACHER AND PARENT PERCEPTIONS OF TRAINING, SUPPORTS, AND LEARNING GAINS AMONG HISD STUDENTS WITH DYSLEXIA, 2020-2021

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EVALUATION REPORT

BUREAU OF PROGRAM EVALUATION

Teacher and parent perceptions of training, supports, and learning gains among HISD students with dyslexia, 2020–2021

Prepared by Georgia Graham, PhD

Abstract

Due in part to parent advocacy, Texas passed legislation and released guidelines to support identification and instruction for students with dyslexia, and their families. In alignment with state guidelines, since January 2020, the Houston Independent School District (HISD) implemented an additional instructional intervention using Reading by Design (RbD) and provided training to teachers and parents to improve the reading performance of students with dyslexia. A univariate analysis was conducted to explore the perception of parents and teachers, as well as the effectiveness of the Reading by Design (RbD) program on reading performance of students with dyslexia. A gain-based model was used to measure HISD students' gains in reading, calculated as the change in performance level from the beginning to the end of the 2020–2021 school year. Parents who found the process of attaining support for their child to be difficult were less likely to be involved in consultation with the school regarding their child's learning. On average, teachers reported a higher level of confidence in their ability to identify and support students with dyslexia at the elementary school level compared to middle and high school. When examined at the elementary, middle, and high school levels, RbD results showed gains in the reading performance of elementary students where teachers used a pull-out model and less so for middle and high school students where teachers used a course-based intervention model. For elementary school teachers who used RbD, 24.4 percent of their students with dyslexia had higher reading performance compared to 15.7 percent of their peers at campuses where teachers reported not using an intervention. A higher percentage of elementary school students with dyslexia who received the RbD intervention and who did not meet the Approaches Grade Level standard in pre-intervention reading (2019 STAAR) met the standard on the STAAR 2021 reading assessment (24.1%) compared to students with dyslexia who received other interventions (13.8%), or no intervention (7.7%).

Introduction

Texas is one of 43 U.S. states in the past decade where advocacy efforts have resulted in the enactment of dyslexia-specific legislation (Odegard, Farris, Middleton, Oslund, & Rimrodt-Frierson, 2020). Most of these laws were triggered by parent groups concerned that the educational needs of students with dyslexia were not being addressed adequately in public schools (ibid). The legislation was designed to outline dyslexia requirements, policies, and state-identified measurable results (SIMR) to support the identification of students with dyslexia. Including Texas, eight state education agencies have in place all the provisions (screening, pre-service, in-service, and intervention) specified within dyslexia legislation (National Center on Improving Literacy [NCIL], 2019).

The Texas Education Agency (TEA) outlined the procedures for school districts, charter schools, campuses, teachers, students, and parents/guardians in the early identification of, instruction for, and accommodations for students with dyslexia in The Dyslexia Handbook (2018). The Dyslexia Handbook (2018) reflects current law and replaces all previous handbook editions. The handbook is used by school districts and charter schools to develop written procedures regarding students with dyslexia (TEA, 2018).

In HISD, the Interventions Office under the Office of Special Populations, is responsible for ensuring that district and campus leaders are provided with the appropriate resources, services, and programs to support students with dyslexia as outlined in the Dyslexia Handbook (HISD, 2021). One of the reading interventions provided to students with dyslexia in the

district is Reading by Design. Reading by Design was developed by the Region 4 Education Service Center (ESC) and implemented across HISD campuses beginning January 2020. Reading by Design is a systematic, multisensory approach that is aligned with research-based practices outlined in the Dyslexia Handbook (2018) for developing accurate and fluent reading (Region 4 ESC, 2019).

Background

Texas Education Code (TEC) §38.003 defines dyslexia and related disorders as "constitutional origin manifested by a difficulty in learning to read, write, or spell, despite conventional instruction, adequate intelligence, and sociocultural opportunity." "Related disorders" include disorders similar to or related to dyslexia, such as developmental auditory imperception, dysphasia, specific developmental dyslexia, developmental dysgraphia, and developmental spelling disability" (TEA, 2018, p. 1). Students identified as having dyslexia typically experience primary difficulties in phonological awareness, including phonemic awareness and manipulation, single-word reading, reading fluency, and spelling (TEA, 2018). Consequences may include difficulty with reading comprehension and/or written expression. It is important to note that individuals demonstrate differences in the degree of impairment and may not exhibit all the characteristics listed above.

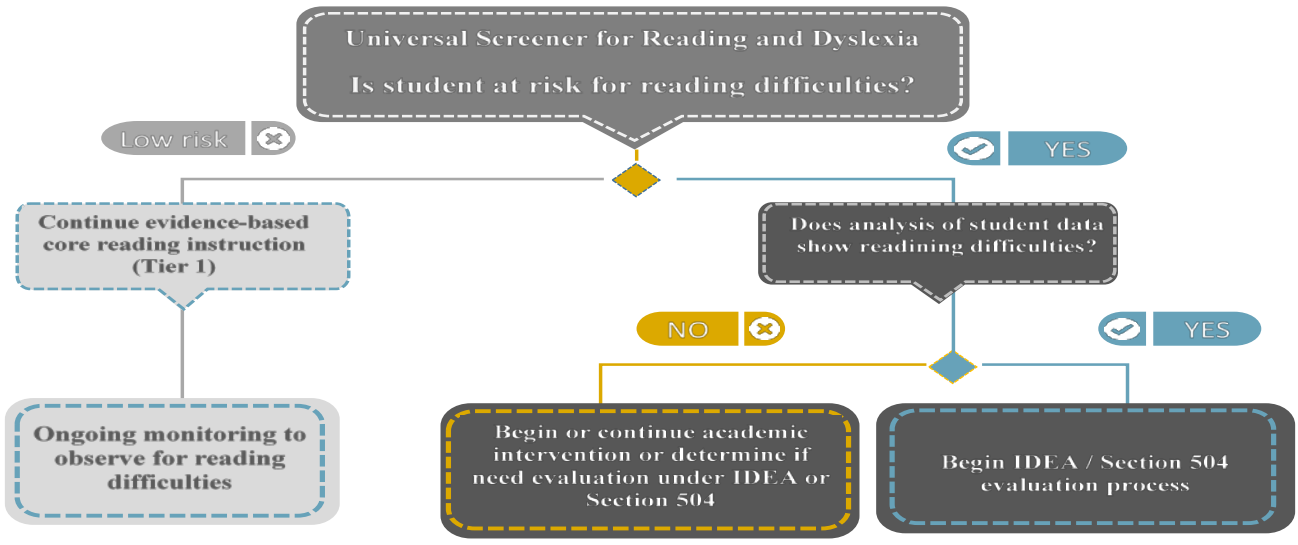
Screening and Assessment

As shown in **Figure 1**, early screening is pivotal in supporting students with dyslexia, which ensures that students are appropriately screened, and if necessary, evaluated further so that reading difficulties can be addressed promptly. Screening is defined as a universal measure administered to all students by qualified personnel to determine which students are at risk for dyslexia, or reading difficulties, and/or a related disorder (TEA, 2018).

Based on Texas Education Code §28.006, Reading Diagnosis and HB1886, HISD students are to be screened in kindergarten, first grade, second grade, and seventh grade. Accordingly, HISD uses Renaissance Star Early Literacy to screen all students in grades kindergarten, 1, 2, and 7. The district also uses Quick Phonics Screener, which can be administered by classroom teachers, dyslexia interventionists, campus-based dyslexia evaluators, or diagnosticians. Screening also includes the use of writing samples and/or math computation work samples, family history of dyslexia, and historical data (i.e., history of a deficit and/or intervention in phonemic awareness) (HISD, 2020a).

In addition to state and local requirements to screen and identify students who may be at risk for dyslexia, there are overarching federal laws and regulations to identify students with disabilities, commonly referred to as Child Find (TEA, 2018, p. 11). Child Find is a set of provisions in the Individuals with Disabilities Education Act (IDEA), a federal law that requires, in part, that states have processes in place for identifying

Figure 1. Universal Screener for Reading Risk and Dyslexia



Source: Adapted from The Dyslexia Handbook (2018)

and evaluating children with disabilities who may need special education and related services. The purpose of IDEA is to ensure a free and appropriate public education for children with disabilities (20 U.S.C. §1400(d); 34 C.F.R. §300.1).

Another federal law that affects children with disabilities in public school, including students with dyslexia, is Section 504 of the Rehabilitation Act of 1973, commonly referred to as Section 504. Under Section 504, public schools must annually attempt to identify and locate every qualified person with a disability residing in its jurisdiction and to notify persons with disabilities and/or their parents of the requirements of Section 504.

Instructional Support and Intervention

Consistent with the Dyslexia Handbook (2018), teachers who screen and educate students with dyslexia are trained in instructional strategies that utilize individualized, intensive, multisensory, phonetic methods and a variety of writing and spelling components (Texas Administrative Code §74.28, State Board of Education Rule). The State Board of Education (SBOE) requires that each school provides access to a student identified with dyslexia to his/her campus to standard protocol dyslexia instruction that is evidence-based and effective; taught by an appropriately trained instructor; and implemented with fidelity (TEA, 2018). HISD's dyslexia program is designed to provide short-term reading intervention for students identified with dyslexia.

There are two types of instruction to meet student's needs. There is the standard protocol dyslexia instruction which includes the critical, evidence-based components of and delivery methods for dyslexia instruction. The other form of instruction is specially-designed instruction to a child identified with a disability and in need of special education services. Specially-designed instruction is defined under IDEA as "adapting . . . the content, methodology, or delivery of instruction." The student must be referred for an evaluation under IDEA (TEA, 2018). Interventions were provided in two formats, pull-out at the elementary level and small group instruction at the secondary level.

According to the Dyslexia Handbook (2018), 'each school shall provide each identified student access at his or her campus to instructional programs and to the services of a teacher trained in dyslexia and related disorders.' In HISD, to ensure that each campus has a trained reading specialist to assist students through intervention, principals identified and designated a teacher to attend training on a reading program. HISD teachers have been trained in the 5-day Basic Language Skills Program (BLS) and/or Reading by Design Program (RbD).

In the past, the district partnered with the Neuhaus Education Center to ensure that each Dyslexia Interventionist was trained with the Basic Language Skills Program to serve all students identified with Dyslexia (HISD, 2020b). The Basic Language Skills Program ensures teachers who provide services to students with dyslexia are trained in the instructional strategies that utilize individualized, intensive, multisensory, phonetic methods and a variety of writing and spelling components described in the Dyslexia Handbook.

In January 2020, HISD implemented Reading by Design, developed by Region 4 Education Service Center (ESC). Reading by Design is a systematic, multisensory approach aligned with research-based practices for developing accurate and fluent reading (Region 4 ESC**,** 2019). Teachers were trained by certified HISD or Region 4 instructors on the first year of the Reading by Design curriculum and received Level 1 certification. The Dyslexia Fundamentals with Reading by Design 5-day training was offered monthly from January 2020 to March 2021 (HISD, 2020c).

Participants were able to learn the fundamentals of dyslexia intervention through a review of Texas dyslexia laws and current research, as well as best practices in dyslexia instruction. The training included evidence-based components of instruction and explored continuums for developing the reading ability of students with dyslexia. Additionally, participants learned how to deliver daily intervention utilizing Reading by Design. Participants received the entire Reading by Design program with supplemental resources necessary for small group instruction.

During the COVID–19, elementary pull-out services were provided for in-person and remote students synchronously using the Microsoft (MS) Teams platform. To maintain social distancing campuses designated service protocols, based on the teaching space available for small group instruction. Intervention stations were established in the classroom or library under the supervision of the classroom teacher. At the designated intervention time, students with dyslexia went to the intervention station and engaged with the interventionist virtually. Students were monitored by the classroom teacher or the librarian during the virtual intervention. If adequate space was available to ensure six feet of physical distancing between students, campuses were able to deliver small group dyslexia services in person. Middle and high school students with dyslexia continued to participate in their scheduled

intervention as part of the reading elective courses, Read to Achieve or Strategic Reading and Writing.

Research Question

This evaluation examines the types of support and training offered to parents and teachers, the effect of the Reading by Design program on student performance, and how these outcomes vary based on demographic characteristics and learning mode. As such, the research questions are as follows:

1. What was the 5-year trend in identification and demographic characteristics of students with dyslexia at HISD?
2. What were parents' perceptions of the services provided for students with dyslexia?
3. What were teachers' perceptions of the training and supports provided by the district for implementation of Reading by Design?
4. To what extent did students with dyslexia at campuses that used the Reading by Design program show reading performance growth from the beginning to the end of the year compared to students at campuses that did not?
5. What proportion of the HISD dyslexia student population showed improvements in reading performance compared to their campus peers?

Method

Different research designs were used to evaluate the services offered by Dyslexia Services, including the Reading by Design reading intervention. The research used the larger population of students with dyslexia at HISD and a subsample of students with dyslexia whose teachers completed the Dyslexia Services Survey (2020–2021).

Sample

The sample consisted of 4,800 HISD kindergarten to grade 12 (K–12) students with dyslexia in the 2020–2021 school year. Information on student demographics, contained in the Public Education Information Management System (PEIMS), was extracted from the OnDataSuite data warehouse. PEIMS data provides a snapshot of students enrolled in HISD as of February 2021. The sub-sample of students consisted of 1,432 students whose teachers completed the survey and reported using Reading by Design, using multiple reading programs, or not using any specific program.

Data Collection

Separate surveys were administered to teachers and parents.

Teacher survey. Teachers who participated in the Reading by Design training between January 2020 and December 2020 completed an online survey from February 15–April 5, 2021. There were 465 teachers who completed the training who were surveyed, 256 responses were received, yielding a 55.0 percent response rate.

Based on The Dyslexia Handbook (2018) and Reading by Design fidelity requirements, the survey included measures of curriculum and instruction, support, assessment, and monitoring. Teachers rated their level of agreement with statements relating to the measures on a 4–point Likert-type scale ranging from strongly agree (4) to strongly disagree (0).

There were 6.6 percent of responses from administrators who did not provide direct reading support to students (chairs, librarian, etc.),which were excluded from the sample. The remaining 93.4 percent of surveys were from teachers, 44.2 percent were special education, 41.5 percent were reading interventionists, 4.3 percent were general education instructors (grade-level or subject matter specific), and 3.5 percent were dyslexia interventionists. The largest number of responses came from elementary schools (which included early childhood centers) (57.4%), followed by high schools (17.3%), middle schools (16.1%), and combined schools (9.2%). The years of teaching experience for respondents varied by campus level, with an average of 16.8 years for elementary school (SD=9.9), 10.5 years for middle schools (SD=5.9), 16.4 years for high schools (SD=8.6), and 16.5 years for combined campuses (SD=10.7).

Parent Survey. Surveys were administered in Spanish and English to the parents of HISD students who were identified with dyslexia. The survey was sent out to 4,800 parents, with 100 Spanish and 734 English surveys received, for a total of 834 surveys. The online survey was available from March 22–April 30, 2021. The survey included questions on parents' perception of the instruction, support, and parent training provided by the district. The number of responses exceeded the required number needed (n=827), with a 95 percent confidence interval (+/–3.1%) to make inferences about the population.

Measures

Training and support. From the teacher survey, indicators of the Reading by Design Training effectiveness included (i) training quality, (ii)

monitoring, (iii) support, (iv) instruction, and (v) confidence-level. These measures were established by grouping several Likert-type items into a 'survey scale' using the factor analysis technique, Cronbach's alpha (α), to provide evidence that the components of the scale were sufficiently intercorrelated and that the grouped items measured the underlying variable (Sullivan & Artino, 2013). A mean standard rating score was computed on a 0 to 4 scale for each indicator. Cronbach's alpha of ≤ .50 is unacceptable, ≥ .60 is poor, ≥ .70 is acceptable, ≥ .80 is good, and ≥ .90 is excellent. The Likert scales were normally distributed, and Cronbach's alpha indicated reliability or internal consistency for all measures ranging from acceptable to excellent.

Learning mode. Students who were marked virtual/remote for more than 50% of the instructional days during the 2020–2021 school year were coded '1' for remote learners and '0' for on campus learners.

Reading program. The reading intervention used for one-on-one or in-class instruction was coded as '1' if the teacher reported on the survey always using Reading by Design, '2' if the teacher reported always using two or more of the district reading programs, and '0' if the teacher reported using none of the district reading programs.

Reading progress. Student's reading progress was measured using a universal screener, the Renaissance Star Early Literacy and Renaissance Star 360 reading. Renaissance Star 360 is used to diagnose student reading development and comprehension (HISD, 2020a). Assessment "waves" occurred at the beginning-of-year (BOY; Wave 1), middle-of-year (MOY; Wave 2), and end-of-year (EOY; Wave 3).

The four benchmark categories for literacy development measured by Star Early Literacy and Renaissance Star 360 reading comprehension are associated with percentile ranks: at/above Benchmark (at/ above 40th percentile rank), on watch (25th to 39th percentile rank), intervention (10 to 24th percentile rank), and urgent intervention (below 10th percentile rank).

It is considered a risk factor if students' score below the 25th percentile at grade level on the Renaissance assessment. In general, students scoring below the publisher determined cut point are considered "at risk" for dyslexia, while those who score above the cut point are considered "not at risk" for dyslexia (TEA, 2018, p. 14).

Academic performance. State of Texas Assessments of Academic Readiness (STAAR) grades 3–8 reading and STAAR End of Course (EOC) English I and English II test results were used to determine the extent to which students who were diagnosed with dyslexia met Level II: Approaches Grade Level standard. The first administration and first-time testers were used in this study. Students 2018 end of course assessments in reading were used as a baseline measure.

Analysis

The first part of the evaluation used descriptive statistics to identify trends and demographic composition of students with dyslexia (Q1). The perception of the dyslexia services, supports, and training provided to parents (Q2) and teachers (Q3) were examined using univariate analysis to compare teacher and parent responses across campus levels.

The second part of the evaluation examined the reading performance growth of student with dyslexia comparing students who received Reading by Design instruction to students with dyslexia who received intervention using one or none of the other reading programs implemented in the district (Q4). Categorical models or gain-based models were used to express student gains in performance level from one point to the next (Castellano & Ho, 2013). Positive gains were associated with moving up one or more performance levels.

As shown in **Table 1**, from BOY to EOY, students who attained a higher performance level (moved up one or more ranks) on Renaissance Star Reading were coded as 3, students who were on watch were coded as 2, students who remained at a low-performance level (below the 25th percentile) were coded as 1, and students whose performance level regressed to a lower level were coded as 0 (Yavuz & Kutlu, 2019). Finally, the research provided a univariate analysis of students with dyslexia who received an intervention academic performance STAAR assessment in reading compared to students who did not (Q5).

Table 1. Value table of student transition from BOY to EOY on Renaissance Star Reading

	EOY			
BOY	Level 1 - Urgent	Level 2 - Intervention	Level 3 – On Watch	Level 4 - At/above
	Low-performance level			High performance level
Level 1 - Urgent	1	1	2	3
Level 2 - Intervention	0	1	2	3
Level 3 - On Watch	0	0	2	3
Level 4 - At/above	0	0	0	3

Based on Renaissance 360 Benchmark categories.

Data Limitations

Data retrieved from PEIMS represent a snapshot of the number of students enrolled by the last Friday in October of each school year in HISD (Texas Education Agency [TEA], 2018). Students present for the snapshot may not have been identified as dyslexic until later in the school year. With the snapshot and the ongoing identification process, the number of students included in this evaluation may not be an accurate reflection of the number students with dyslexia and supported through HISD's Dyslexia Services during the 2020–2021 school year.

Another limitation was the unavailability of post-training data on teachers using the Reading by Design intervention. There was no clear tracking of teachers or campuses using the program once teachers were certified in Reading by Design. To mitigate the limited data on teachers using Reading by Design as an intervention, the evaluation used the sample of teachers who completed the survey and their students. The survey asked teachers to report on which reading intervention program they used, primarily. The survey showed that various reading programs were used across campus levels by HISD teachers. The evaluation accounted for the three programs that HISD teachers were trained to use but does not account for other programs. As a result, there is a possibility that teachers may have administered other reading resources or programs to their students. The results of the evaluation, therefore, need to be interpreted with consideration for these limitations.

Finally, due to the COVID-19 pandemic, the district altered the delivery of the reading intervention providing students with the option of in-person or remote learning. As a result of the altered delivery and depending on their learning mode, students may not have received the full dose of the reading intervention. Taking this into consideration, the evaluation included learning mode as part of the analysis.

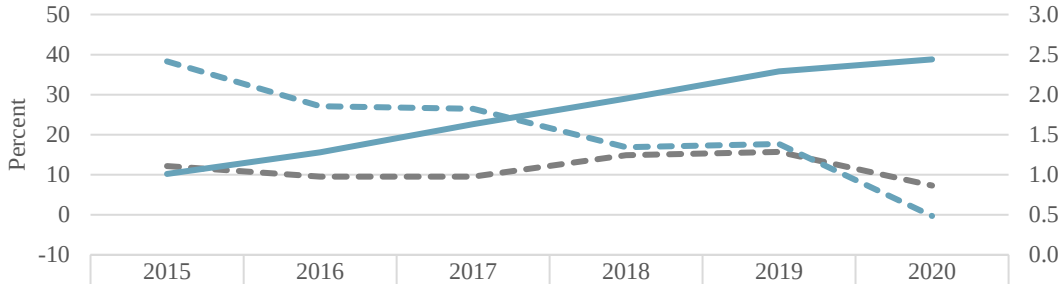
Results

What was the 5-year trend in identification and demographic characteristics of students with dyslexia at HISD?

Figure 2 presents the five-year trend in the identification of HISD students with dyslexia from 2016–2017 to 2020–2021. The percentage of the HISD student population identified with dyslexia increased steadily over the past four years. In the 2020–2021 school year, there was a decrease from the previous year in the number of students enrolled in HISD (210,061 vs. 196,943, respectively) and a decrease in the number of students identified with dyslexia (4,813 vs. 4,800). However, there was a slight increase in the percentage of the HISD student population identified with dyslexia (2.4%) compared to the previous year (2.3%). The number of students identified with dyslexia in the state decreased to 7.3 percent of the student population compared to 15.7 percent the previous year.

Analysis of the 2020–2021 data on students with dyslexia showed that 38.4 percent were in elementary school, 26.0 percent were in middle school, 25.1 percent were in high school, and 10.4 percent attended a combined campus. Almost twice as many males compared to females were identified with dyslexia in elementary school (61.8% vs. 38.2%), middle school (63.3% vs. 36.7%), and high school (63.6% vs. 36.4%), respectively (**Appendix A**, **Table A1**, p. 17). At combined campuses, 59.8 percent of females were identified with dyslexia compared to 40.2 of males **(**Appendix A**,** Table A1, p. 17).

Figure 2. Comparative dyslexia identification trends in HISD and statewide, 2015–2021



	2015	2016	2017	2018	2019	2020
Texas 5-YR change	12.2	9.5	9.5	14.9	15.7	7.3
HISD 5-YR change	38.3	27.1	26.5	16.9	17.7	-0.3
% HISD population	1.0	1.3	1.6	2.0	2.3	2.4

Notes: Data was retrieved from PEIMS Data File, PEIMS Snapshot for October of each year, 2015–2016 to 2020–2021, state data was retrieved from PEIMS Standard reports, Student Program and Special Populations Reports, 2020¬2021, https://rptsvr1.tea.texas.gov/adhocrpt/adspr.html

The largest proportion of students identified as having dyslexia at the elementary (59.3%), middle (58.0%), and high (56.3%) school levels were Hispanic. While at the combined campus levels, a comparable number of students with dyslexia were Hispanic (38.4%) or White (39.6%). A higher percentage of students with dyslexia were economically disadvantaged at the elementary (75.7%), middle (78.6%), and high school (76.9%) level compared to the combined school (49.8%) level. Similarly, almost double the number of students with dyslexia were special education (SPED) at the elementary (61.3%), middle (56.8%), and high school (62.3%) levels compared to the combined school (34.6%) level.

Table 2 shows the distribution of HISD students with dyslexia by disability classification for the 2020–2021 school year. When considered by disability classification, 57.6 percent of students coded with dyslexia in the PEIMS Student Information System (SIS) appeared to have a primary disability, and 13.9 percent had a secondary disability. Of the students with dyslexia identified as having a disability, 79.2 percent were coded as having a learning disability (LD).

What were parents' perceptions of the services provided for students with dyslexia?

This section provides a univariate analysis of parent's perception of the identification and communication process, training, and support. There were 834 parent surveys received, 52.6 percent reported their child was studying in-person (n=439). Most parents, 71.5 percent, did not know which reading program their child participated (n=596). Half of the parents, 55.9 percent, reported that their child had a 504 Plan (n=447), 24.8 percent noted an Individualized Education Program (IEP) (n=198), 11.6 percent of parents responded their child had both a 504 Plan and an IEP, and 7.7 percent or parents did not know (n=62).

Identification and communication

Most parents reported that they were the first to notice that their child may have a learning difficulty. The highest number of parents that reported they were the first to identify that their child may have a learning difficulty was at combined campuses (70.6%) and elementary schools (68.4%), followed by high school (62.7%) and middle school (62.0%) (**Figure 3**). High schools (32.3%) and middle schools (31.0%) had the highest percentage of parents reporting that the school was the first to identify the child had learning difficulty. For seven percent of parents at middle schools, it was a professional outside of school (Figure 3).

Table 2: Distribution of dyslexic students by disability classification, 2020–2021

	Disability Categories			
	Primary		Secondary	
	n	%	n	%
Total dyslexic students with disability	2,765	57.6	666	13.9
Autism	*	.14	-	-
Deaf or Blindness	376	13.6	170	3.5
Developmental Delay	*	.07	*	.02
Hearing Impairment	26	.94	*	.06
Infants / Toddlers with Disabilities	57	2.1	8	.17
Learning Disability	2,191	79.2	130	2.7
Multiple Disabilities	60	2.2	354	7.4
Orthopedic Impairment	49	1.8	-	-

Source PEIMS data file 2020–2021; – indicates no data, *number < 5.

Figure 3. Parent reporting of first person to identify child has learning difficulty by campus level

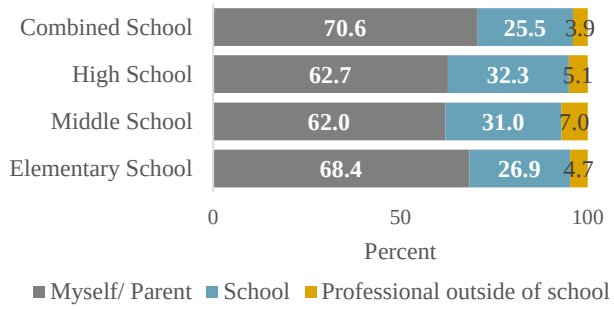
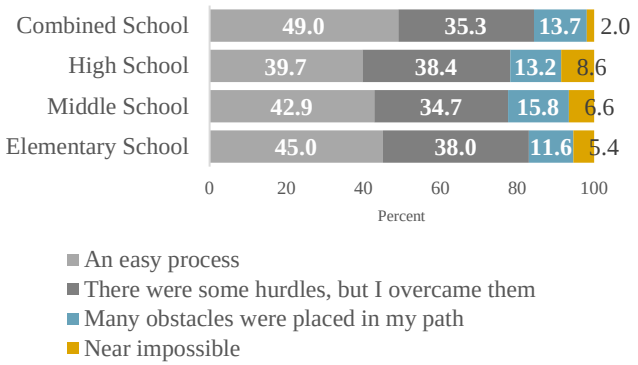


Figure 4. Parents' perception of process of attaining identification and support by campus level



The process of obtaining identification and support for their child from the school was reported as being *easy* for 43.8 percent of parents (n=360) (**Appendix A**, **Table A3**, p. 18). The highest rating of satisfaction with the process of obtaining identification was from parents at combined campuses (49.0%) and the lowest rating was from parents of high school students (39.7%) (**Figure 4**). For parents that reported

the process as not being *easy*, 37.1 percent reported that *there were some hurdles, but I overcame them* (n=305), 13.0 percent reported *many obstacles were placed in my path* (n=107), and for 6.1 percent of parents the process was *near impossible* (n=50) (Figure 4).

Parents were satisfied with the communication between them and their child's school, 62.5 percent of parents were *very satisfied/satisfied* (n=517), 20.4 percent were *somewhat satisfied* (n=169), and 17.0 percent were *unsatisfied* (n=141) (Appendix A, Table A2, p. 18). The highest rating of satisfaction was from parents at elementary school (74.3%) and the lowest rating was from middle school parents (45.7%) (**Figure 5**). Most parents reported being involved in consultation with the school regarding their child's learning, for 47.5 percent of parents *every term* (n=393) and 24.8 percent *often-one term* (n=205) (Appendix A, Table A2, p. 18). The remainder of parents reported *sometimes, once a year* (21.9%), *never* (2.0%), and *rarely-every few years* (3.9%).

In looking at whether there was an association between parents' level of difficulty in obtaining identification and support for their child and parents' frequency of consultation with the school, a chi-square test of independence was performed. The relation between ease of process and frequency of consultation with campuses was significant, X^2 (1, N = 818) = 17.11, p = .000. Parents who found the process of attaining support as difficult were reportedly less likely to be involved in consultation with the school regarding their child's learning. Sixty-eight percent of parents who *sometimes*, *never*, or *rarely* consult with the school reportedly faced obstacles in the process of obtaining identification and support for their child from the school.

Training participation and quality

There were five primary district virtual trainings provided to parents during the 2020–2021 school year: (i) Dyslexia 101, (ii) Multisensory Strategies for Supporting Students at Home, (iii) The Dyslexia Identification Process, (iv) Spelling Rules, Tech Tools for Accessibility, and (v) Secondary Consequences of Dyslexia (**Figure 6**).

Parents were asked how often they participated in district training on dyslexia services and supports. Most parents said they *never* (49.8%) or *rarely (every few years)* (16.5%) participated in district training (Appendix A, Table A2, p. 18). Of the parents who participated in district training (*always*, *often*, or *sometimes*), 64.6 percent were parents whose child

Figure 5. Parent's level of satisfaction with communication between school

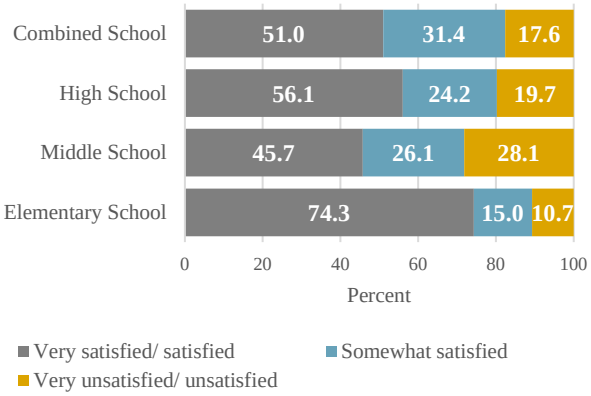
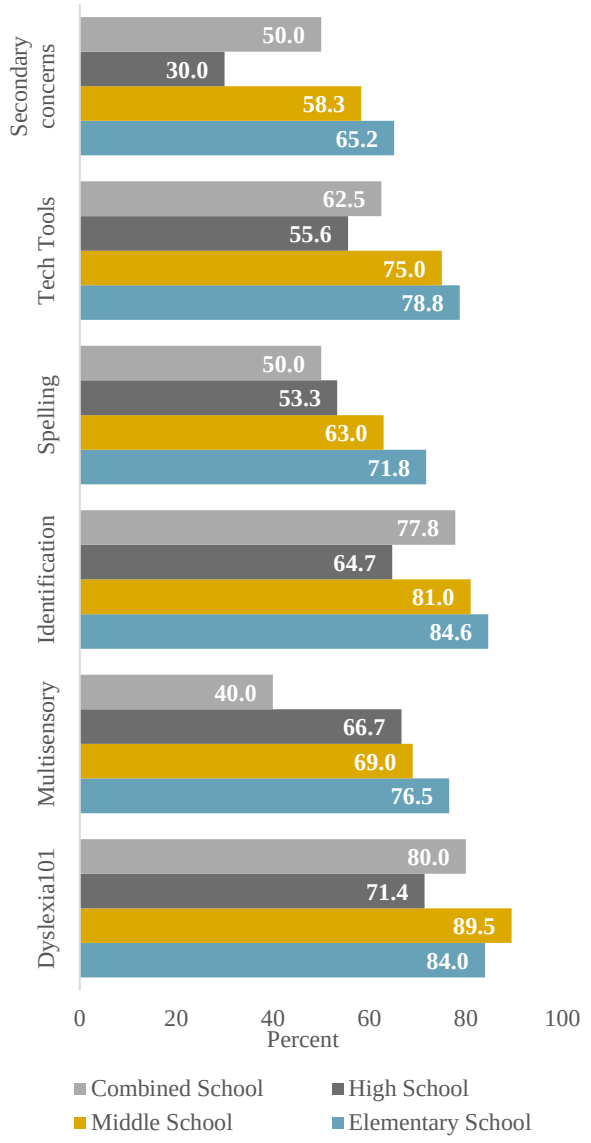


Figure 6. Percentage of parents who attended workshops who reported the district training was helpful by campus level



attended an elementary school and 20 percent were parents whose child attended a middle school.

Dyslexia 101 training had the highest number of parents in attendance (n=182), followed by the Dyslexia Identification Process (n=172), Tech Tools for Accessibility (n=138), Multisensory (n=133), Spelling (n=126), and Secondary Consequences of Dyslexia (n=102) (Appendix A, Table A2, p. 18). Across training topics, a lower percentage of parents whose child attended high school or combined campus reported the training provided by the district was *helpful* for understanding dyslexia and supports available in HISD.

Two of the six training sessions rated by most parents as *helpful* were Dyslexia 101 and Identification (Figure 6). For Dyslexia 101, 89.5 percent of parents of middle school students (n=35), 71.4 percent of high school parents, and 84.0 percent of parents of elementary school students highly reported the training was *helpful*. The training on identification was also highly reported as *helpful* by parents of students at elementary campuses, 84.6 percent, followed by 81.0 percent for middle school, 77.8 percent of parents at combined campuses, and 64.7 percent for high school.

Instruction and support

Most parents expressed a positive level of satisfaction with the reading instruction provided to their children in school. The highest percentage of parents, 90.3 percent, who reported being *satisfied* with the instruction were parents of elementary students (n=374) and the lowest, 66.9 percent, were parents of students in high school (n=87) (**Figure 7** and Appendix A, Table A2, p. 18). Similarly, the highest percentage of parents, 89.4 percent, who reported they were satisfied with the supports were parents of elementary students (n=371), and the lowest, 66.4 percent, were parents of high school students (n=91) (Figure 7).

Figure 7. Parents' who reported being satisfied with instruction and support

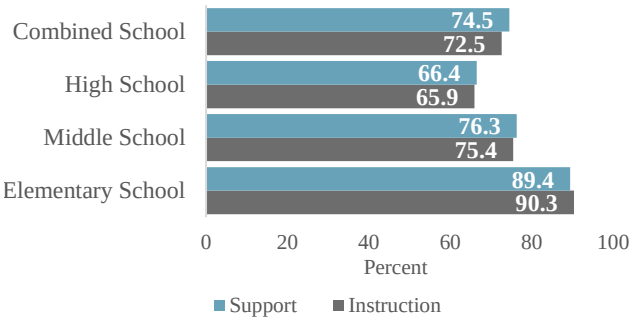
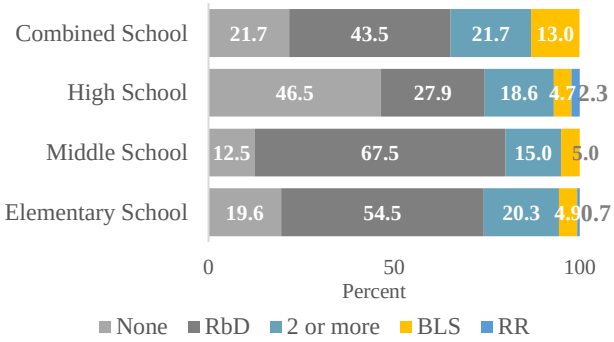


Figure 8. Teachers reporting on reading intervention program used always by campus level



What were teachers' perceptions of the training and supports provided by the district for implementation of Reading by Design?

According to the Dyslexia Handbook (2018), "each school must provide an identified student access at his/her campus to an instructional program that meets the requirements in SBOE rule and to the services of a teacher trained in dyslexia and related disorders" (p.39). Over the years, HISD has offered training for Basic Language Skills (BLS), Reading by Design (RbD), or Reading Readiness (RR) programs.

Teachers were asked if they used each reading program (RbD, BLS, RR) *always*, *sometimes*, *rarely*, or *never*. Over half of teachers, 51 percent, who reported using a reading program indicated they *always* used Reading by Design (n=127) (**Figure 8**). Reading by Design was reported as *always* used at the middle school level by 67.5 percent of teacher respondents, 54.5 percent of elementary school teachers, 43.5 percent of teachers at combined schools, and 27.9 percent of high school teachers. There was a higher percentage of teachers at the high school level that indicated not using a reading program (46.5%) compared to the elementary school (19.6%), middle school (12.5%), and combined school level (21.7).

Reading by Design Training

For the 2020–2021 school year, HISD trained 515 individuals on the Reading by Design curriculum between June 2020 and April 2021 (OSML Report, 2021). In meeting the standard protocol for dyslexia instruction, the training was delivered by certified HISD Reading by Design trainers over 5-days, for a total of 30 hours of training per participant. Another 298 HISD teachers were trained through the Region 4. However, teachers trained through Region 4 were not included in this evaluation due to challenges with tracking those trained externally (Interventions Office,

2021). There was a total of 813 employees trained, 785 of which were teachers.

The Reading by Design training offered through HISD was delivered to participants from 248 of the 276 campuses, with an average of two trainees per campus. Ninety-four percent of Reading by Design trainees were teachers (n=487), and six percent were administrators (e.g., chairs, deans, librarians, and principals) (n=28). Of those trained, 59.1 percent were from an elementary school (n=288), 18.9 percent from a middle school (n=92), 15.6 percent from a high school (n=76), 6.4 percent were from a combined school (i.e., K-12, 3-12, PK-8) (n=31), and 5.4 percent were not from a school (i.e., interventionists) (n=28).

Following the training, teachers were provided with additional support for the implementation of the Reading by Design program. The teachers were able to participate in monthly scheduled drop-in meetings with the trainers. Almost a quarter of teachers responded that they attended all monthly campus dyslexia interventionist meetings for additional support. More teachers responded that they attended the monthly meetings *always* at the elementary school (29.4%), combined campuses (27.3%), and middle school level (23.1%), compared to 12.2 percent of teachers at the high school level who reported *always* (**Figure 9**). A higher percentage of teachers reported that they *sometimes* attended monthly meetings at the high school (48.8%), middle school (46.2%), combined campus level (45.5%) compared to the elementary school level (33.6%) (Figure 8).

Training quality

On average, across campuses, teachers reported a level of agreement that the *trainers were knowledgeable, competent, and effective*. Teachers generally reported agreement for each median rating for training quality at the elementary, middle, and combined school levels that the training and post-training supports improved their efficacy working with students with dyslexia. The highest median (mdn) rating for training quality was from high school and elementary school teachers (mdn=3.8, respectively) and the lowest rating was for middle school teachers (mdn=3.6) (**Figure 10** and **Appendix A**, **Table A4**, p. 18).

Student Support

The median rating for teachers' response that the training provided help with *support for English learners identified with dyslexia* and *students with dyslexia taking accelerated or advanced classes* was low across campus levels. The median rating for

Figure 9. Frequency of attendance at monthly Reading by Design support meeting

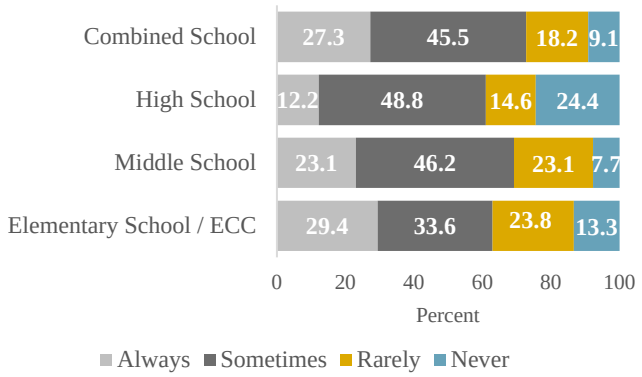
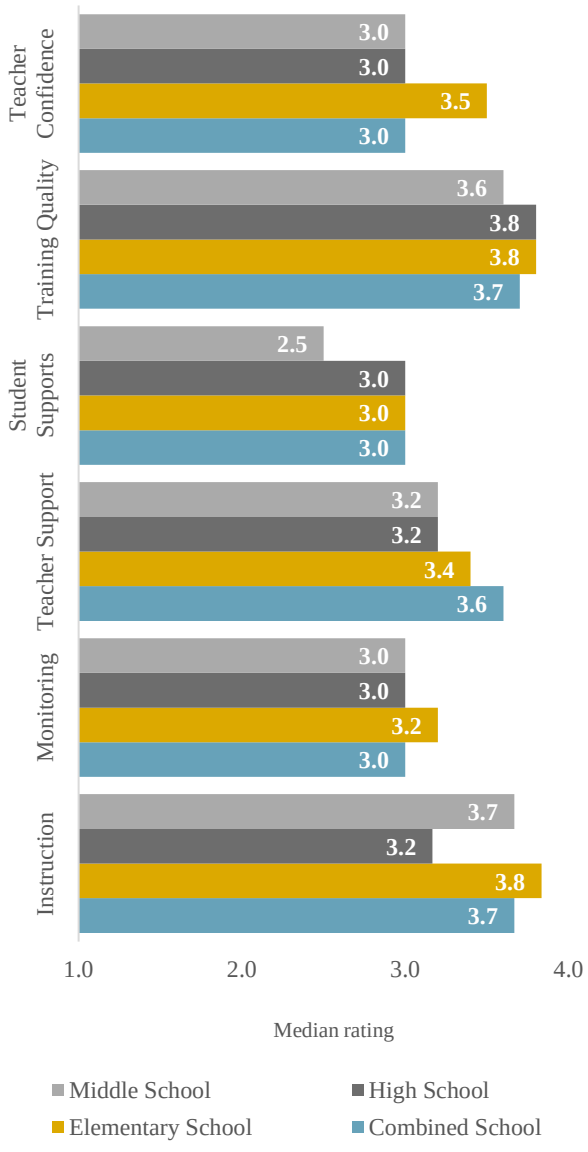


Figure 10. Median teacher rating for survey measures of training and support by campus level



teachers' response that the training provided help with *support for English learners identified with dyslexia* and *students with dyslexia taking accelerated or advanced classes* was low across campus levels. Compared to middle schools, teachers at elementary schools, high schools, and combined campuses reported a higher median rating of agreement that the training helped them to support students with dyslexia that were ELs or taking AP-level courses (2.5 vs 3.0, respectively) (Figure 10 and Appendix A, Table A3, p. 19).

Teacher confidence-level

On average, teachers reported a higher level of confidence in their ability to identify and support students with dyslexia at the elementary school level (mdn=3.5) compared to middle school, high school, and combined school levels (mdn=3.0) (Figure 10 and Appendix A, Table A3, p. 19). For elementary and high school level teachers, there was a correlation between their confidence level and the need for additional training.

Elementary teachers reported the highest median rating for confidence-level, and 72.4 percent of teachers *strongly agreed* or *agreed* they needed additional training to meet the needs of students with dyslexia, χ^2 (15) = 100.7, p = .000 (Figure 10). For high school teachers who reported the lowest median rating for confidence-level, 78.4 percent reported that they *strongly agreed* or *agreed* that they needed additional training to meet the needs of students with dyslexia, χ^2 (18) = 32.8, p = .017.

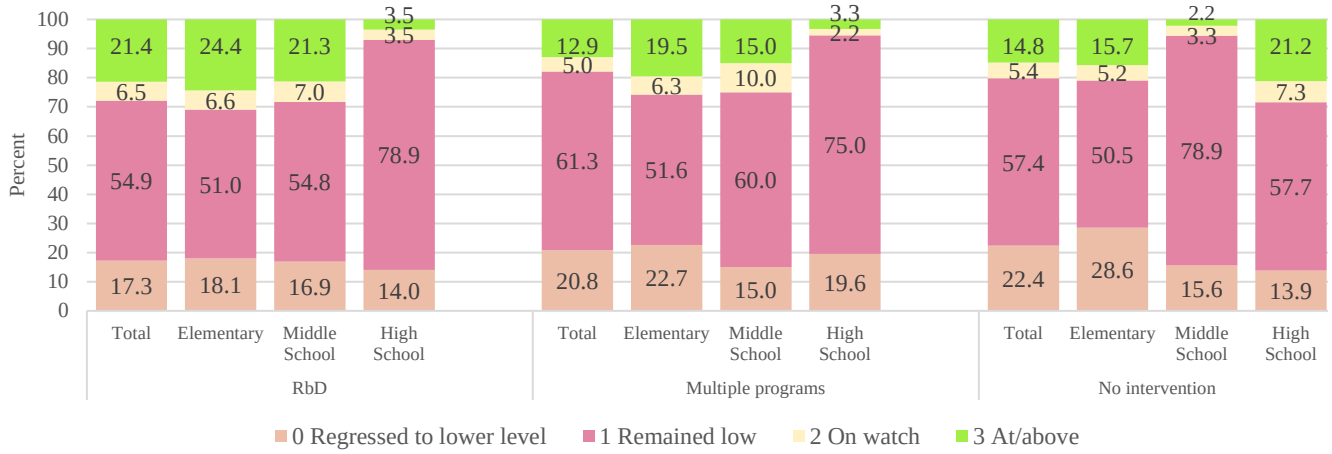
Conversely, there was no correlation between teacher confidence level and the need for additional training at the middle and combined school level. At the combined school level, 73.9 percent of teachers reportedly *strongly agreed* or *agreed* that they needed additional training to meet the needs of students with dyslexia, χ^2 (12) = 17.47, p = .133 (Figure 10). At the middle school level, 84.6 percent of teachers reportedly *strongly agreed* or *agreed* that they needed additional training to meet the needs of students with dyslexia, χ^2 (9) = 4.34, p = .887.

To what extent did students with dyslexia at campuses that used the Reading by Design program show reading performance growth from the beginning to the end of the year compared to students at campuses that did not?

Students were selected for inclusion in this analysis if they had a teacher who participated in the Reading by Design training, completing the online teacher survey, and self-reported reading program used (RbD, BLS, RR). The analyses were completed at the elementary, middle, and high school campus levels.

Analysis of growth scores used the frequency of students' reading performance at the campus level on the Renaissance reading assessment in the four growth categories (at/above=3, on watch=2, remained low=1, regressed to lower level=0). Over fifty percent of the students in the sample did not show growth in their performance level, including 54.9 percent of students whose whose teacher used Reading by Design (n=678), 61.3 percent of students whose teacher used multiple programs (n=240), and 57.4 percent of students whose teacher did not use a program (n=514) (**Figure 11** and **Appendix A**, **Table A4**, p. 18).

Figure 11. Percent campus level distribution of reading growth categories on Renaissance 360 Reading Assessment by reading program



For students whose teachers reported using RbD, 17.3 percent regressed to a lower reading performance category (n=117) compared to 20.8 percent of students whose teacher used multiple programs (n=50), and 22.4 percent of students whose teacher did not use an intervention (n=115). A higher proportion of students whose teacher used the RbD program remained in the at/above benchmark reading performance category (21.4%) compared to students whose teacher used multiple programs (12.9%) or did not use an intervention (14.8%).

In addition, the campus level with the highest number of students who increased their reading performance category were elementary schools whose teachers used the RbD program (24.4%) and the lowest was at high school campuses that used multiple programs or no intervention (3.3%) (Figure 11). The campus-level with the highest number of students whose performance regressed to a lower reading performance category was at elementary campuses where teachers reported using no intervention (28.6%). The campus-level with the lowest number of students whose reading performance category regressed to a lower level was high schools where teachers reported using no intervention (13.9%).

As shown in Figure 11, when examining by campus-level according to reading performance growth, most students with dyslexia at the elementary campus level fell in the *remained low* category, regardless of whether their teacher used Reading by Design or not. For elementary students with dyslexia whose teacher reported using Reading by Design, 51.0 percent fell in the *remained low* category, and fewer students (18.1%) fell in the *regressed to lower level* category. Similarly, a high percentage of elementary students with dyslexia whose teacher reported using no intervention fell in the *remained low* category (50.5%), and fewer students fell in the *regressed to lower level* category (28.6%). In other words, while most of the elementary students with dyslexia growth category remained low, a smaller proportion consisted of students whose reading performance regressed to a lower level.

For elementary level teachers who reported using RbD, a higher percentage of students with dyslexia performed in the *at/above* reading performance category (24.4%) compared to 15.7 percent of students at campuses where teachers reported not using an intervention (Figure 11). There was a statistically significant strong association between the reading program used and the elementary students' growth category (X^2 = 14.060, p = .029). That is, elementary school students' growth category was associated with the reading program used.

For middle school campuses, a smaller proportion of students with dyslexia whose teacher reported using no intervention was *on watch* (10.0%) compared to campuses where teachers reported using RbD (7.0%) (Figure 9). A higher percentage of middle school students with dyslexia whose teachers reported using RbD performed in the *at/above* reading performance category (31.3%) compared to students whose teachers reported using no intervention (3.3%). At the middle school campus level, there was a statistically significant strong association between the reading program used and the reading performance growth category (X^2 = 23.467, p = .001). That is, the student's growth category was associated with whether the teacher used a reading program.

At the high school campus level, when examined by campus-level according to the reading performance growth categories, most students with dyslexia fell in the *remained low* category, regardless of whether their teacher used RbD or not. For high school students with dyslexia whose teacher reported using RbD, 78.9 percent fell in the *remained low* category, and fewer students fell in the *regressed to lower level* category (14.0%). Likewise, a lower percentage of high school students with dyslexia whose teacher reported using no intervention fell in the *remained low* category (57.7%), and fewer students fell in the *regressed to lower level* category (13.9%). In other words, while most of the high school students with dyslexia growth category remained low, a smaller proportion consists of students whose reading performance regressed to a lower level.

The growth category for a high percentage of students with dyslexia whose teacher reported using RbD fell in the *remained low* category (75.4%) compared to students whose teachers reported not using RbD (54.7%) (Figure 9). There was a statistically significant strong association between the reading program used and student reading performance growth category at the high school level (X^2 = 27.387, p = .000). That is, for high school student's reading performance growth categories were associated with whether the teacher used a reading program or did not use a program.

What proportion of the HISD dyslexia student population showed improvements in reading performance compared to their campus peers?

This section examines whether the proportion of students with dyslexia who performed below proficiency before the 2020–2021 implementation of

the Reading by Design intervention decreased after participating in the intervention.

The evaluation used the 2019 STAAR reading assessment as a baseline measure. There were 412 HISD elementary and 735 middle school students with dyslexia who completed the 2019 and 2021 STAAR reading assessments. There were 514 high school students with dyslexia who completed the 2019 STAAR reading in grade 7 or 8 and the 2021 STAAR English I or English II assessments. An exact McNemar's test determined if there was a statistically significant difference in the proportion of students with dyslexia who improved in reading pre-intervention compared to post-intervention.

A higher percentage of elementary school students with dyslexia who received the RbD who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 reading assessment (24.1%) (**Figure 12**, p. 13 and **Appendix A**, **Table A6**, p. 19). A lower percentage of students with dyslexia who received the other intervention or no intervention who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 reading assessment (13.8% and 7.7%, respectively). An exact McNemar's test determined there was no statistically significant difference in the proportion of elementary students with dyslexia who met Approaches Grade Level standard in reading pre-intervention compared to post-intervention, p = .649.

For middle school, a higher percentage of students with dyslexia who did not receive an intervention who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 reading assessment (11.9%) (**Figure 13**). A lower percentage of students with dyslexia who received RbD as an intervention or the other intervention who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 reading assessment (6.7% and 9.3%, respectively). An exact McNemar's test determined there was a statistically significant difference in the proportion of middle school students with dyslexia who met Approaches Grade Level standard in reading pre-intervention compared to post-intervention, p = .000.

As shown in **Figure 14**, a higher percentage of high school students with dyslexia who received RbD intervention who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 English I reading assessment (11.8%). A lower percentage of students with dyslexia who received the other intervention or no intervention who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 reading assessment (6.7% and 1.9%, respectively). An exact McNemar's test determined that on the English I, there was no statistically significant difference in the proportion of high school students with dyslexia who met Approaches Grade Level standard in reading pre-intervention compared to post-intervention, p = .008.

On the English II assessment, a higher percentage of high school students with dyslexia who did not receive an intervention and who did not meet Approaches Grade Level standard in reading pre-

Figure 12. The proportion of elementary school students who met or did not meet Approaches Grade Level standard on the 2020 reading STAAR based on intervention status

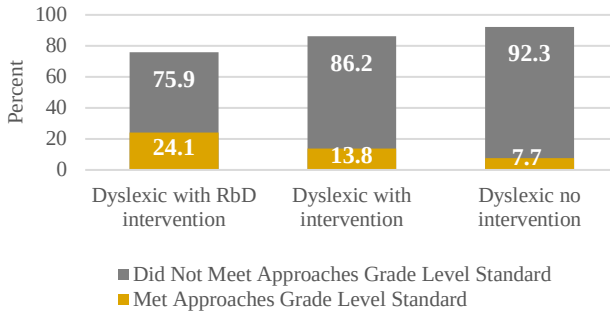


Figure 13. The proportion of middle school students who met or did not meet Approaches Grade Level standard on the 2020 reading STAAR based on intervention status

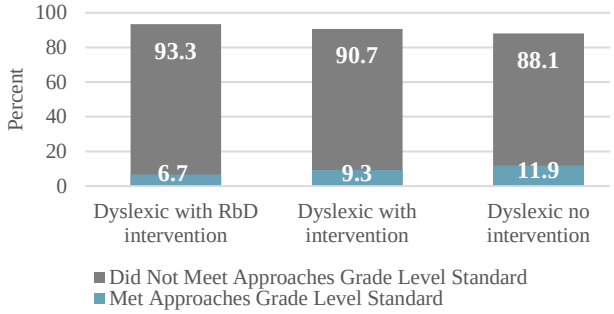
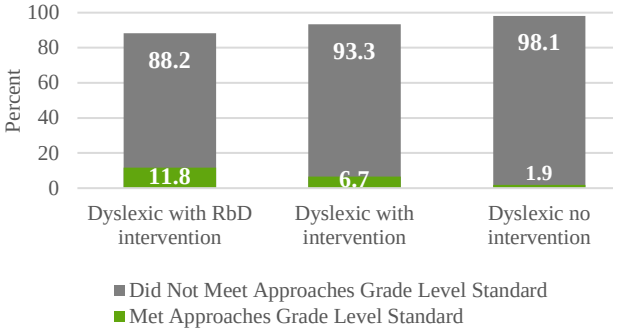
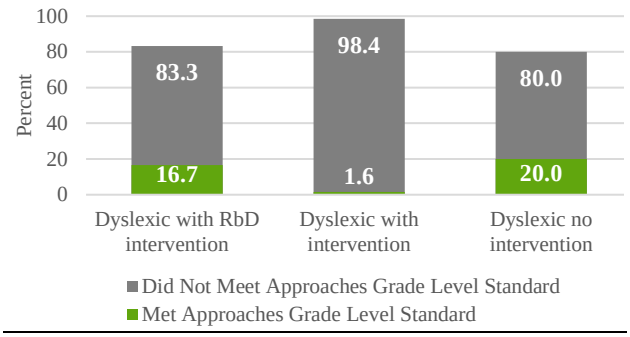


Figure 14. The proportion of high school students who met or did not meet Approaches Grade Level standard on the 2020 reading STAAR English I based on intervention status



intervention met the standard on the STAAR 2021 reading assessment (20.0%) (**Figure 15**). A higher percentage of students with dyslexia who received RbD as an intervention and who did not meet Approaches Grade Level standard in reading pre-intervention met the standard on the STAAR 2021 English II reading assessment (16.7%) compared to students who received no intervention (1.6%) (Figure 15). An exact McNemar's test determined that on the English II assessment there was not a statistically significant difference in the proportion of high school students with dyslexia who met Approaches Grade Level standard in reading pre-intervention compared to post-intervention, p = .256.

Figure 15. The proportion of high school students who met or did not meet Approaches Grade Level standard on the 2020 reading STAAR English II based on intervention status



Discussion

For the 2020–2021 school year, HISD's Interventions Office followed the TEA SY 20–21 Public Health Planning Guidance during COVID–19 (HISD, 2020a). Elementary pull-out services were provided for in-person and remote students synchronously. The Microsoft Teams platform was used with remote students. To adhere to social distancing protocols, campuses designated services based on the teaching space available for small group instruction. For middle school and high school students with dyslexia, students reported to intervention as their schedule indicated as part of the Reading elective courses – Read to Achieve or Strategic Reading and Writing (HISD, 2020a). The effects of online and in-person learning, are not clear for children with dyslexia (Soriano-Ferrer, Morte-Soriano, Begeny, & Piedra-Martínez, 2021).

In addition to addressing the challenges of remote learning for teachers and students, the HISD Interventions Office had to transition supports for parents and teachers to remote delivery. The district also introduced a new intervention program, Reading by Design (RbD). RbD is a systematic, multisensory approach aligned with research-based practices outlined in The Dyslexia Handbook (2018) for developing accurate and fluent reading (Region 4 ESC, 2019).

Identification and demographics

Analysis of the five-year trend in the identification of HISD students with dyslexia from 2015 to 2020 has shown an increase in the number of students identified. There was an increase in the percentage of the HISD student population identified as dyslexic (2.4%) compared to the previous year (2.3%). However, in 2020 there was a 0.3 percent decrease in the number of students identified with dyslexia over the previous year.

Of those parents surveyed, 65.8 percent reported that they were the first to notice that their child may have a learning difficulty. Once identified, 43.8 percent of parents described the process of obtaining identification and support for their child from the school as being *easy*. Parents who reported facing some obstacles in the process of obtaining identification and supports from the school were less likely to be in consultation with the school, 62.5 percent.

On average, teachers reported mid-level confidence in their ability to identify and support students with dyslexia, with high school teachers reporting the lowest confidence rating for identification (mdn=2.9) and combined campuses reporting the highest median rating (mdn=3.4).

There was an observed difference in the demographic composition of students with dyslexia at the elementary, middle, and high school levels compared to the combined campus. Across campus levels, approximately sixty percent of students with dyslexia were males. A higher proportion of students with dyslexia were Hispanic at the elementary, middle, and high school level compared to the combined campus-level. Almost three-quarters of students with dyslexia at elementary, middle, and high school campus-level were economically disadvantaged compared to half of the students with dyslexia at the combined campus level. Similarly, twice the number of students with dyslexia at the elementary, middle, and high school campus-level were designated special education students compared to the combined campus level.

Training and supports

There were five primary district virtual training sessions provided to parents in the 2020–2021 school

year. Most parents reported not participating in district training, however, those who participated were predominately parents of elementary school children. The Dyslexia 101 training had the highest number of parents in attendance (n=182) followed by identification (n=172).

Teachers were provided training for RbD. From January 2020, 813 HISD employees and teachers were trained in using RbD, across 89.9 percent of HISD campuses. Fifty-one percent of teachers who reported using a reading program indicated they *always* used Reading by Design. There was a higher percentage of teachers at the high school (34.5%) and elementary school (48.3%) level that indicated not using a reading program compared to the middle school and combined school level (5% respectively). Following the training, teachers were provided with additional support for implementation of the RbD program. Teachers were able to participate in monthly scheduled drop-in meetings with the trainers. Almost sixty percent of teachers responded that they attend all monthly campus dyslexia interventionist meetings for additional support.

Reading progress and academic performance

For elementary, middle, and high school students, there was a statistically significant strong association between reading program used and elementary student growth category. A higher percentage of students with dyslexia who attended elementary (24.4%) or middle (21.3%) school campuses where their teachers reported using RbD growth categories were *at/above* level compared to campuses where teachers reported using no program (15.7% and 3.3%, respectively). For high schools, a high percentage of students with dyslexia whose teacher reported using RbD, growth categories *remained low* (75.4%) compared to campuses where teachers reported using multiple programs (75.0%) or no program (57.7%).

The evaluation used students' prior reading score to measure student performance. When examining academic performance across campus levels, a higher proportion of elementary students attained Approaches Grade Level standard in reading post-intervention. There was a higher proportion of elementary school students with dyslexia who received RbD intervention and met Grade Level standard post-intervention (24.1%) compared to their peers who received other interventions (13.8%), or no intervention (7.7%). There was no statistically significant difference between the pre-and post-intervention groups (p=.649).

A statistically significant lower proportion of middle school students with dyslexia who did not attain Approaches Grade Level standard in reading pre-intervention did so on their post-intervention reading assessment (p=.000). Approximately 6.7 percent of middle school students with dyslexia who received the RbD intervention, 9.3 percent who received other intervention, and 11.9 percent who received no intervention met Approaches Grade Level standard on STAAR 3–8 reading assessment post-intervention.

There was a higher proportion of high school students with dyslexia who received RbD intervention and met Grade Level standard post-intervention on STAAR EOC English I (11.8%) compared to their peers who received other interventions (6.7%), or no intervention (1.9%). There was a statistically significant difference between the pre- and post-intervention groups performance (p=.008). There was a lower proportion of high school students with dyslexia who received RbD intervention and who met Grade Level standard post-intervention on STAAR EOC English II (16.7%) compared to their peers who received no intervention (20.0%), or other intervention (1.6%). There was no statistically significant difference between the pre- and post-intervention groups (p=.256).

In summary, the research observed that students at campuses with high parent involvement and teacher confidence showed improvements in reading. Elementary and middle school teachers had the highest number of teachers who reported using one of the district's approved reading programs. Elementary teachers had a high self-reported median rating on measures of training and support. Parents of elementary students had the highest satisfaction rating for communication with school, instruction, and support provided to students. Also, a higher percentage of elementary school parents reported being the first person to identify their child had dyslexia. A higher percent of elementary and middle school parents attended and found the district workshops on dyslexia helpful. Reading by Design was found to improve reading gains and performance for elementary and middle school students.

At the high school level, students whose teacher used a district intervention showed low to no gain in reading. Almost half of the high school teachers surveyed reported not using any of the district's approved reading programs. High school teachers had a lower self-reported median rating on measures of training and support. Parents of high school students had a low satisfaction rating for communication with the school, and instruction and support provided to students. Additionally, a lower percentage of high and middle school parents reported being the first person to identify their child had dyslexia. A lower percentage of

high school parents reported attending and finding the district workshops on dyslexia helpful.

Future evaluation could explore the association between parent and teacher-level variables and student reading performance. Additionally, there is a need to explore strategies for improved campus and teacher compliance with requirements for reading intervention.

References

Castellano, K. E., & Ho, A. D. (2013). A Practitioner's Guide to Growth Models. *Council of Chief State School Officers*.

Chyung, S. Y., Roberts, K., Swanson, I., & Hankinson, A. (2017). Evidence-based survey design: The use of a midpoint on the Likert scale. *Performance Improvement*, *56*(10), 15-23.

Houston Independent School District (HISD). (2021a). *Support for Special Populations*. Retrieved from https://www.houstonisd.org/Page/182831.

Houston Independent School District (HISD). (2021b). *Operating Guidelines: Dyslexia and Related Disorders*. Retrieved from https://www.houstonisd.org/Page/171662.

Houston Independent School District (HISD). (2021c). *Dyslexia Fundamental with Reding by Design* Retrieved from https://docs.google.com/document/d/1tG8noN913c4HwiJMc6bqln8cjgPJcuMOwFfSODjL8MU/edit.

Houston Independent School District (HISD). (2021d). *Dyslexia Curriculum Support*. Retrieved from https://docs.google.com/document/d/1pl5v0v4HaGwo9oQKhLWsu1IxwbAHlw6nNu2Lj8vNF1Y/edit.

Houston Independent School District (HISD). (2021e). *Campus Dyslexia Interventionist Meeting Calendar*. Retrieved from https://docs.google.com/document/d/1p4uecIzRFKDE3DlckXPLKNfebjXJaicuk0OqZVb2ca8/edit.

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. *Current Journal of Applied Science and Technology*, 396-403.

Region 4 Education Services (2019). *Reading by Design: An Individualized Literacy Intervention*. Retrieved from https://4.files.edl.io/9b2a/12/20/19/175656-98df7008-f506-4dbb-bd55-af0397d73ac0.pdf.

Soriano-Ferrer, M., Morte-Soriano, M. R., Begeny, J., & Piedra-Martínez, E. (2021). Psychoeducational Challenges in Spanish Children with Dyslexia and Their Parents' Stress During the COVID-19 Pandemic. *Frontiers in Psychology*, *12*, 2005.

Texas Education Agency [TEA]. (2018). *The Texas dyslexia handbook revised 2018: Procedures concerning dyslexia and related disorders*.

Yavuz, H. C., & Kutlu, Ö. (2019). Examination of student growth using gain score and categorical growth models. *International Journal of Assessment Tools in Education*, *6*(3), 487-505.

APPENDIX A

Table A1: Demographic characteristics HISD students with dyslexia by campus level, 2021–2021

		Elementary School (K - 5)		Middle School (6 - 8)		High Schoo1 (9-12)		Combined Campus (e.g., K-12, 4-8)	
		n	%	n	%	n	%	n	%
Overall Sample		1,844	38.4	1,249	26.0	1,207	25.1	500	10.4
Gender	Female	705	38.2	459	36.7	439	36.4	201	40.2
	Male	1,139	61.8	790	63.3	768	63.6	299	59.8
Ethnicity	Black	455	24.7	350	28.0	347	28.7	89	17.8
	Hispanic	1,094	59.3	725	58.0	680	56.3	192	38.4
	White	257	13.9	150	12.0	155	12.8	198	39.6
	Other	38	2.1	24	1.9	25	2.1	21	4.2
Home Language	Spanish	484	26.2	315	25.2	320	26.5	79	15.8
	English	1,321	71.6	925	74.1	876	72.6	412	82.4
	Other	39	2.1	9	0.7	11	0.9	9	1.8
Economically Disadvantage	No	449	24.3	267	21.4	279	23.1	251	50.2
	Yes	1,395	75.7	982	78.6	928	76.9	249	49.8
At-Risk	No	813	44.1	434	34.7	377	31.2	287	57.4
	Yes	1,031	55.9	815	65.3	830	68.8	213	42.6
Gifted/ Talented (GT)	No	1784	96.7	1,176	94.2	1115	92.4	477	95.4
	Yes	60	3.3	73	5.8	92	7.6	23	4.6
English Learners (ELs)	No	1668	90.5	1038	83.1	1051	87.1	458	91.6
	Yes	176	9.5	211	16.9	156	12.9	42	8.4
SPED	No	713	38.7	540	43.2	455	37.7	327	65.4
	Yes	1131	61.3	709	56.8	752	62.3	173	34.6

Source. 2020–2021 PEIMS student databases. Retrieved from OnDataPoint, February 10, 2021

Table A2. Comparative dyslexia identification trends in HISD and statewide, 2015–2021

	HISD Population	HISD Students with Dyslexia	Texas Students with Dyslexia	% HISD population	HISD 5-YR change	Texas 5-YR change
2014	–	1,573	125,741	–	–	–
2015	215,627	2,176	141,033	1.01%	38.3%	12.2%
2016	216,106	2,766	154,399	1.28%	27.1%	9.5%
2017	214,175	3,500	169,043	1.63%	26.5%	9.5%
2018	209,772	4,090	194,214	1.95%	16.9%	14.9%
2019	210,061	4,813	224,741	2.29%	17.7%	15.7%
2020	196,943	4,800	241,197	2.44%	-0.3%	7.3%

Note: 5-year population change was calculated by subtracting prior year's population from current year. The difference was divided by prior year's population and converted to percentages

Table A3. Parents' self-reported perception of supports, attendance and helpfulness of district training by campus level, 2020–2021 Parent Survey

	Overall Sample		Elementary School		Middle School		High School		Combined School	
	n	%	n	%	n	%	n	%	n	%
Communication										
Very satisfied/ satisfied	686	83.0	375	89.3	143	71.9	126.0	80.3	42	82.4
Unsatisfied/ very unsatisfied	141	17.0	45	10.7	56	28.1	31	19.7	9	17.6
Frequency consultation with school										
Always - every term	393	47.5	220	52.1	77	38.7	75	47.8	21	42.0
Often – one term (fall or winter)	205	24.8	110	26.1	45	22.6	35	22.3	15	30.0
Sometimes - once a year	181	21.9	72	17.1	57	28.6	39	24.8	13	26.0
Rarely - every few years	32	3.9	14	3.3	11	5.5	7	4.5	-	-
Never	17	2.1	6	1.4	9	4.5	-	-	-	-
Training participation										
Always - every term	60	7.3	47	11.1	9	4.5	-	-	-	-
Never	411	49.8	198	46.9	97	49.0	89	57.4	27	54.0
Often – one term (fall OR winter)	70	8.5	37	8.8	17	8.6	10	6.5	6	12.0
Rarely - every few years	136	16.5	69	16.4	28	14.1	33	21.3	6	12.0
Sometimes - once a year	148	17.9	71	16.8	47	23.7	22	14.2	8	16.0
Identification										
An easy process	360	43.8	191	45.0	84	42.9	60	39.7	25	49.0
Many obstacles were placed in my path	107	13.0	49	11.6	31	15.8	20	13.2	7	13.7
Near impossible	50	6.1	23	5.4	13	6.6	13	8.6	1	2.0
There were some hurdles, but I overcame them	305	37.1	161	38.0	68	34.7	58	38.4	18	35.3
Instruction										
Very satisfied/ satisfied	639	81.5	374	90.3	141	75.4	87.0	65.9	37	72.5
Unsatisfied/ very unsatisfied	145	18.5	40	9.7	46	24.6	45	34.1	14	27.5
Support										
Very satisfied/ satisfied	645	81.3	371	89.4	145	76.3	91	66.4	38	74.5
Unsatisfied/ very unsatisfied	148	18.7	44	10.6	45	23.7	46	33.6	13	25.5
Training was helpful										
Dyslexia 101	182	81.2	106	84.0	38	89.5	28	71.4	10	80.0
Multisensory	133	63.0	81	76.5	29	69.0	18	66.7	5	40.0
Identification	172	77.0	104	84.6	42	81.0	17	64.7	9	77.8
Spelling	126	59.5	78	71.8	27	63.0	15	53.3	6	50.0
Tech Tools	138	68.0	80	78.8	32	75.0	18	55.6	8	62.5
Secondary concerns	104	50.9	66	65.2	24	58.3	10	30.0	4	50.0

Table A4. Median teacher rating for survey measures of training and support by campus level

	Combined School (i.e., K-12, 3-12, PK-8, 3-8, EE-8, 4-8)				Elementary School / ECC				High School				Middle School			
	n	Mdn	IQR	Min	n	Mdn	IQR	Min	n	Mdn	IQR	Min	n	Mdn	IQR	Min
Instruction	22	3.7	.71	1.3	133	3.8	.33	1.0	37	3.2	.92	1.3	36	3.7	.63	2.7
Monitoring	21	3.0	.80	2.2	133	3.2	.80	1.0	37	3.0	.70	1.0	38	3.0	.80	2.0
Teacher Support	22	3.6	.80	2.8	128	3.4	.80	1.0	37	3.2	.60	2.2	35	3.2	.70	2.4
Student Support	23	3.0	.50	1.5	141	3.0	1.50	1.0	39	3.0	1.00	1.0	40	2.5	1.50	1.0
Training Quality	22	3.7	.95	2.6	141	3.8	1.00	1.0	39	3.8	.90	2.4	39	3.6	1.00	1.0
Teacher Confidence	23	3.0	.50	2.0	138	3.5	1.00	1.0	38	3.0	.50	1.0	39	3.0	1.00	2.5

Note: Maximum mean rating for all measures is 4.0.

Table A5. Frequencies related to the values calculated based on reading growth categories on Renaissance 360 reading assessment by reading program/ intervention and campus level

		Growth Category							
		0 Regressed to lower level		1 Remained low		2 On watch		3 Higher	
Campus Level	Program / Intervention	n	%	n	%	n	%	n	%
Elementary	No intervention	82	28.6%	145	50.5%	15	5.2%	45	15.7%
	RbD	63	18.1%	178	51.0%	23	6.6%	85	24.4%
	Multiple programs	29	22.7%	66	51.6%	8	6.3%	25	19.5%
	Total	174	22.8%	389	50.9%	46	6.0%	155	20.3%
Middle School	No intervention	14	15.6%	71	78.9%	3	3.3%	2	2.2%
	RbD	46	16.9%	149	54.8%	19	7.0%	58	21.3%
	Multiple programs	3	15.0%	12	60.0%	2	10.0%	3	15.0%
	Total	63	16.5%	232	60.7%	24	6.3%	63	16.5%
Secondary	No intervention	19	13.9%	79	57.7%	10	7.3%	29	21.2%
	RbD	8	14.0%	45	78.9%	2	3.5%	2	3.5%
	Multiple programs	18	19.6%	69	75.0%	2	2.2%	3	3.3%
	Total	45	15.7%	193	67.5%	14	4.9%	34	11.9%

Table A6. Proportion of elementary students with dyslexia that did not attain Aprraoches Grade Level standard in reading pre-interveniton (2018) did so post-intervention (2021) by campus level

		Elementary School				Middle School				High School ENG I				High School ENG II			
		Attained Grade Level standard in 2021															
		Approaches		Meets		Approaches		Meets		Approaches		Meets		Approaches		Meets	
Intervention Used	**2018 Proficiency**	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Reading by Design	Did not meet	13	24.1	14	17.1	5	6.7	5	4.7	-	-	-	-	-	-	-	-
	Met	32	76.2	11	78.6	39	63.9	15	51.7	-	-	-	-	-	-	-	-
Other intervention	Did not meet	27	13.8	18	6.9	35	9.3	18	3.9	7	6.7	5	3.9	-	-	9	75.0
	Met	64	71.9	13	56.5	56	51.4	9	40.9	16	57.1	-	-	24	72.7	18	15.5
No intervention	Did not meet	-	-	-	-	7	11.9	7	9.0	-	-	13	15.1	13	20.0	34	85.0
	Met	17	94.4	13	86.7	41	74.5	29	80.6	52	78.8	25	78.1	60	83.3	49	35.8