HMH

RESEARCH RESULTS:

Students with Dyslexia in the San Antonio Independent School District

SYSTEM 44®

THE HMH RESEARCH MISSION STATEMENT

Houghton Mifflin Harcourt® (HMH®) is committed to developing innovative educational programs that are grounded in evidence and efficacy. We collaborate with school districts and third-party research organizations to conduct research that provides information to help improve educational outcomes for students, teachers, and leaders at the classroom, school, and district levels. We believe strongly in a mixed-methods approach to our research, an approach that provides meaningful and contextualized information and results.

SYSTEM 44 DYSLEXIC STUDENTS SOAR WITH INCREASED USE OF THE PROGRAM

PROFILE

DISTRICT:
San Antonio Independent School District (SAISD), TX

GRADES:
3–8

STUDY DESIGN:
Bronze Level[1]

EVALUATION PERIOD:
2014–2015

MEASURES:
HMH *Phonics Inventory*[2], and HMH *Reading Inventory*[3]

THE CHALLENGE

Dyslexia is a learning difficulty often associated with a quest for grade-level reading proficiency (Fiester, 2012). It has neurological origins, exists on a continuum, and with proper instructional intervention can be overcome. Dyslexia is the most common form of learning difficulty in the United States, with about 2.4 million students diagnosed with it; however, it is often not noticed in the optimal time for dyslexic students' needs to be diagnosed and addressed through proper instructional intervention (Dyslexia International, 2014).

Learning to read is a most challenging process for dyslexic students. They often lack the foundational literacy skills necessary to process the text in order to later read for understanding. These foundational literacy skills include elements such as: phonology and phonemic awareness; sound-symbol association; syllable instruction; morphology; syntax; and semantics. In order to teach these skills, there must be an understanding of what effective reading instruction is, as well as how to implement it. This is especially important for dyslexic students who struggle with these foundational skills that are necessary in order to learn to read (International Dyslexia Association [IDA], 2015).

It is easy to see how dyslexic students who struggle to read in ways above and beyond that of their peers often feel branded by their differences. As educators, it is critical that we guide dyslexic students in developing a positive internal environment in order to overcome both the cognitive and noncognitive challenges that they face. Social-emotional characteristics, such as growth mindset and grit, support the growth of positive internal environments. Growth

[1] Bronze level studies use a variety of designs, such as single-subject designs, pre- and posttests, qualitative case studies, ethnography, and self-report surveys, among other design types. While informative, these studies are not eligible to meet What Works Clearinghouse (WWC) standards. Following the Every Student Succeeds Act (ESSA) categories, these studies provide promising evidence.

[2] Prior to 2015, the HMH *Phonics Inventory* was known as the Scholastic Phonics Inventory (SPI).

[3] Prior to 2015, the HMH *Reading Inventory* was known as the Scholastic Reading Inventory (SRI).

mindset refers to the belief that intelligence is not just something one has but is something that one must progress toward with hard work; grit refers to the ability to persist toward longterm goals. These noncognitive skills help create positive internal environments for all students, especially for dyslexic students (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2015; IDA, 2015).

The Every Student Succeeds Act (ESSA) signed into law in January 2016 allows for more flexibility than its predecessor, No Child Left Behind (NCLB), for states and districts to choose multiple measures of school success. ESSA encourages more holistic indicators of success, including academic outcomes, student progress, and school quality. Under ESSA, the noncognitive attributes of all students, including those with disabilities and specific learning disabilities such as dyslexia, are more highly valued as potential measures of their progress and performance. Academic and neuroscientific research shows that when children can identify and regulate their behavior and emotions, they are on a pathway for greater academic success later in life (Gottman, 1997; Medina, 2014). While we know that focusing on these innovative, nonacademic approaches to learning increases learning, we also know that they inspire learning. Igniting passion, curiosity, engagement, and joint learning experiences between students, teachers, and families lights the fire for life long learning.

THE SOLUTION

Recognizing that both foundational reading skills and noncognitive skills, as well as the implementation of them, are critical to reading success, *System 44* was designed with students with specific disabilities, such as dyslexia, in mind. The International Dyslexia Association (IDA) states that a *Structured Literacy* instruction model that is implemented with evidence-based, direct, explicit, structured, and sequential instruction is an effective instructional intervention for dyslexic students (2015).

System 44 provides the elements of a *Structured Literacy* instruction model that are recommended by IDA. Phonological support, sound-symbol association, syllable instruction, morphology, syntax, and semantics are woven throughout the program guided by principles of how these critical elements are taught and enhanced with support for students' noncognitive needs. *System 44* accomplishes this by providing systematic and cumulative instruction, ensuring that the organization of material follows the logical order of the language with each step being based on concepts previously learned. Explicit instruction also drives student learning by requiring deliberate teaching of all concepts with continuous student-teacher interaction, as does diagnostic teaching that ensures that instruction meets each students' individualized needs by basing the instruction on careful and continuous assessment. Students are continuously encouraged to work hard to achieve long-term goals throughout the program.

As the results in this Research Report demonstrate, students in Texas with dyslexia enrolled in general education as well as students with dyslexia who are also receiving special education services benefit from the frequent opportunities that they are given to practice and learn the foundational literacy skills that are essential components of language and literacy development, as well as the noncognitive skills that enhance this development, each time they are exposed to the program. In addition, students receiving special education services who do not have dyslexia also benefited from *System 44*.

FIGURE 1: *SYSTEM 44* MODEL FOR BLENDED LEARNING

THE STUDY

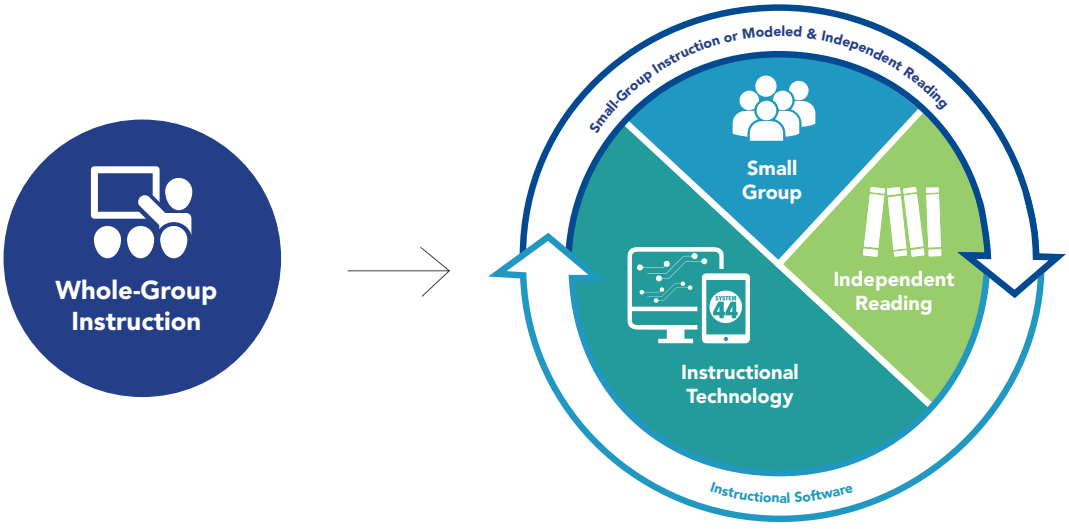
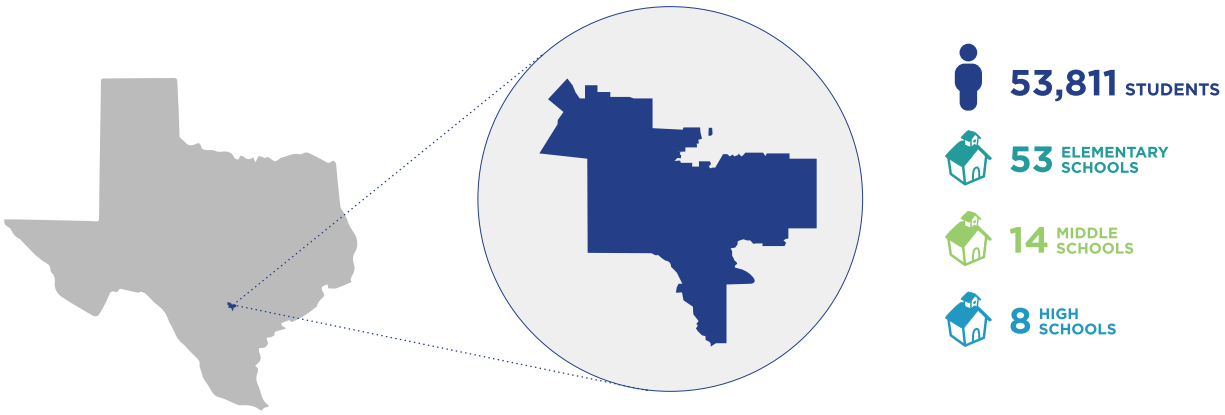


FIGURE 2: SAISD DISTRICT CHARACTERISTICS



Located in south-central Texas, the majority of students in SAISD are Hispanic (91%); 6% are African American, 2% are Caucasian, and the remaining students are Asian or another ethnicity. Ninety-three percent of students are economically disadvantaged.

This Research Results paper describes a bronze-level pre-post evaluation on the impact of *System 44* on students with and without dyslexia in the San Antonio Independent School District (SAISD), Texas. Data were collected from the district and analyzed by HMH. SAISD has a designation for students receiving special education services and a second designation for students with dyslexia. As such, SAISD's data can be disaggregated into three distinct groups: 1) general education students who have dyslexia; 2) special education students who have dyslexia; and 3) special education students who do not have dyslexia. Results indicate that *System 44* is an effective foundational reading program for students with special needs in third through eighth grade. Notably, both general education students with dyslexia and special education students with dyslexia performed similarly well.

IMPLEMENTATION

During the 2014–2015 school year, SAISD implemented *System 44* with students from Grades 3–8, almost half of whom were dyslexic (41%). Selection criteria for participation in the *System 44* program included a Response to Intervention (RTI) referral for a Tier 2 or Tier 3 intervention. *System 44* was implemented as a supplemental intervention in addition to the core English Language Arts (ELA) curriculum for all of the students included in the study.

System 44 Next Generation is designed as an intensive intervention for daily use by a small class (ideally 10–12 students), with students rotating between the Instructional Technology and Small-Group Differentiated Instruction or Modeled & Independent Reading. The program can be used effectively during a regular class period, in a resource room, and in after-and summer-school programs. HMH recommends that the instructional period consist of 45–90 minute daily sessions with at least 20 minutes dedicated to time spent on the *System 44* software.

The components of the *System 44* model include: Whole-Group direct instruction, Small-Group differentiated instruction, individualized instruction on the *System 44* Software, and independent and modeled reading of leveled texts. In this district, program implementation at the elementary level followed a daily 60-minute model, with 30 minutes spent on *System 44* during their intervention time and 30 minutes during their core class time. At the middle school level, students followed a 48- minutes per day model. At both school levels, students spent five minutes in Whole-Group, followed by 20 minutes on the *System 44* Software and 20 minutes in Small-Group with the teacher.

PARTICIPANTS

A total of 1,574 students in Grades 3–8 comprise the sample in this report. All students in the sample participated in the *System 44* intervention during the 2014–2015 school year. Of the 1,574 students, 366 (23%) were students with dyslexia in general education, 286 (18%) were students with dyslexia receiving special education services, and 922 (59%) were students receiving special education services who do not have dyslexia.

MEASURES

HMH *Phonics Inventory*

Phonics Inventory is a computer-based test that is designed to measure fluency for two word-level reading skills: phonological decoding and sight word reading. Phonological decoding fluency is assessed by the speed and accuracy with which pronounceable nonwords are decoded. Sight word fluency is assessed by the speed and accuracy with which highfrequency words are read. An overall accuracy and fluency score reflects the performance for these two skills. *Phonics Inventory* contains three equivalent forms for screening and progress monitoring purposes. The software selects the appropriate form automatically; each time a student logs on to take a test, the software delivers a new form. *Phonics Inventory* was validated against two forms of the Sight Word Efficiency and the Phonetic Decoding Efficiency Subtests from the *Test of Word Reading Efficiency* (TOWRE) (Torgesen, Wagner, & Rashotte, 1999), and the Word Attack and Letter-Word Identification subtests from the *Woodcock-Johnson III* (Woodcock, McGrew, & Mather, 2001).

HMH *Reading Inventory*

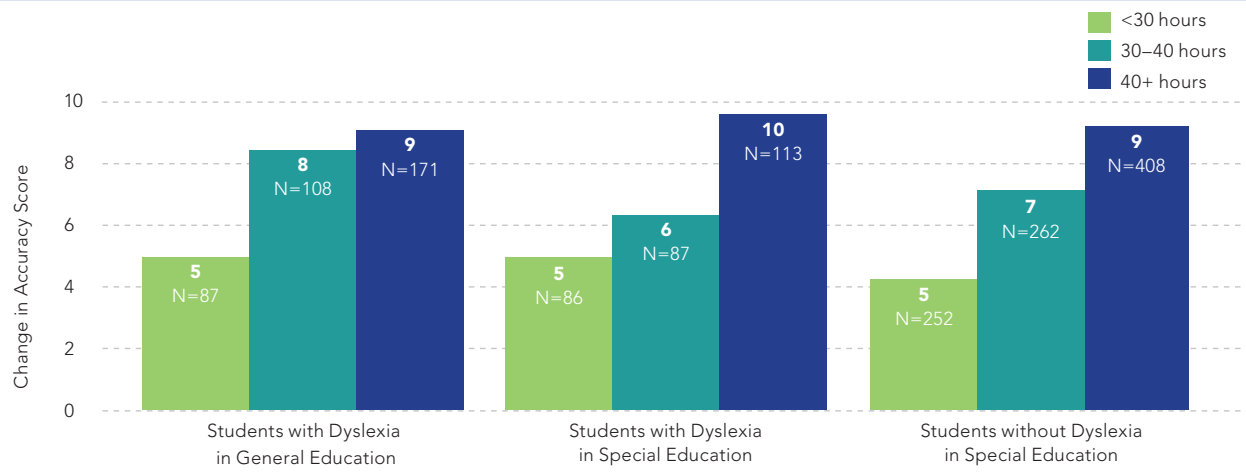
Reading Inventory is designed to measure how well readers comprehend literary and expository texts. It focuses on the following skills: identifying details in a passage; identifying cause-and-effect relationships and sequence of events; drawing conclusions; and making comparisons and generalizations. During test administration, the computer adapts the test continually, according to student responses. Performance on the *Reading Inventory* is reported as a Lexile® (L) measure. The higher a student's score, the more challenging material that student is likely to be able to read and understand. Scores can range from Beginning Reader (below 200L) to Advanced Reader (above 1700L).

TABLE 1
San Antonio Independent School District, Grades 3–8 (N = 1,574)
System 44 Software Usage and Program Completers

Group	N	Total Topics Completed (range)	Total Sessions (range)	Median Session Time (min)	Total Time (hours) (range)	Percent of Students who Completed *System 44*
Students with Dyslexia in General Education	366 (23%)	67 (2-160)	108 (25-157)	22	38 (2-85)	**14%**
Students with Dyslexia in Special Education	286 (18%)	53 (2-160)	111 (6-155)	21	36 (2-83)	**14%**
Students without Dyslexia in Special Education	922 (59%)	65 (0-160)	110 (3-153)	21	38 (1-80)	**15%**
All	**1,574**	**64**	**110**	**22**	**37**	**14%**

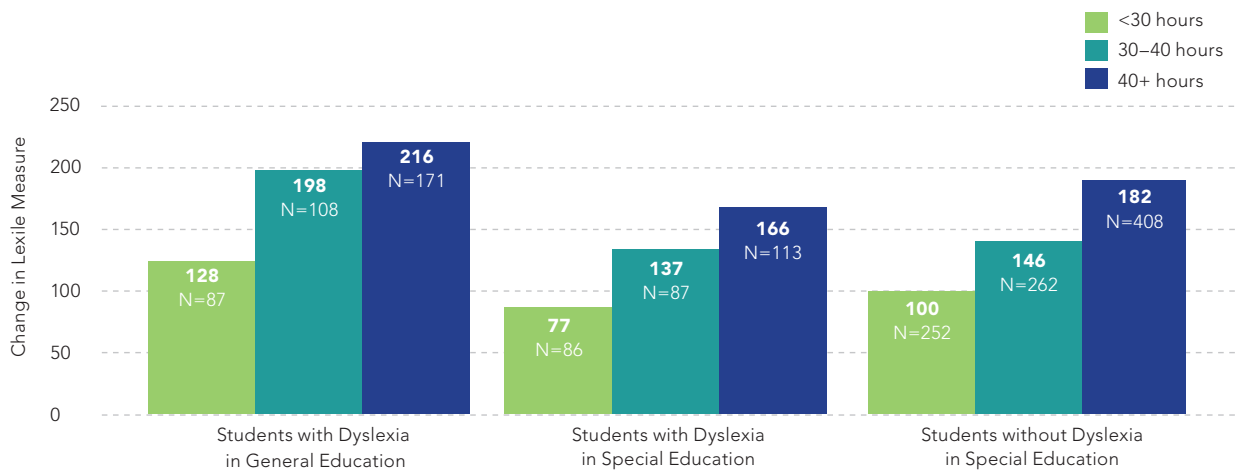
Note: 61 students completed *System 44*

GRAPH 1:
San Antonio Independent School District. Grades 3–8 (N = 1,574)
System 44 Usage Effects on *Phonics Inventory* Scores



Note: There were significant differences found between Accuracy gains as a function of software time for all three groups. ANCOVAS conducted to covary out effects of initial Accuracy score differences.

GRAPH 2:
San Antonio Independent School District. Grades 3–8 (N = 1,574)
System 44 Usage Effects on *Reading Inventory* Scores



Note: There were significant differences found between Lexile gains as a function of software time for all three groups. ANCOVAS conducted to covary out effects of initial *Reading Inventory* differences.

RESULTS

The goal of *System 44* for most students is to complete all 160 Topics in the Software as this is an indicator that the student has mastered their foundational reading skills and is ready to move on to Tier 2 or even Tier 1 instruction. The implementation analysis showed some variation in software usage across the study participants. During the course of the 2014-2015 school year, the average number of topics completed by students with dyslexia in general education was 67; the average number competed by students with dyslexia in special education was 53; and the average number completed by students in special education without dyslexia was 65 (Table 1). All *System 44* students made gains, but greater software usage resulted in greater gains on both the *Phonics Inventory* and the *Reading Inventory*.

Phonics Inventory

Across the grades, the amount of time that students spent on the *System 44* software had a significant impact on their performance on the *Phonics Inventory*. This impact was most significant for students who spent 40+ hours on the *System 44* software. Students with dyslexia in general education gained 9 accuracy points, students with dyslexia in special education gained 10 accuracy points, and students in special education without dyslexia gained 9 accuracy points (Graph 1).

Reading Inventory

Across the grades, the amount of time that students spent on the *System 44* software had a significant impact on their performance on the *Reading Inventory*. This impact was most significant for students who spent 40+ hours on the *System 44* software. Students with dyslexia in general education gained 216L, students with dyslexia in special education gained 166L, and students in special education without dyslexia gained 182L (Graph 2).

CONCLUSION

Results indicated that elementary and middle school dyslexic students and struggling readers benefited from participation in *System 44*, demonstrating significant improvements in reading proficiency over the course of the 2014–2015 school year. Students with dyslexia in general education, students with dyslexia who are also receiving special education services, and students receiving special education services that do not have dyslexia showed a significant increase in their performance on a test of foundational literacy skills (*Phonics Inventory*), as well as a test of reading comprehension (*Reading Inventory*). Students enrolled in *System 44* showed significant growth in reading; these results were consistent across grade levels. Furthermore, these significant gains on the *Phonics Inventory* and the *Reading Inventory* were evident for students classified as having a specific learning disability.

These findings are especially important as they support several of the goals of ESSA. Under ESSA, there is a push for evidence-based practices such that the more rigorous the evidence is around an intervention, the greater the potential for more funding. Additionally ESSA seeks to ensure that states set high standards so that children graduate high school ready for college and career, as well as maintain accountability in that resources are targeted toward the students who need it most. As this study demonstrates, *System 44* is an innovative and effective literacy intervention that can meet the goals of ESSA for students with dyslexia. By providing the details of the study implementation and results, we can help deliver on ESSA's goal to empower students, families, and other stakeholders with quality information on student progress.

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NOTES

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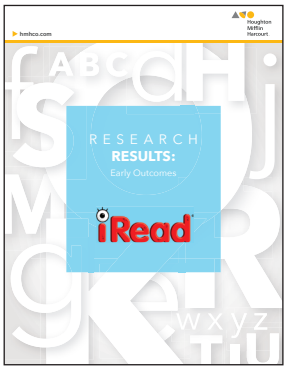
HMH Research Publications

Research Into Practice Into Results

Research Foundations

Research Foundations papers, which include the Evidence and Efficacy papers, provide an in-depth account of the theoretical underpinnings, evidence base, and expert opinions that guide the design and development of new and revised programs. Research Foundations map known research and design principles to practical applications of the program.



Research Results including Efficacy Compendiums

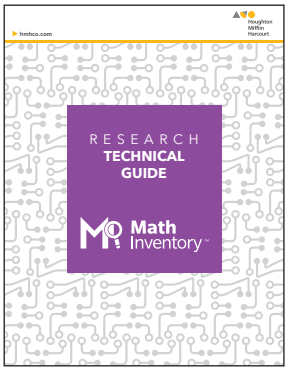
Research Results papers document the efficacy of a program in terms of Gold level studies (strong evidence), Silver level studies (moderate evidence), and Bronze level studies (promising evidence). At HMH®, program efficacy is monitored closely and continuously in a variety of settings, including varying geographical locations, implementation models, and student populations.

Research Case Studies

Research Case Study papers showcase research that is primarily qualitative and/or anecdotal. Research Case Study papers may profile a particular educator, student, implementation, or special population of students. Research Case Study papers strive to provide more context for understanding programs in practice.

Research Professional Papers

Research Professional Papers are typically authored by an expert in the field and highlight an important theoretical construct, practical application, program component, or other topic related to learning in the context of HMH programs.



Research on Assessments

Research Assessments such as the Technical Guide accompany the release of a stand-alone assessment to demonstrate its reliability and validity. Technical Guides and supporting papers are periodically updated as additional reliability and validity evidence is collected in support of an assessment's use and functionality.

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RESEARCH RESULTS PAPER

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