S.P.I.R.E.
ESSA LEVEL III STUDY
GRADES 3-5, 2022-2023

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Understanding ESSA Evidence

In December 2015, the Every Student Succeed Act (ESSA) was passed encouraging education programs to provide evidence of effectiveness and impact in order to be federally supported. EvidenceforESSA.org provides standards to assess the varying levels of strength of research for education products.

The categories for ESSA Evidence are: strong, moderate, and promising evidence of effectiveness, or demonstrates a rationale to be effective.

- Level/Tier 1: Strong - At least one randomized, well-conducted study showing significant positive effect on at least one outcome measure, analyzed at proper clustering (class/student or school level), with a multi-site sample of at least 350 students.
- Level/Tier 2: Moderate - At least one quasi-experimental (i.e., matched), well-conducted study showing significant positive student outcomes, analyzed at class/student or school level, with a multi-site sample of at least 350 students.
- Level/Tier 3: Promising - Would have qualified for Tier 1/2, but did not account for clustering, but obtained significantly positive outcomes at student level or did not meet sample size required. Post-hoc or retrospective studies may also qualify.
- Level/Tier 4: Demonstrates a Rationale - Well defined logic model based on rigorous research, an effort to study intervention effects is planned or currently underway.

This study meets the requirements for Level 3: Promising

- ✅ Correlational design, students new to the program compared to students with more progress in the program
- ✅ Proper design and implementation with at least two teachers and 30 students per group
- ✅ Study uses a form of a program that could be replicated
- ✅ Statistical controls through covariates
- ✅ At least one statistically significant, positive finding
- ✅ Post-hoc and retrospective studies that meet the following: treatment group includes all students who received treatment and not restricted by dosage or usage, matching done using only baseline characteristics, and quality of match is demonstraated

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Abstract

EPS contracted with LXD Research, a third-party research company, to examine the relationship between progress in S.P.I.R.E. and student reading outcomes at Martin County School District in Florida. LXD Research analyzed 192 students from grades 3-5 in 13 elementary schools who use S.P.I.R.E./i.S.P.I.R.E. reading intervention that uses an Orton-Gillingham approach. The Martin County School District's largest racial/ethnic group is Hispanic (48%), and over one-third of students (38%) had a Limited English Proficiency class or were still being monitored. Researchers used S.P.I.R.E. progress level and the Florida Assessment of Student Thinking (FAST) to understand the impact of the intervention program on student's learning outcomes. LXD Research found that students who completed more lessons in S.P.I.R.E. had higher literacy achievement at the end of the study, and these relationships were statistically significant. For all grades, students who completed more S.P.I.R.E. levels had higher spring FAST achievement ($t(190) = 2.9$, $p < .01$, Cohen's d effect size = .44). For all grades, S.P.I.R.E. ending level was significantly correlated with spring FAST achievement ($r(190) = .43$, $p < .01$) for students in Grades 3-5. After controlling for grade, race, LEP status, gender, and Fall FAST scores in an Analysis of Covariance, S.P.I.R.E. significantly predicted spring FAST achievement for students across Grades 3-5. This study provides results to satisfy ESSA evidence requirements for Level III (Promising Evidence) given the study design and positive, statistically significant findings.

Keywords: S.P.I.R.E., reading intervention, grades 3-5, FAST achievement

Introduction

Supporting and supplementing early reading development with quality instruction is essential. In 2022, the average reading score in fourth grade dropped again, now lower than all previous assessment years going back to 2005 and no different than reading scores in 1992 (NAEP, 2022). As such, the need for effective reading instruction is becoming increasingly urgent. In recent years, research on early literacy and reading has provided clearer specifications about reading development, converging on three themes that have gained widespread acceptance: reading is a strategic process, and fluent readers need instruction and practice employing a variety of strategies to understand text (Juel & Minden-Cupp, 2000), reading instruction should be differentiated to meets the needs of individual students (Spiro, 2001), and the reader's ultimate goal is comprehension of the meaning of text in light of prior knowledge and purpose (Filderman et al., 2022).

The S.P.I.R.E. curriculum is built on all three themes. S.P.I.R.E./i.S.P.I.R.E. incorporates the core principles of the Science of Reading (The Reading League, 2022) and is an evidence-based, explicit, direct and systematic Orton-Gillingham reading intervention program. Strategies for successful reading are introduced through direct, explicit teacher-led instruction that is systematically planned and organized, allowing students to practice in monitored reading situations. The lessons are sequenced in a way that moves from simple to complex. Lessons in S.P.I.R.E. draw students back to the core of what reading is all about, employing newly learned strategies in real reading situations to comprehend text.

The Individuals with Disabilities Education Improvement Act (IDEA, 2004) encourages the use of Response to Intervention (RTI), mandating that schools provide a more intensive level of instruction when a student's response to research-based general classroom instruction is unsatisfactory. RTI is a problem-solving approach that proactively utilizes performance data to inform decisions for instruction, rather than waiting for students to fail on high-stakes tests before providing services. It includes early intervention to prevent reading failure and helps provide timely support for struggling learners and special education students compared to past policies (Gersten & Dimino, 2006). S.P.I.R.E. uses an RTI system for identifying struggling students and as a model of instruction to provide support, instruction, and assessment of progress.

S.P.I.R.E./i.S.P.I.R.E. has been helping schools/districts make significant learning gains in reading throughout the United States for over 30 years and is currently listed as an approved reading intervention program in many states. S.P.I.R.E. partnered with LXD Research to conduct a third-party evaluation of S.P.I.R.E. as it was implemented in a Florida school district during the 2022-2023 school year.

Product Description

S.P.I.R.E. includes the following evidence-based types of instruction: Phonemic awareness, phonics, fluency, comprehension, vocabulary, morphology, and spelling. S.P.I.R.E. is unique from other phonics programs in that it uses RTI to individualize instruction to students' specific instructional needs. As of Spring 2022, EPS has four case studies, two experimental studies, and three theoretical papers on the efficacy of S.P.I.R.E.

While S.P.I.R.E. is most appropriate for struggling readers in Tiers 2 and 3, the program has been used in a variety of settings, whether classroom, small group, or one-on-one. The depth, nature, and intensity of skill reinforcement available in S.P.I.R.E. is unique in educational publishing and provides the resources needed to differentiate instruction. For example, in Lesson 3 of Level 3, the targeted concept is the ay letter group. After the introductory lesson, four reinforcing Lessons are provided, each with a reading passage, independent practice, and extensive individual activities. A teacher can differentiate instruction by choosing the number of Reinforcing Lessons to use, based on students' individual needs.

Study Description

As part of their ongoing efforts to demonstrate the efficacy of S.P.I.R.E., EPS contracted with Learning Experience Design (LXD) Research, a third-party edtech research company, to examine the relationship between S.P.I.R.E. usage and student outcomes. After collaborating on the co-development of a research summary of previously conducted research using S.P.I.R.E., LXD Research conducted this analysis and report to satisfy Level III requirements (Promising Evidence) according to the Every Student Succeeds Act (ESSA).

Research Questions

After controlling for students' prior literacy achievement, language proficiency status (LEP), gender, grade, and race,

1. How did Grade 3-5 students' level completion in S.P.I.R.E. predict their spring 2023 literacy achievement?
2. What was the overall impact of S.P.I.R.E. on Grade 3-5 students' spring 2023 literacy achievement?
    a. What was the impact of EPS literacy when accounting for student gender, grade, and race/ethnicity?
    b. Did the impact of EPS literacy differ for students monitored in LEP or by gender?

Methods

This report section briefly describes the setting, participants, measures, and analysis methods.

Setting

The study included the Martin County School District in Florida and an analysis sample of 3rd-5th grade students across 13 schools who were in the Special Education program. Located on Florida's Treasure Coast, Martin County School District educates around 18,000 PK-12 students in 12 elementary schools, 5 middle schools, 3 comprehensive high schools, 3 special centers, 4 preschool centers, and 2 adult education campuses. The student demographics in the District consist of roughly 35% of students who identify as Hispanic, 6% who identify as Black, 2% who identify as Asian, and 3% who identify as two or more races (Florida Department of Education, 2022).

Participants

There were 192 students in grades 3-5 in the final analytic sample. According to demographic data provided by the district, 47% of students were described as Hispanic. Females made up 35% of the group, while males accounted for 65%. In addition, 34% of students were identified as having Limited English Proficiency (LEP). All students were classified as SPED (Appendix).

Measures

This study included the following measures to provide insights into S.P.I.R.E. implementation and evidence about the potential impacts of S.P.I.R.E. on student outcomes.

Teacher Survey. An online teacher survey was sent out to participating teachers to understand their reading intervention experience and feedback on S.P.I.R.E. components. The survey took about 15 minutes to complete. Five participants were chosen at random to receive a $50 Amazon gift card.

S.P.I.R.E. Progress Level. Researchers utilized 2022-23 student progress information. According to S.P.I.R.E., students typically take a half year to complete one level. Typically students complete two levels within a school year. The higher levels indicate the mastery of more complex skills. This level of completion information informed the extent to which students made progress in S.P.I.R.E. during the school year, which could then be used to determine whether students' use of S.P.I.R.E. related to literacy learning outcomes on FAST.

Standardized Student Assessments. Cabium F.A.S.T., a computer-administered assessment created for Florida, aligned to the BEST Standards, measured students' strengths and weaknesses relative to

grade-level literacy content to assess students' literacy skills. Measures of student literacy outcomes included pre-test (i.e., Fall 2022) and post-test (i.e., Spring 2023) assessment scale scores.

Data Analysis

Researchers used a variety of quantitative analytic approaches. First, researchers conducted descriptive statistics (e.g., scatter plots) to describe participant characteristics. Researchers then conducted correlations, t-tests, and analyses of covariance to examine how S.P.I.R.E. use predicted student literacy outcomes from Fall 2022 to Spring 2023. The analyses included student-level covariates to control for potential selection bias. In addition, researchers calculated standardized effect sizes (Cohen's d and partial η^2) to determine the magnitude of changes in student outcomes and the proportion of variance accounted for by S.P.I.R.E. level.

Sample Description

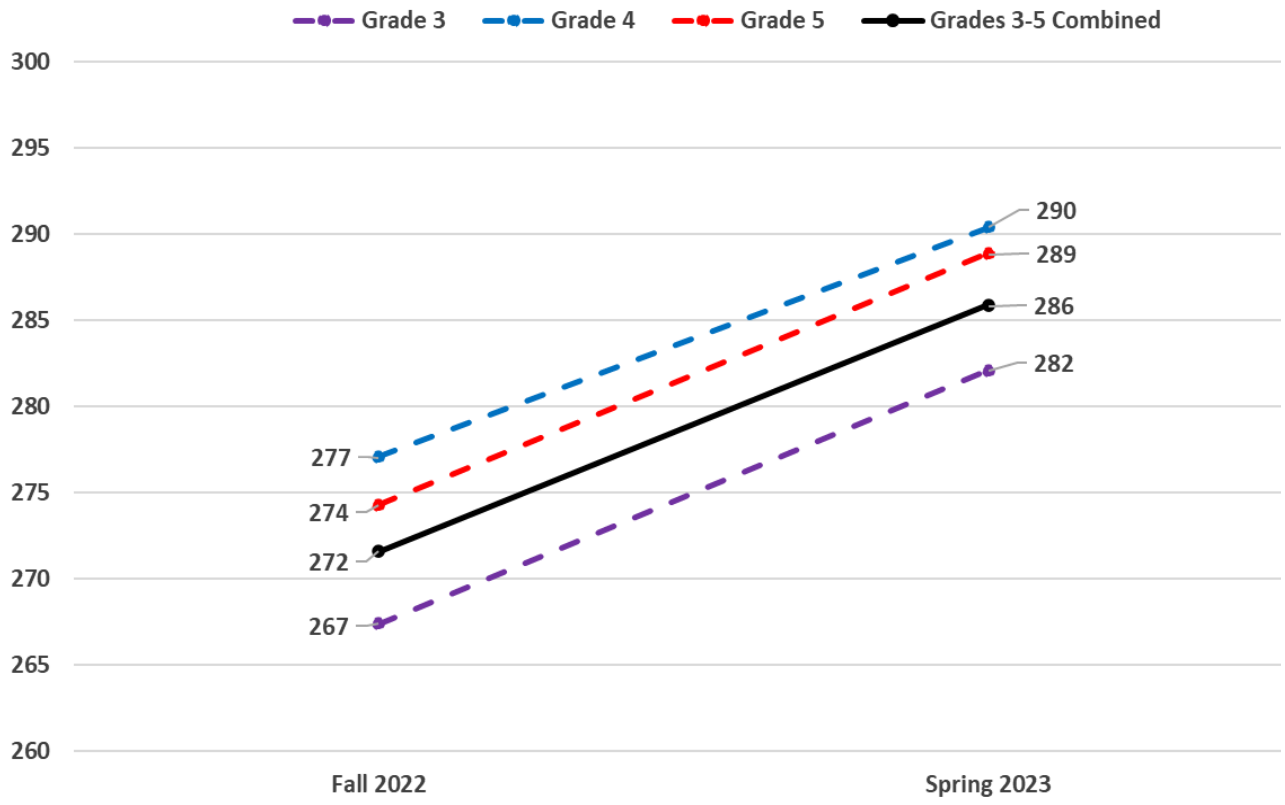
While just over a third of the students were still on Level 1 of S.P.I.R.E. at the end of the year, the remaining students were more advanced, the next third were on Level 2, and the rest were on Level 3 or above. The charts below highlight S.P.I.R.E. use during the 2022-2023 school year based on S.P.I.R.E. progress data (Figure 1). In the correlational study, we compare students in Level 1 to students in Levels 2-5.

Figure 1. **Overall Distribution of S.P.I.R.E. Level Attainment**

Student Outcome Findings

To answer the remaining study research questions, researchers conducted descriptive statistics, correlations, t-tests, and analyses of covariance. Researchers reported statistically significant findings at the $p = .01$ level. To determine the magnitude of the relationship, researchers calculated standardized effect sizes. Before running t-tests, correlations, and Analyses of Covariance, researchers examined unadjusted FAST scores at the beginning and end of the year. Students who used S.P.I.R.E. showed FAST growth from Fall 2022 to Spring 2023 across all grade levels (see Figure 2).

***Figure 2*. FAST Scores Increased from Fall to Spring for S.P.I.R.E. Students by Grade**



The changes in FAST scale score shown in Figure 2 were significant in each grade, and showed moderate to strong effects, depending on the grade (Table 1).

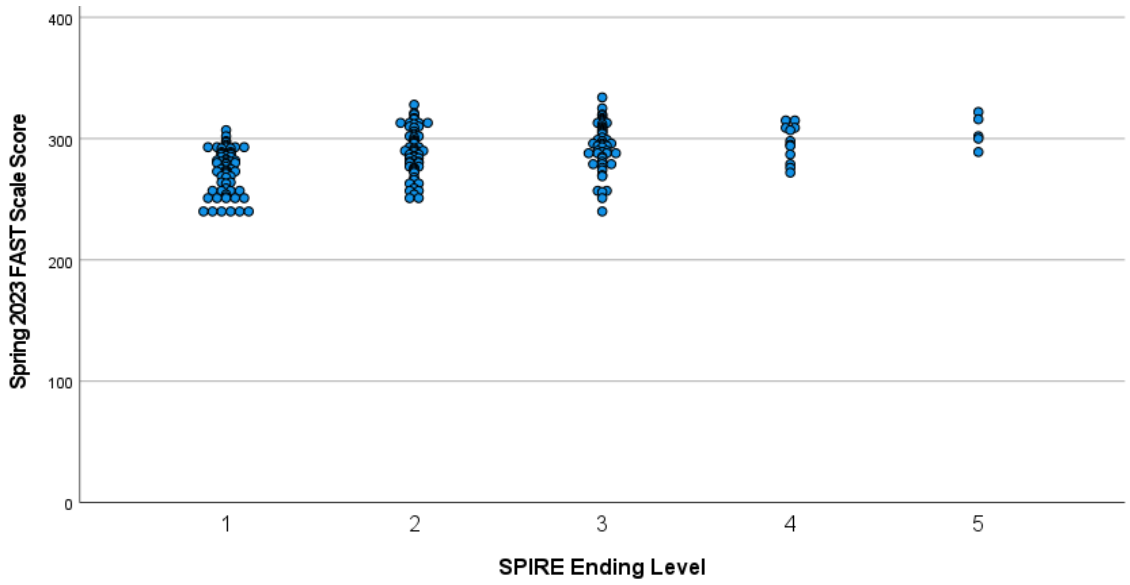
Table 1. **Paired Sample T-tests: Fall 2022 to Spring 2023 among S.P.I.R.E. Participants**

Grade Level	N	Fall 2022 FAST Scale Score	Spring 2023 FAST Scale Score	Fall-Spring Change in Fast Score	Significance	Cohen's d Effect Size
Grade 3	95	267	282	15	P < .001	.71
Grade 4	49	277	290	13	P < .001	.59
Grade 5	48	274	289	15	P < .001	.93
Grade 3-5 Combined	192	272	286	14	P < .001	.71

Effectiveness Findings for 2022–23 School Year

Researchers conducted a scatter plot to observe whether S.P.I.R.E. Ending Level appeared to be related to Spring 2023 FAST scale scores. In the scatter plot below showing all 192 students across grades 3-5, students who ended the school year at higher S.P.I.R.E. levels appeared also to have higher Spring 2023 FAST literacy scale scores (Figure 3).

Figure 3. **Scatter Plot of Spring 2023 FAST Literacy Scale Scores by S.P.I.R.E. Ending Level**



Overall Relationship Between S.P.I.R.E. Level and Student Literacy Outcomes on FAST

To explore the association between S.P.I.R.E. level and FAST scale scores further, researchers next examined whether higher S.P.I.R.E. levels were positively correlated with Spring FAST achievement. In each grades 3, 4, and 5, and across grades 3-5 combined, S.P.I.R.E. ending level was positively correlated with Spring 2023 FAST Scale scores. Pearson correlation coefficients ranged from .33 to .56 ($p < .01$: see Table 2).

***Table 2*. Correlation between S.P.I.R.E. Level & Spring 2023 FAST Scores by Grade**

Grade Level	N	Spring 2023 FAST Scale Score	Significance
Grade 3	95	.33	P < .001
Grade 4	49	.56	P < .001
Grade 5	48	.39	P < .01
Grade 3-5 Combined	192	.43	P < .001

Analysis of Covariance Testing

Next, researchers used Analyses of Covariance (ANCOVA) models to determine the effect of S.P.I.R.E. level on Spring FAST literacy scale scores after accounting for student-level covariates. Covariates in the ANCOVA model included Fall FAST achievement, grade, race, LEP status, and gender. Preliminary tests indicated that the sample met the assumptions of normality and homogeneity of variance ($p > .05$).

Results of the ANCOVA indicated that, after controlling for Fall FAST score, grade, race, LEP status, and gender, S.P.I.R.E. level positively predicted Spring FAST literacy scale scores $F(4, 183) = 6.6$, $p < .001$, partial η^2 effect size = .12. Although Fall FAST literacy scale scores were also significant predictors of Spring FAST literacy scale scores, there were no significant interaction effects with S.P.I.R.E. level
(see Table 3).

Table 3. **ANCOVA: S.P.I.R.E. Level on Spring 2023 FAST Scores**

Variable	Mean Square	F Score	Significance	Partial η^2 Effect Size
Corrected Model	3,917	12.7	$p < .001$	.26
Fall FAST Score	13,923	45.4	$p < .001$	.20
Gender	1,728	5.6	$p = .02$	—
LEP Status	90	0.3	$p = .59$	—
S.P.I.R.E. Level	**7,820**	**25.4**	$\boldsymbol{p < .001}$	**.12**
S.P.I.R.E Level*Gender	93	0.3	$p = .58$	—
S.P.I.R.E Level*Fall FAST Score	494	1.6	$p = .21$	—

Teacher Survey Findings

A total of 28 educators responded to the online survey. Majority of respondents were ESE Teachers (71.4%) and the rest were either ESE Staffing Specialists (10.7%), classroom teachers (7.1%), or interventionists (3.6%), substitute teachers (3.6%) or paraprofessionals (3.6%). The majority of respondents teach reading to 3rd graders (20%), 4th graders (18%), 2nd graders (13%) and 5th graders (12%). Number of years teaching varied from 1-8 years to over 30 years. Majority of educators (71.4%) spent about 30 minutes per day on S.P.I.R.E. 60% of respondents were very comfortable implementing the intervention, 28.6% were comfortable, and only 10.7% were somewhat comfortable. Educators strongly agreed that S.P.I.R.E. was easy to use (36%), helped students feel a strong sense of belonging and community (43%), and supports students' foundational literacy skills (50%). Educators agreed that S.P.I.R.E. helped students with different reading abilities stay engaged (54%), helped struggling readers advance reading levels (61%), and exposed students to new and diverse texts (29%). 93% of educators found that the blackline masters component of S.P.I.R.E. worked well for them. 89% of educators found that the placement test and teacher's guide worked well for them. The majority of educators indicated that the phonogram cards (75%), word cards (71%) and student manipulative kit (71%) worked well for them. Educators spent the majority of the intervention time on reading comprehension, phonological awareness activities, and graphic organizer activities.Educators typically cut working with manipulatives, review every sound card and only review the sound cards the students needed, and some spelling or word activities to save time. Some suggestions to improve S.P.I.R.E. components included: having all printing materials in one place to help with copying/printing, more supplemental instruction on blends, some edits to the graphic organizers like making the lines wider,

changing the font, and more scalable comprehension questions for older students. Refer to Table 4 for anecdotal evidence of the programs' impact.

Table 4. **Educator Anecdotal Evidence from Survey**

Comments
I had a student reading in class that noticed every word that had the controlled R and was generalizing the S.P.I.R.E. skill into other subject areas!
Student "J" in 3rd grade has a severe deficit in phonological awareness which has impacted his ability to decode. He is reading on a beginning K level. With the use of S.P.I.R.E. and the explicit systematic instruction, he progressed and was demonstrating skills of tapping and blending as well as more recognition of sight words which impacted his overall confidence.
[From February to May] My students went from struggling to read 2 letter words (at, it, is) to reading 3-4 paragraphs with cvc words.....sometimes even 2 syllable words. Their reading growth and confidence in that short period of time was so inspiring.
Something that I love is that my students in S.P.I.R.E. are not generally academically successful in the general education classroom. School is hard for them, and they fail a lot. But with S.P.I.R.E. they can all be successful and feel good about what they have learned.
My students are showing confidence in their own reading, I have students who are applying S.P.I.R.E. taught strategies when reading independently. Students are improving in their ELA courses and have shown growth on state assessments.
During ELA students were proud to use skills taught in S.P.I.R.E. to spell words and they felt very confident in doing so.
I have a kindergarten student who did not know any letter sounds when I began working with him using Sounds Sensible. By the end of the year, we had made it through all of Sounds Sensible and S.P.I.R.E. Level 1. He can read and write sentences. He increased his score on the STAR Early literacy from the 11th percentile to the 66th percentile.
I had two 3rd graders that had a lot of holes in their phonics skills, this program helped them progress at a faster pace.

Conclusions and Recommendations

In this case study, we evaluated the evidence-based S.P.I.R.E. literacy program in the form of a case study of SPED student literacy achievement in 13 schools in Martin County School District, Florida. In sum, the findings support a relationship between S.P.I.R.E. progress and improved literacy skills for Special Education students. Additionally, the teacher survey gave us specific insights on the educators' perspective and some anecdotal evidence to support positive outcomes from using S.P.I.R.E. Educators indicated they felt very comfortable using the program and that the program supports the development of foundation literacy skills. Through the share of individual student stories, educators thought the program improved students' confident levels and growth in literacy. These findings were robust across Grades 3, 4, and 5, and after controlling for key predictors such as previous FAST scale scores, gender, LEP status, grade level, and race/ethnicity. Given the statistically significant positive findings, this study provides results to satisfy ESSA evidence requirements for Level III (Promising Evidence). Specifically, this study met the following criteria for Level III:

- ✔ Correlational design
- ✔ Proper design and implementation
- ✔ Statistical controls through covariates
- ✔ At least one statistically significant, positive finding

As such, researchers recommend the following next steps: Identify a site that has not used S.P.I.R.E. in the past to conduct a research study with an experimental or quasi-experimental design to meet ESSA Levels I or II. To mitigate other limitations of this study, it is also recommended that researchers conduct interviews with school leaders and collect feedback from educators to better understand the nature of the implementation to inform future product development and user support tools.

References

Filderman, M. J., Austin, C. R., Boucher, A. N., O'Donnell, K., & Swanson, E. A. (2022). A Meta-Analysis of the Effects of Reading Comprehension Interventions on the Reading Comprehension Outcomes of Struggling Readers in Third Through 12th Grades. *Exceptional Children, 88*(2), 163–184. https://doi.org/10.1177/00144029211050860

Florida Department of Education (2022, April). *The 2021-22Martin School District Report Card.* https://edudata.fldoe.org/ReportCards/Schools.html?school=0000&district=43

Gersten, R., & Dimino, J. A. (2006). RTI (Response to Intervention): Rethinking special education for students with reading difficulties (yet again). *Reading Research Quarterly, 41*(1), 99–108. https://doi.org/10.1598/RRQ.41.1.5

Individuals with Disabilities Act (2004). *Statute & Regulations.* https://sites.ed.gov/idea/statuteregulations/#statute

Juel, C., & Minden-Cupp, C. (2000). Learning to read words: Linguistic units and instructional strategies. *Reading Research Quarterly, 35*(4), 458–492. https://doi.org/10.1598/RRQ.35.4.2

National Assessment of Educational Progress (2022). *The Nation's Report Card: Reading Assessment.* https://www.nationsreportcard.gov/highlights/reading/2022/

Spiro, R. J. (2001). Principled pluralism for adaptive flexibility in teaching and learning to read. In R. F. Flippo (Ed.), Reading researchers in search of common ground (pp. 92-97). Newark, DE: International Reading Association.

The Reading League. (2022). *Science of Reading: Defining Guide.* https://www.thereadingleague.org/what-is-the-science-of-reading/

Appendix

Sample Characteristics

Variable	Grade 3	Grade 4	Grade 5	All Grades 3-5
N	95	49	48	192
Percent SPED	100%	100%	100%	100%
Percent Female	31%	35%	46%	35%
Percent LEP	30%	27%	52%	34%
Percent Hispanic	46%	43%	52%	47%
Fall 2022 FAST Literacy Scale Score	267.4	277.1	274.3	271.6

LXD Research is an independent research firm that specializes in evaluating educational programs to support accelerated learning. Learn more at www.lxdresearch.com

For more information about the curriculum visit https://curriculum.schoolspecialty.com/SPIRE/