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Evaluating the Effectiveness of 95 Phonics Lesson Library™: Intervention Study for Grades 4-5

2023-2024 School Year Report

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Understanding ESSA Evidence

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Educators search for high-quality research and evidence-based interventions to strengthen grant applications, to support comprehensive and targeted schools, or to implement new programming in their schools. Evidence requirements under the Every Student Succeeds Act (ESSA) are designed to ensure that states, districts, and schools can identify programs, practices, products, and policies that work across various populations.

Educational programs document their evidence of design, effectiveness, and impact in order to be eligible for federal funding. While there is no singular authority that determine's a program's tier, the Department of Education's Office of Educational Technology provides standards to assess the varying levels of strength of research for education products.

The categories for ESSA Evidence are: strong (Tier 1) , moderate (Tier 2), and promising (Tier 3) evidence of effectiveness, or demonstrates a rationale to be effective (Tier 4).

This product meets the requirements for Tier 2:

- In a quasi-experimental design, students who used the program are examined against a comparison group through matching.
- At least one quasi-experimental study with the proper design and implementation with at least two teachers and a multi-site sample of 350 students showed statistically significant, positive findings.
- The study uses a program implementation that could be replicated.
- A third-party research organization has reviewed the documentation for ESSA validation.

When product designers leverage learning sciences to design and evaluate the effectiveness of their programs, educators can better target instruction, and students' skills soar. A matched, quasi-experimental study design using standardized assessment data, an analysis of student growth, and educator feedback demonstrates this product's efficacy, meeting the criteria for LXD Research's ESSA Tier 2 Evidence.

– Rachel Schechter, Ph.D., Founder of LXD Research

EFFICACY STUDY SUMMARY
2023-2024

PROGRAM DESCRIPTION

95 Phonics Lesson Library (95 PLL) is a phonics intervention program designed for grades K-5. It provides explicit, systematic, and sequential instruction of phonics, syllable types, and word analysis strategies for single and multi-syllable words in a small group setting. The model has a clear scope and sequence and includes many articulatory features, decoding and encoding lessons, and decodable text passages allowing structured transfer-to-text processes.

STUDY DETAILS

Location

Ohio

Analysis Sample Sizes

4th and 5th graders

- 2 treatment schools, 121 students
- 3 comparison schools, 129 students

Demographics

81% Minority | 30% Disability | 7.5% ELL

Time Frame

August 2023-May 2024

Implementation Description

- Treatment teachers used 95 PLL for their daily Tier 2 intervention
- Comparison teachers used a mix of West Virginia Phonics, MindPlay Reading, and other resources for daily Tier 2 intervention

Methodology

- BOY and EOY scores on Acadience and MAP Growth were compared.

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STUDY CONTEXT

95 Percent Group hired LXD Research as a third-party researcher to investigate the impact of 95 PLL on 4th and 5th grade literacy in Ohio. Two schools used 95 PLL and 3 were comparison. Using the district's assessments of Acadience Reading and NWEA MAP Growth from Beginning-of-YEAR (BOY) and End-of-Year (EOY), LXD ran analyses to understand impact of 95 PLL on test scores.

KEY FINDINGS

95 PLL 4th and 5th graders showed growth on the EOY Acadience assessment with 26% of 4th graders and 19% of 5th graders being On/Above Benchmark, closing their reading gaps in one year. 23% of comparison students were On/Above Benchmark in grade 4 and 2% in grade 5. On MAP Growth, both 4th and 5th grade 95 PLL students showed significant growth with 8% of 4th graders and 6% of 5th scoring High/High Average by EOY. Only 2% of comparison 4th graders and 3% of 5th graders scored High/High Average. An additional 21% of comparison 4th graders and 5th graders were considered Low compared to 95 PLL students at EOY.

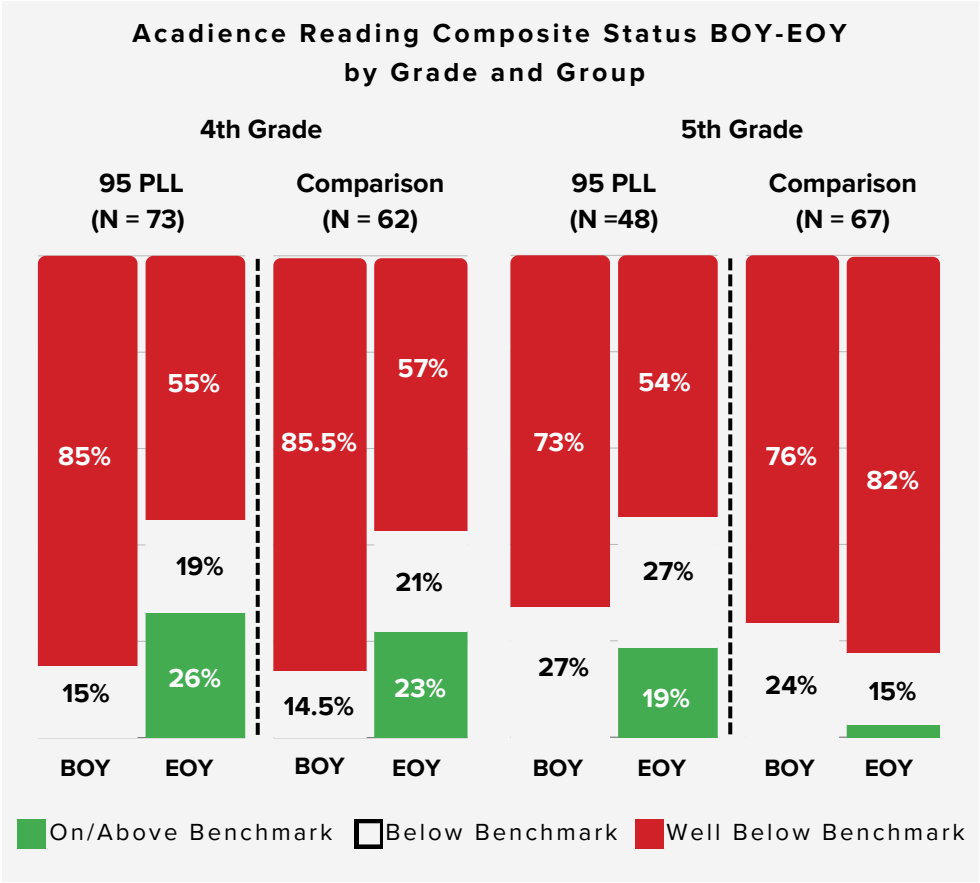
More 95 PLL 4th and 5th graders are considered On/Above Benchmark on the EOY Acadience assessment. On MAP Growth, the mean RIT score was higher for 95 PLL 4th and 5th graders than the comparison. The effect size of 95 PLL 5th grade RIT growth was .68 showing high practical significance.

Assessment Proficiency Rates in % of Students at EOY

Grade	Group	Acadience % At/Above	MAP Growth % High or High/Average
4	PLL	26%	8%
4	Comp.	23%	2%
5	PLL	19%	6%
5	Comp.	3%	3%

ACADIENCE FINDINGS

At baseline, both the 4th and 5th grade samples had similar average composite scores. Over the year, 95 PLL students showed substantial growth with 26% of 4th graders and 19% of 5th graders being considered On/Above Benchmark by the EOY. This is an additional 7% more 4th graders and 13% of 5th graders than the comparison group. T-tests revealed that 95 PLL 4th graders were 15 points higher at the EOY than the comparison group, while not significant. For the 95 PLL 5th graders, they made significantly greater growth across the year than the comparison students (t = 3.53, p = .00, Cohen's d = .68), a 108 point improvement vs. 67 point improvement. The comparison 5th graders had an additional 6% of students Well Below Benchmark whereas the 5th grade 95 PLL students had a 19% decrease in students labeled Well Below Benchmark. See full report for subdomain growth.

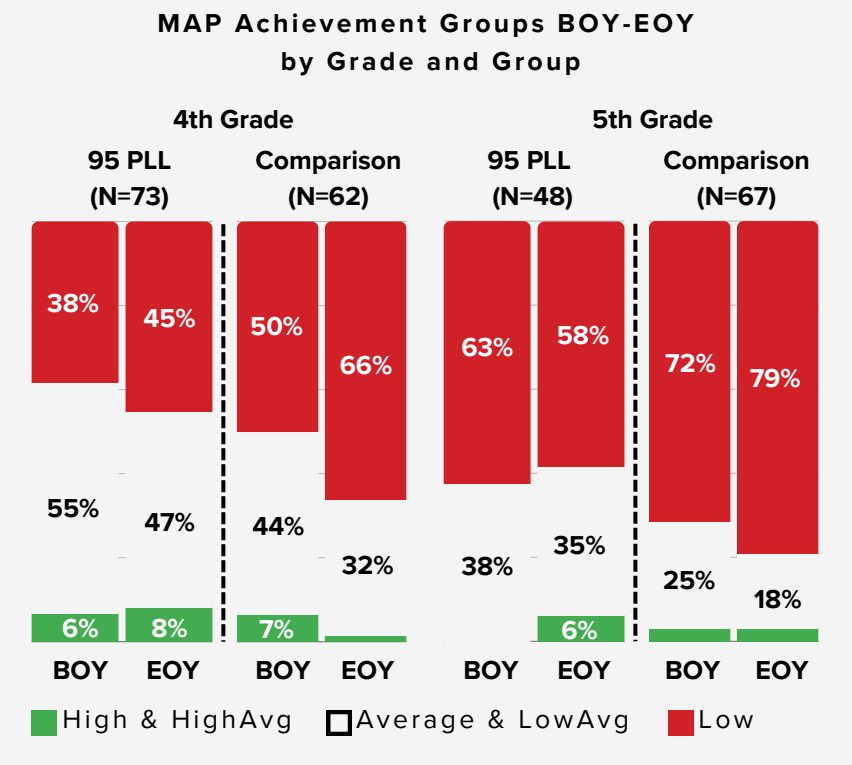


5th Grade Highlighted Growth

Groups	BOY to EOY (mean raw score)	Difference	T-Test Result
PLL (N=48)	183 to 290	+108 pts	PLL Higher Growth from BOY to EOY: t = 3.53, p = .00, Cohen's d = .68
Comparison (N=67)	158 to 225	+67 pts	

MAP GROWTH FINDINGS

On the MAP assessment, 95 PLL students outperformed comparison students in both grades. 4th graders using 95 PLL ended the year with 8% considered High and High Average, while comparison 4th graders had only 2% considered High and High Average. Similarly, 95 PLL 5th graders grew where 6% were considered High and High Average at the EOY while comparison stayed the same at 3%. T-tests revealed that the growth for both 95 PLL 4th graders (t = 2.57, p = .01, Cohen's d = .44) and 5th graders (t = 2.64, p = .01, Cohen's d = .50) from BOY-EOY compared to the comparison were statistically significant with high practical significance. See full report to see subdomain growth.



Note. High average and high achievement groups were combined to form the high achievement group and the average and low average achievement groups were combined to form the medium achievement group.

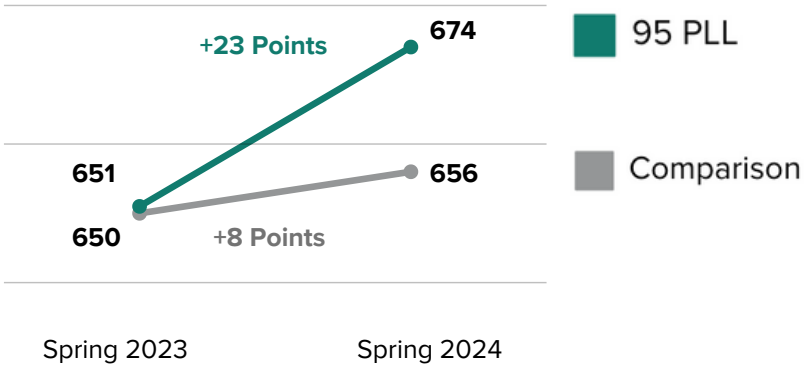
Grade 5 Highlighted MAP Growth

Groups	BOY to EOY (mean RIT score)	Change	T-Test Result
PLL (N=48)	185 to 193	7.92	PLL Higher EOY RIT Scores: *t* = 2.64, *p* = .01, Cohen's *d* = .50
Comparison (N=67)	184 to 185	1.18	

OHIO STATE TEST FINDINGS: GROWTH

As this study investigated 4th and 5th graders, LXD also measured the impact on the Ohio state test. Although 4th Grade students showed similar change in both conditions, 95 PLL 5th graders grew significantly more from Spring 2023 to Spring 2024 vs the comparison group - 95 PLL 5th graders showed almost triple the growth (+23.4 points) vs the comparison group (+8.2 points; $p < .05$, Cohen's d = .46).

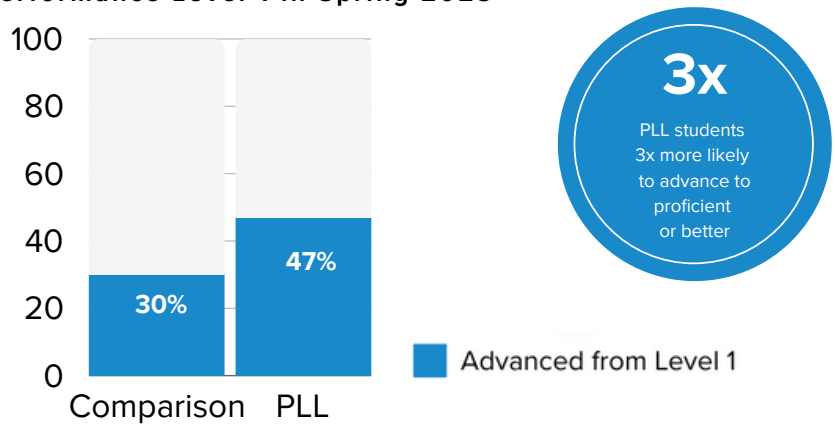
Ohio State Reading Test
5th Graders Growth from SY22-23 to SY23-24



OHIO STATE TEST FINDINGS: PERFORMANCE LEVELS

A majority of this study's fifth graders were in Performance Level 1 (88%) when they were fourth graders, part of why these students were flagged for intervention during 2023-2024. While not all students were able to advance to proficient in just one year, almost half of the PLL students who were in Level 1 (Did Not Meet Expectations) advanced out of Level 1 by the end of fifth grade. Overall, fifth graders in the PLL group were three times more likely to advance to Proficient or better on the OST than the comparison group.

Grade 5 Students Advanced from Performance Level 1 in Spring 2023



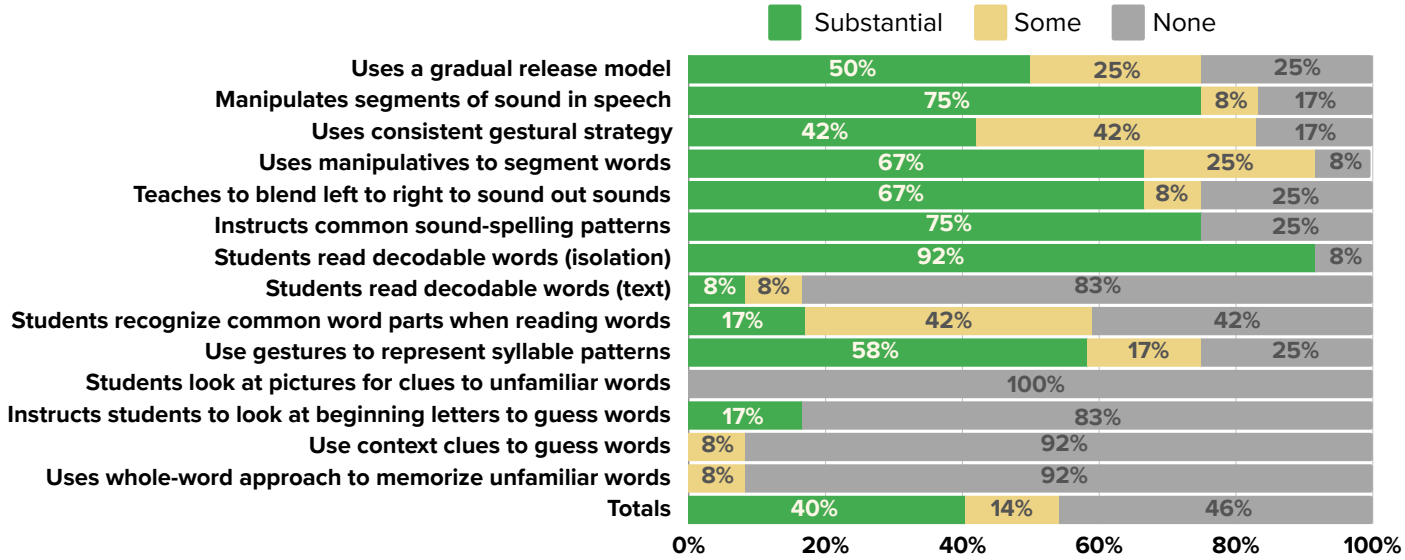
EDUCATOR VOICES

LXD Researchers interviewed administrators and conducted teacher focus groups of the 95 PLL schools to understand their perspective of 95 PLL implementation and feedback from their educators. Overall, their thoughts were positive indicating how they are noticing a difference within their students confidence levels when reading as well as their educator's confidence levels as they are learning how to teach reading better and becoming stronger teachers because of it.

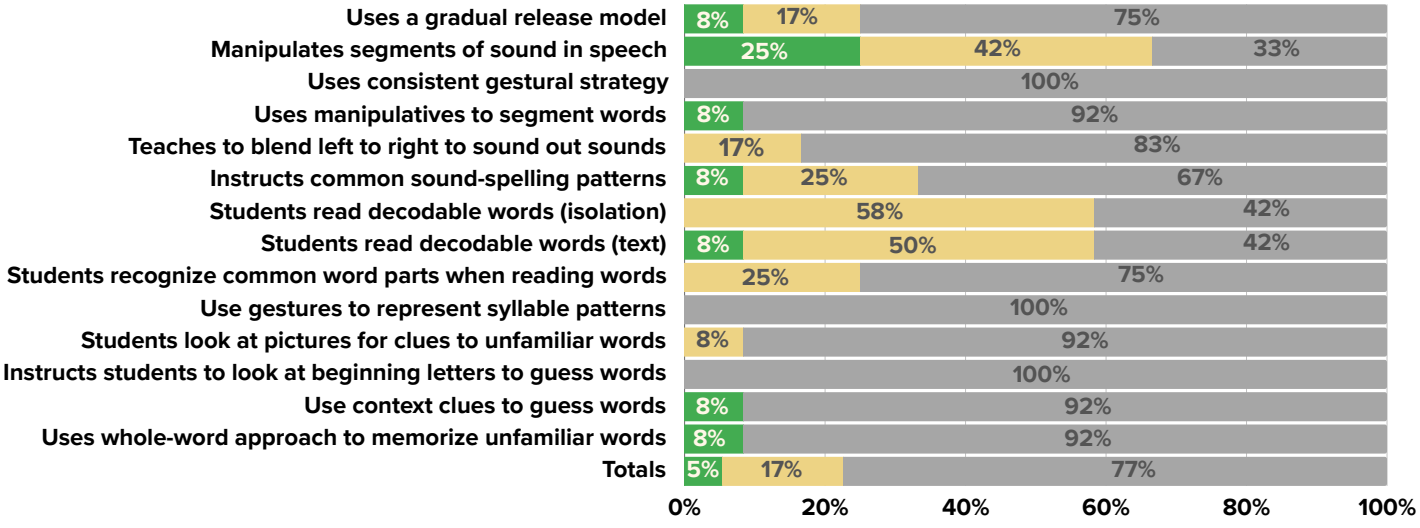
SITE OBSERVATIONS - PHONICS INSTRUCTIONAL STRATEGIES

LXD Researchers visited 12 classrooms implementing 95 PLL and 12 classrooms serving as comparison in Youngstown. The researchers noted the level of instructional strategies focusing on phonics during the lesson time observed. 95 PLL classrooms had more substantial levels of phonics instructional strategies than the comparison with 40% of lesson time observed in total showing a substantial amount of the strategies while comparison only had 5% overall. The observation results highlighting the substantial day-to-day phonics instruction in the classroom supports the assessment results indicating significant student growth from BOY-EOY. See report for more details on site observations.

95 PLL Classrooms



Comparison Classrooms



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Conducted by Rachel L. Schechter, Ph.D., Rachel Gross, Ph.D, and Isabella Ilievski, Ed.M.
LXD Research at Charles River Media Inc.

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Abstract

The COVID-19 pandemic significantly impacted educational outcomes, including reading achievement in grades 3-5, particularly in schools primarily serving high-poverty communities of color. This study evaluates the 95 Phonics Lesson Library (95 PLL), a targeted phonics intervention program, in a low socio-economic status, ethnically diverse, midwestern school district during the 2023-2024 school year. Using a quasi-experimental design, this study compares reading outcomes of fourth and fifth graders using 95 PLL with a similar comparison group of fourth and fifth graders. Acadience Reading and NWEA MAP Growth assessments showed significant growth in reading scores for 95 PLL students relative to the comparison group, especially among the fifth grade students. Supported by positive educator perceptions, these findings demonstrate 95 PLL's potential to enhance reading achievement and close academic gaps.

Introduction

The COVID-19 pandemic heightened challenges in ensuring food security and health, showcasing a tangible effect on students' educational outcomes. Between Fall 2019 and Fall 2021, reading achievement significantly decreased across all grades, with the most pronounced declines observed in students in grades 3–5 (Kuhfeld et al., 2022). Further analysis of average reading achievement revealed that communities of color were disproportionately impacted, with Hispanic, American Indian and Alaska Native (AIAN), and Black students in high-poverty schools experiencing the most substantial decline (Kuhfeld et al., 2022). This decline led to the widening of reading gaps among 3rd-5th graders across race/ethnicity and income groups that pre-existed before the pandemic.

Upon the return of students to schools in 2021, there was a notable narrowing of measurable disparities in achievement between Black and Hispanic students and their Asian and white counterparts in grades K–2 (Amplify, 2023). However, this positive trend did not extend to grade 3. The gap between the 25th percentile and 75th percentile in fourth graders continues to widen in 2022 compared to 2019 (NAEP, 2022). The persistence of these academic gaps into grade 5 is alarming, as failure to address them at this stage could result in further hardships for marginalized students, given the intricate social dynamics and heightened academic pressure accompanying the transition from grade 5 to middle school (U.S. Department of Education, 2018).

Immediate and targeted interventions are imperative to mitigate these disparities and ensure an equitable educational foundation for all students. These interventions should leverage the science of reading framework in instructional methods, as demonstrated by research indicating significant improvements in students' reading abilities (Shanahan, 2010). The current research points to phonics instruction, particularly the development of decoding skills for reading multisyllabic words, as essential for improving the reading abilities of students in grades 4–9 who struggle with complex texts (Toste et al., 2019). Moreover, the science of reading dissects reading comprehension (RC) ability into two components—decoding (D) and language comprehension (LC). This analytical breakdown empowers intervention programs to tailor support for low-performing students based on their specific challenges with either decoding or language comprehension. According to the Institute of Education Sciences What Works Clearinghouse guide on reading interventions, as students advance in grade levels, the complexity of words in their reading materials increases, requiring more sophisticated phonics skills. These practices are not only applicable within the context of supplemental programs in elementary settings but are also adaptable for middle and high school reading courses, ensuring a continuum of support across educational stages (Vaughn et al., 2022).

The 95 Phonics Lesson Library™ (95 PLL) is a science of reading-based intervention program that utilizes phonics to close reading gaps through explicit and systematic instruction. To understand 95 PLL's effect on specifically fourth and fifth grade students, 95 Percent Group partnered with

Learning Experience Design (LXD) Research to conduct a third-party real-time efficacy study of the 95 Phonics Lesson Library intervention program during the school year 2023-2024 in Youngstown City School District in Youngstown, Ohio. For intervention, the comparison schools use West Virginia Phonics and MindPlay Reading. This is a quasi-experimental design because students in multiple schools who used 95 Phonics Lesson Library were matched and compared to students who did not use the program.

Research Questions

To what extent does the 95 Phonics Lesson Library intervention impact overall reading scores for fourth and fifth graders?

- What were the results by test (Acadience Reading/NWEA MAP Growth)?
- What subdomain skills were particularly affected by the intervention? Specifically, how did phonics skills influence reading comprehension and vocabulary skills?
- What was the impact on the Ohio State Test scores compared to the year prior without the treatment program?

How did overall reading scores grow/change compared to the schools that did not use 95 PLL?

- What were the results by test (Acadience Reading/NWEA MAP Growth)?
- What differences were seen amongst subdomain skills? Specifically, how did phonics skills influence reading comprehension and vocabulary skills?
- What was the impact on the Ohio State Test scores compared to the year prior without the treatment program?

What are teacher and administrator perceptions about the quality and impact of the 95 PCP?

- What are teachers' and administrators' initial reactions to the 95 PCP, and associated materials, content, pacing, and professional development?
- What suggestions do they have for improvement?

Methods

The goals of the research activities were to understand the nature and extent of the implementation of 95 PLL and the literacy intervention program in comparison schools as well as to understand end-of-year (EOY) gains and growth from BOY-EOY. Two schools were selected to use the 95 PLL and the remaining three schools did not use the program. To increase the rigor of the study design, one school was randomly selected to be removed from the comparison group, leaving two treatment schools and three comparison schools. During the school year 2023/2024, district leaders supported data collection to complete the study and support product coaching services. Those activities included:

- Conducting and sharing NWEA MAP Growth and Acadience Reading with all students at the beginning of the year (BOY), middle-of-year (MOY), and end-of-year (EOY).
- Conducting 95 Phonics Screener for Intervention (PSI) at the start of the year and every three weeks for progress monitoring (with treatment schools)

- Participating in qualitative data collection activities throughout the year for 95 PLL schools and comparison schools: site observations, educator focus groups, administrator interviews, and educator perception surveys

This report focuses on gains from BOY to EOY on Acadience Reading, NWEA MAP Growth, and qualitative perceptions of 95 PLL, with supplemental findings about year-over-year Ohio State Test growth.

Study Program Description

The 95 Phonics Lesson Library™ (95 PLL) is a collection of lessons for educators seeking phonics intervention instruction. The lessons are categorized into three separate boxed sets (i.e. Basic, Advanced, and Multisyllable) that accommodate various grade levels and instructional needs. The goal of 95 PLL is to provide comprehensive sets of lesson materials for teachers to use. It is designed primarily for Tier 2 phonics intervention, targeting specific gaps in phonics skills that can hinder reading progress. It follows a systematic approach that progresses from basic letter-sound correspondences to decoding multisyllabic words, supported by explicit instruction in phonics, syllable types, and word analysis strategies recommended by researchers like Maria Laura Castiglioni and Linnea Ehri. Moreover, 95 PLL can be used to supplement Tier 3 instruction or enhance Core instruction by targeting phonics skills development. As part of 95 Percent Group's One95 Literacy Ecosystem, which includes the 95 Phonics Core Program (PCP), 95 PLL aligns with a structured literacy solution.

Comparison Program Description

The West Virginia Phonics is a free, open-source curriculum for early reading instruction that aligns with the science of reading developed by the West Virginia Department of Education (West Virginia Board of Education, 2023). It is designed to equip educators with effective tools for fostering foundational literacy skills in young learners. The program is anchored in ten key areas encompassing short vowels, consonant blends, and multisyllabic word decoding and delivers explicit instruction through activities and assessments. West Virginia Phonics aims to develop competent readers by laying a strong foundation in phonics knowledge and understanding. MindPlay Reading was also used as part of individualized instruction for all students in the comparison groups.

Literacy Assessments

Acadience Reading

Acadience Reading is a universal screening and progress monitoring assessment designed to gauge the acquisition of early literacy skills from kindergarten through sixth grade (Acadience Learning, 2024). The assessment comprises six measures (*see Table 1.*) that indicate skills necessary for proficient reading (Acadience Learning, 2020). These measures are systematically

employed to routinely monitor the development of early literacy skills, to facilitate the provision of timely instructional support, and to prevent potential reading difficulties later on.

Table 1. Acadience Reading K-6 Measures and Indicators

Acadience Reading Measures	Indicators of Basic Early Literacy Skills	Grades
First Sound Fluency (FSF)	• Phonemic awareness	Kindergarten
Phoneme Segmentation Fluency (PSF)	• Phonemic awareness	Kindergarten
Letter Naming Fluency (LNF)	• Indicator of risk	Grade 1-2
Nonsense Word Fluency (NWF)	• The alphabetic principle and basic phonics	Grade 1-2
Oral Reading Fluency (ORF)	• Advanced phonics and word attack skills • Accurate and fluent reading of text • Reading comprehension	Grade 2-6
Maze	• Reading comprehension	Grade 3-6

NWEA MAP Growth

NWEA MAP Growth is an adaptive assessment tool that measures students' academic growth and proficiency in various subjects, including math, reading, language usage, and science. MAP Growth is a standardized achievement test that measures student knowledge and informs what they are ready to learn next through a computer adaptive test that adjusts to the students. The goal of MAP growth is to provide educators with data on individual student performance across time and areas of strength and improvement. MAP Growth assessments are administered multiple times throughout the school year to track student progress and inform instructional decisions (NWEA, 2024).

Table 2. MAP Growth Goal Names for Subscale Scores

Goal Number	Skill Domain Description
Goal 1	Literary Text: Key Ideas and Details
Goal 2	Literary Text: Language, Craft, and Structure
Goal 3	Informational Text: Key Ideas and Details
Goal 4	Informational Text: Language, Craft, and Structure

Goal 5	Vocabulary: Acquisition and Use

Establishing Baseline Equivalence

Over 15% of students did not have the data necessary to be included in the end-of-year analysis in at least one grade (i.e., the attrition was too high to meet WWC standards). Therefore, a new analytic sample needed to be created to establish baseline equivalence in the analytic sample. The matching process focused on students below grade level with complete data: BOY and EOY data for both Acadience and MAP in addition to complete data on all demographic variables. LXD employed a causal inference technique to balance the sample based on beginning-of-year scores and demographics via MatchingFrontier in R (King, Lucas, and Nielsen, 2017). During the matching process, 37 fourth-grade and 15 fifth-grade comparison students were dropped from the sample to achieve sufficient balance between conditions.

Demographic data for students by grade and group is located in Tables 3a and 3b below. LXD tested for differences between the treatment and control groups by grade level for student ethnic group and gender. For ethnicity, no differences were detected for fourth grade. However, a difference in the overall percentage of students who were minorities was detected for fifth grade (χ^2 = 4.33, p = .038). There were no significant percentage differences in gender for either grade level.

Table 3a. Sample Demographics Part I

Grade	Race/Ethnicity			Gender		
		Treatment (N = 73)	Comparison (N = 62)		Treatment (N=48)	Comparison (N=67)
Fourth	Minority	75%	82%	Male	52%	48%
Fifth	Minority	77%	91%	Male	56%	58%

Chi-square tests found no significant differences between the treatment and control groups within each grade level in the percentage of students in foster care, or whether students were classified as gifted. Although the percentage of students noted as gifted was equivalent across groups, the types of classifications themselves varied. It is worth noting that the fifth-grade comparison group had one student classified as gifted in reading, whereas the treatment group had none.

Table 3a. Sample Demographics Part II

Grade	Condition	Foster Placed	Classified as Gifted
Fourth	Treatment (N = 73)	0%	1%

	Comparison (N = 62)	0%	–
Fifth	Treatment (N=48)	2%	2%
	Comparison (N=67)	1%	3%

The percentage of students with a disability classification was not significantly different across groups. There were no significant differences for either grade in the percent of students with a 504 plan, or the percent of students who were English language learners, or in homeless status. There were no students with migrant status in the sample.

Table 3b. Sample Demographics Part III

Grade	Condition	Disability	504 Plan	LEP	Homeless Status
Fourth	Treatment (N = 73)	34%	3%	92% Not EL 1% Yes, 1st Year 7% Yes, 2+ Years	1% Doubled-Up 1% Shelter or Transitional Housing 97% None
	Comparison (N = 62)	32%	3%	92% Not EL 2% Yes, 1st Year 6% Yes, 2+ Years	5% Doubled-Up 95% None
Fifth	Treatment (N=48)	25%	2%	92% Not EL 2% Yes, 1st Year 6% Yes, 2+ Years	–
	Comparison (N=67)	28%	1%	94% Not EL 1% Yes, 1st Year 4% Yes, 2+ Years	3% Doubled-Up 97% None

Note. Percentages that may add to less than 100 are due to rounding and/or a small number of students for whom demographic data were unavailable.

Baseline Literacy Scores

LXD examined the beginning-of-year scores for students in each grade for each test to determine whether the groups were similar at the start of the year.

To establish baseline equivalence for each grade and both assessments, LXD tested whether the difference in means between the treatment and comparison groups was less than a quarter of the comparison group's BOY standard deviation (ESSA, 2024). For both grades, the mean difference was smaller than the .25 SD threshold, and thus, evidence of baseline equivalence was established. Further, in all four cases, no statistically significant difference was found. In other words, for both grades, the means were statistically similar and were within .25 SDs of the whole group. Baseline equivalence computations and *t*-test results are available in Tables 4 and 5 below.

Table 4. Acadience Reading Composite Scores for Beginning-of-Year 2024

Grade	Treatment Group		Comparison Group		Baseline Differences	Equivalent?
	Mean	SD	Mean	SD		
Fourth	134.82	92.7	128.63	95.0	.07	Yes
Fifth	182.81	103.9	157.99	104.1	.24	Yes

Table 5. MAP Growth RIT Scores for Beginning-of-Year 2024

Grade	Treatment Group		Comparison Group		Baseline Differences	Equivalent?
	Mean	SD	Mean	SD		
Fourth	182.42	15.9	178.40	16.9	.24	Yes
Fifth	185.33	14.3	183.61	15.4	.11	Yes

Baseline equivalence for Ohio State Test Scores in 2023

Students were administered the Ohio State Test in Spring 2023 and Spring 2024. LXD compared OST ELA Overall Scale Score growth from spring to spring creating two cohorts: Grade 3 in 2022-2023 school year -> Grade 4 in 2023-2024 school year cohort and Grade 4 in 2022-2023 school year -> Grade 5 in 2023-2024 school year cohort. LXD tested for baseline equivalence for state test scores in 2023 (see Table 6 below), and found that baseline equivalence was met for the Spring 2023 fourth graders (who are in fifth grade in the study year of 2023-2024 in this report) but not for the Spring 2023 third graders (who are in fourth grade in the study year of 2023-2024 in this report).

Table 6. Ohio State Test Overall ELA Scale Scores for Spring 2023

Cohort 2023-2024	Treatment Group		Comparison Group		Baseline Differences	Equivalent?
	Spring 2023 Mean	SD	Spring 2023 Mean	SD		
Grade 4	673.72	42.3	656.92	31.4	.54	No
Grade 5	650.62	21.6	649.54	30.0	.04	Yes

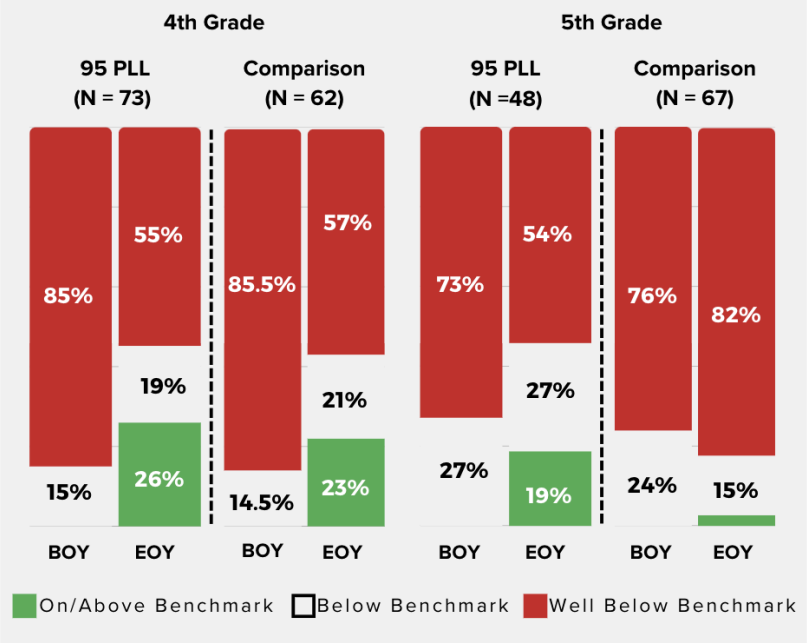
Note: Groups are defined as baseline equivalent if the mean difference is smaller than .25*SD.

Student Literacy Achievement Results

Acadience Results

95 PLL schools showed substantial growth over the year. The percentage of students Well Below grade level reduced for both grades, and substantially more for the 95 PLL group in the fifth grade. Considering that older students have to gain multiple years of skills in one year to close gaps, seeing 20-30% of them advancing performance levels is encouraging evidence of effective intervention.

Figure 1. Acadience Reading Composite Status BOY-EOY by Grade and Group



In the fourth grade, the 95 PLL schools' student Acadience scores gained from BOY-EOY was 15 points higher than the comparison group, which was not considered a statistically significant difference. Descriptively, this acceleration translated into a slightly higher proportion of students reaching their grade-level benchmark in the 95 PLL schools versus the comparison schools.

In fifth grade, the 95 PLL schools' EOY Acadience score gains were more than double that of the comparison group, a statistically significant difference with a .68 effect size. This translated into a substantial transformation of the school profiles. The 95 PLL schools had more than twice the percentage of students on grade level mid-year than the comparison group. The 95 PLL schools also had a reduction in students who were Well Below grade level while the comparison group's proportion increased (see results in table form in the appendix).

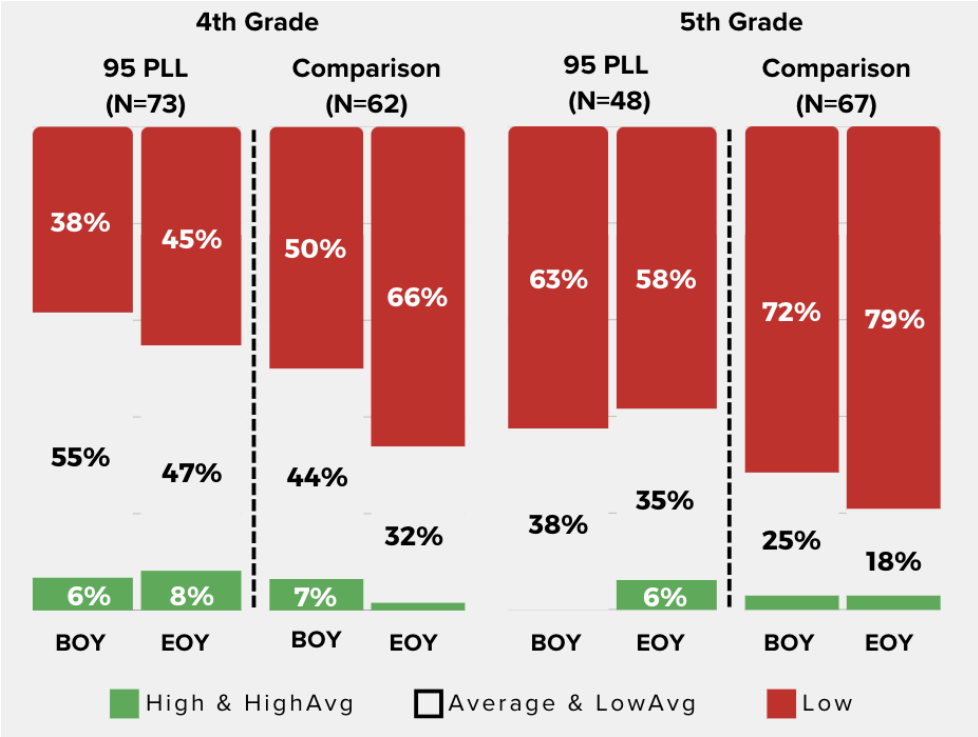
Table 7. Acadience Reading Composite Scores and T-tests Comparing Growth from BOY to EOY

Grade	Group	BOY		EOY		Mean Growth from BOY-EOY	Statistically significant?	Difference in Mean at EOY	Statistically significant?
		Mean	SD	Mean	SD				
Fourth	**95 PLL** (N=73)	134.82	92.66	267.05	157.39	132.23 points	No, t = .61 , = .54, **Cohen's *d* = .11**	95 PLL was 15 points higher at EOY	No, t = .56, p =.58 **Cohen's *d* = .10**
	Comp. (N=62)	128.63	95.04	252.40	147.56	123.77 points			
Fifth	**95 PLL** (N=48)	182.81	103.91	290.38	147.77	107.57 points	Yes, t = 3.53, p = .00, **Cohen's *d* = .68**	95 PLL was 66 points higher at EOY	Yes, t = 2.53, p = .01, **Cohen's *d* = .50**
	Comp. (N=67)	157.99	104.11	224.85	119.83	66.86 points			

NWEA MAP Growth Results

MAP Growth uses quintiles, based on normed reference percentile rankings, to organize RIT scores into ranges. To best understand change "within the red" for students receiving reading intervention, this paper combines the High and Average-High, Average and Average-Low, and keeps Low as its own quintile range. Many students did not make the gains needed to advance in MAP, falling into lower ranges by the end of the year. Only the 95 PLL 5th graders reduced the proportion of students in Low and increased in High/High-Average.

Figure 2. MAP Growth RIT Range BOY-EOY by Grade and Group



Fourth-grade students using 95 PLL scored 8 points higher than the comparison group on the end-of-year assessment, the difference trending towards significance (see note under Table 8). 95 PLL students also showed more growth from BOY-EOY than the comparison group, growing 5.55 points, whereas the comparison group grew 1.79 points. Table 8 below highlights the MAP achievement groups at EOY for both 95 PLL and comparison groups by grade level. At EOY, the majority (54.8%) of 95 PLL fourth graders were in the high or medium achievement groups. Alternatively, the comparison fourth graders had 33.9% in the high or medium achievement groups while the majority (66.1%) were in the low achievement group (at or below the 20th percentile).

Fifth-grade students using 95 PLL performed similarly to the fourth graders and scored significantly higher (by 8.5 points) at EOY than the comparison group (see Table 7). Additionally, 95 PLL fifth graders improved 7.92 points from BOY-EOY on the MAP Growth assessment, while comparison fifth graders only improved 1.18 points. As for the achievement groups at EOY (in Table 8), 41.7% of fifth grade 95 PLL students were in the medium or high achievement groups, whereas 20.9% of comparison students were in the medium or high groups, with the other 79.1% of comparison students in the low achievement group.

Table 8. MAP RIT Scores and t-tests Comparing Growth from BOY to EOY

Grade	Group	BOY		EOY		Mean Growth from BOY-EOY	Statistically significant?	Difference in Mean at EOY	Statistically significant?
		Mean	SD	Mean	SD				
Fourth	**95 PLL** (N=73)	182.42	15.94	187.97	17.56	5.55 points	Yes, $t = 2.57$, $p = .01$, **Cohen's *d* = .44**	95 PLL was 8 points higher at EOY	Essentially yes*, $t = 1.95$, $p = .05$, **Cohen's *d* = .34**
	Comp. (N=62)	178.40	16.86	180.19	17.52	1.79 points			
Fifth	**95 PLL** (N=48)	185.33	14.31	193.25	17.09	7.92 points	Yes, $t = 2.64$, $p = .01$, **Cohen's *d* = .50**	95 PLL was 8.5 points higher at EOY	Yes, $t = 3.37$, $p = .00$, Cohen's **d = .63**
	Comp. (N=67)	183.61	15.41	184.79	16.81	1.18 points			

* The threshold for statistical significance is set at $t = 1.96$. In this case, the result of $t = 1.95$ is close. Smaller samples make it harder to cross that threshold thus the reader should keep in mind that if there were one more student in the sample, it is likely the result would cross the statistical significance threshold. The effect size is further evidence that the result is meaningful; thus LXD have practical significance here paired with near statistical significance.

Table 9. MAP Growth Achievement Groups for End of Year

Grade	Group	Treatment Group				Comparison Group			
		N	High	Medium	Low	N	High	Medium	Low
Fourth	BOY	73	6.8%	54.8%	38.4%	62	6.5%	43.5%	50.0%
Fourth	EOY	73	8.2%	46.6%	45.2%	62	1.6%	32.3%	66.1%
Fifth	BOY	48	–	37.5%	62.5%	67	3.0%	25.4%	71.6%
Fifth	EOY	48	6.2%	35.4%	58.3%	67	3.0%	17.9%	79.1%

Note. To form three groups from MAP achievement quintiles, the high average and high achievement groups were combined to form the high achievement group and the average and low average achievement groups were combined to form the medium achievement group. The resulting groups correspond to: high = at or above the 61st percentile, medium = 21st to 60th percentile, low = the bottom 20th percentile (per percentiles from NWEA, 2022).

Note. Percentages that may not add to precisely 100 are due to rounding.

Multilevel Model of Fourth and Fifth Graders

To further assess MAP growth from BOY to EOY, all fourth and fifth-grade students were analyzed together using a multilevel model to account for school-level differences when measuring the impact of the 95 PLL. 95 PLL students significantly outperformed the comparison group (b = 6.77, t = 3.79, $p < .05$) while allowing school-level variability (via a random intercept for school and a random slope for treatment condition) and controlling for BOY MAP scores, minority status, gifted status, disability status, LEP status, and gender. Being in the treatment group was associated with growing an extra 6.77 points, even after accounting for everything else in the model. Further, the model showed a significant negative relation between BOY MAP scores and growth from BOY to EOY, signaling that students who scored lower at BOY grew more. Taken together, the results presented earlier in this report still hold when accounting for a variety of factors that could contribute to between-group differences, both in terms of the treatment group growing more than the comparison group and in terms of students who started more behind growing more on average.

The random effects portion of the model indicated that the effect of the treatment varied between schools after controlling for covariates. Since there were two treatment schools, this means that one school showed more growth on average, controlling for covariates. In other words, one school benefitted even stronger than the other from the treatment. More detailed results are available in Table A2 in the Appendix.

Subdomain Scores

Acadience Growth Subdomain Scores

A deeper investigation into each subdomain score was conducted to understand if there were any patterns of improvement in each grade. Fourth grade saw similar growth between 95 PLL and comparison schools, except slightly higher growth in the Retell score, which is a reading comprehension measure. As expected due to the large fifth-grade gains, 95 PLL fifth graders outperformed the comparison group in all subdomains. The chart below presents the findings from the various t-tests conducted (see the appendix for statistical details).

Table 10. Acadience Subdomains for Fourth and Fifth Graders

Grade	ORF Words Correct		ORF Accuracy		Retell Score		Maze	
	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth
Fourth	-	-	-	-	-	✔+	-	-
Fifth	✔+	√	-	✔+	✔+	✔+	✔+	✔+

✔+ = Cohen's d greater than .40
✔ = PLL group was statistically significantly higher or grew more
√ = Approaching significance

NWEA MAP Growth Subdomain Scores

While Acadience focuses more on oral reading fluency, NWEA MAP Growth measures reading comprehension and word meaning skills in more detail. A deeper investigation into each MAP subdomain score was conducted to understand if there were any patterns of improvement in each grade. The table below summarizes these findings that provide insights into each grade's literacy skill growth (see the appendix for statistical citations). MAP results showed that 95 PLL fourth graders had higher EOY scores on goals related to Language, Craft, and Structure (Goals 2 and 4) and Vocabulary than non-PLL students. In fifth grade, 95 PLL students had higher EOY scores across Goals 1-4, all of the comprehension subdomains.

Table 11. MAP Subdomains for Fourth and Fifth Graders

Grade	Goal 1: Literary Text: Key Ideas and Details		Goal 2: Literary Text: Language, Craft, and Structure		Goal 3: Informational Text: Key Ideas and Details		Goal 4: Informational Text: Language, Craft, and Structure		Goal 5: Vocabulary: Acquisition and Use	
	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth	EOY Means	BOY-EOY Growth
Fourth	√	-	✔+	✔+	√	-	✔	-	✔	-
Fifth	✔+	✔+	✔	-	✔+	✔+	✔+	✔+	-	-

✔+ = Cohen's d greater than .40
✔ = PLL group was statistically significantly higher or grew more
√ = Approaching significance

EOY Ohio State Test Results

Correlations

For context, LXD ran correlations between 2024 EOY Ohio State Test (OST) scores with 2024 MAP Growth RIT scores and Acadience Reading Composite Scores at BOY and at EOY. All correlations were positive and statistically significant, ranging from .6 to .8. State test scores had stronger correlations with RIT scores than with Reading Composite Scores. Among these correlations, strongest correlations were for the 2024 fourth graders, with r = .74 at BOY and r = .82 at EOY. This trend existed to varying degrees, where EOY with EOY correlations were consistently larger than BOY with BOY correlations, which makes sense logically. (The smallest difference in BOY and EOY correlations was for 2024 fifth graders' Reading Composite Scores, but the EOY with EOY correlation was indeed larger than the BOY with EOY correlation before rounding in Table 12 below.)

Table 12. Matrix of Correlations with 2024 EOY Ohio State Test Scores

Cohort - 23-24	RIT Score BOY	RIT Score EOY	Reading Composite Score BOY	Reading Composite Score EOY
Grade 4	.74*	.82*	.60*	.64*
Grade 5	.63*	.69*	.61*	.61*

* = statistically significant

Comparing Spring 2023 OST Mean Scores to Spring 2024 Mean Scores

For the fourth graders (Grade 3 in 22-23 school year -> Grade 4 in 23-24 school year cohort), the treatment group had a notably higher mean OST score (671.91) versus the comparison group (656.34), though the difference was not significant when controlling for 2023 OST scores. However, a statistically significant difference was detected between the treatment and comparison groups when looking at the fifth graders (Grade 4 in 22-23 school year -> Grade 5 in 23-24 school year cohort) alone (highlighted in Table 13 below) and when looking at both cohorts combined. This fifth grade finding feels especially meaningful because the treatment and comparison groups met baseline equivalence with mean scores of 651 versus 650 for Spring 2023 OST scores, and then the treatment group was much higher in Spring 2024, with a mean of 674.3 versus 657.7 for the comparison group. When examining both grade cohorts combined, there was a statistically significant difference with a treatment mean of 672.6 and comparison mean of 657.1.

Table 13. Grade 5 ANCOVA Comparing Treatment & Comparison Year 2 OST scores, with Year 1 OST Scores as a Covariate

	F	*p*
OST Score 2023	14.73	.00*
Group	6.25	.01*

* = statistically significant

Comparing Difference in OST Growth from Year 1 to Year 2

Although t-tests comparing the difference in OST growth from year 1 (2022-2023) to year 2 (2023-2024) were not significant for the G3 -> G4 cohort, there was a significant difference between the treatment and comparison groups for the G4 -> G5 cohort. 95 PLL fifth graders grew 23.4 points from year 1 to year 2 versus the comparison fifth graders only grew 8.2 points (t = 2.19, p = .03, Cohen's d = .46.).

Observation & Educator Results

Site Visit Summary

Two LXD researchers visited Youngstown City Schools to observe the 95 PLL program in action as well as understand the intervention programming in the comparison classrooms. The observers viewed 12 classrooms using 95 PLL (6 fourth grade and 6 fifth grade) and 12 comparison classrooms (8 fourth grade and 4 fifth grade). The treatment school observations were all small group lessons where 1-6 students were using 95 PLL and the rest of the class used Mindplay, completing individual activities. A limited number of the comparison classrooms had small-group interventions, but instead used their intervention time to have students complete reading/writing activities on Mindplay. The average lesson time observed in each classroom was 22.5 minutes. Notably, in all of the 95 PLL classrooms, researchers found that most of the students (above 75% of the class/intervention group) were engaged throughout the entire lesson observed. In only 42% of the comparison classrooms was student engagement over 75% throughout the lesson. LXD researchers observed that 100% of the 95 PLL classroom teachers used instructional language about phonics such as digraphs, vowel teams, short/long vowels etc. In contrast, 66% of comparison classroom teachers used instructional language when teaching - typically about a text/passage such as paragraph, summary, and punctuation. 100% of comparison classrooms used technology (individual chromebooks) whereas none of the 95 PLL lessons used technology.

Having specifically observed instruction and strategies that teachers used during the intervention period, 95 PLL teachers had a substantial amount of phonics instructional strategies present in 40% of the classrooms observed, while comparison classrooms only had 5%. Most notably, 92%

of 95 PLL classrooms had a substantial amount of students reading decodable words in isolation whereas 58% of comparison classrooms only had some reading of decodable words in isolation. 95 PLL classrooms had a substantial level of using gestures to represent syllables as seen in 58% of their classrooms while no comparison classrooms included this strategy. Refer to Figures 3a-3b for more details on the phonics instructional strategies used in 95 PLL and comparison classrooms. When looking at reading comprehension and fluency instructional strategies taught in both groups, the differences between the treatment and comparison groups were minimal.

Figure 3a. Phonics Instructional Strategies in 95 PLL Classrooms

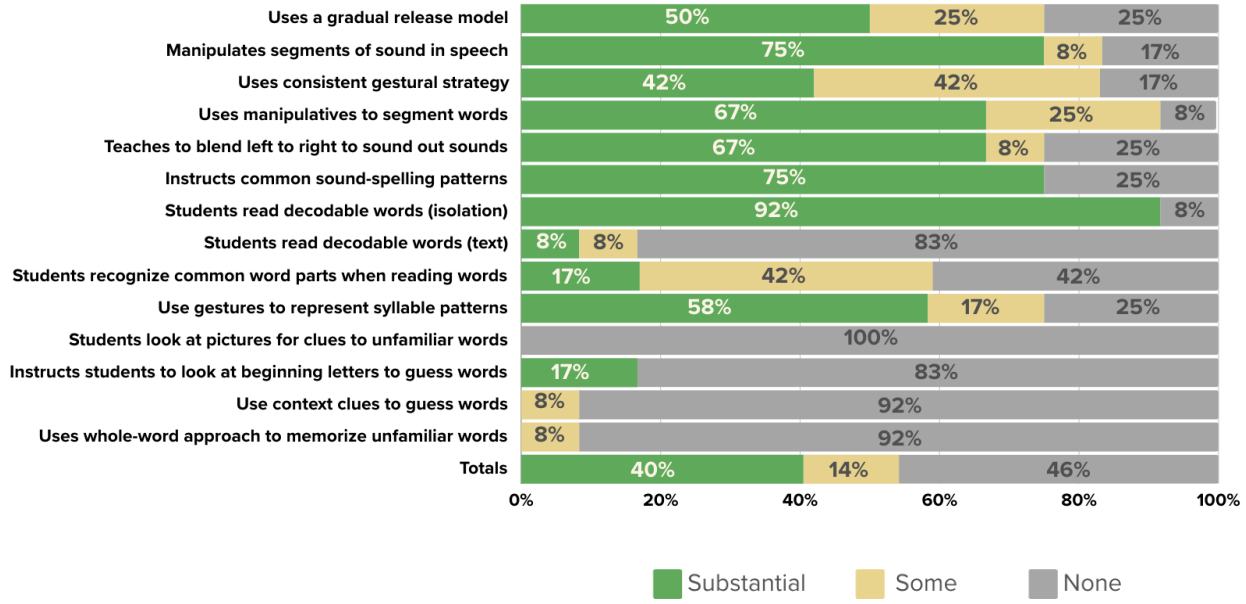
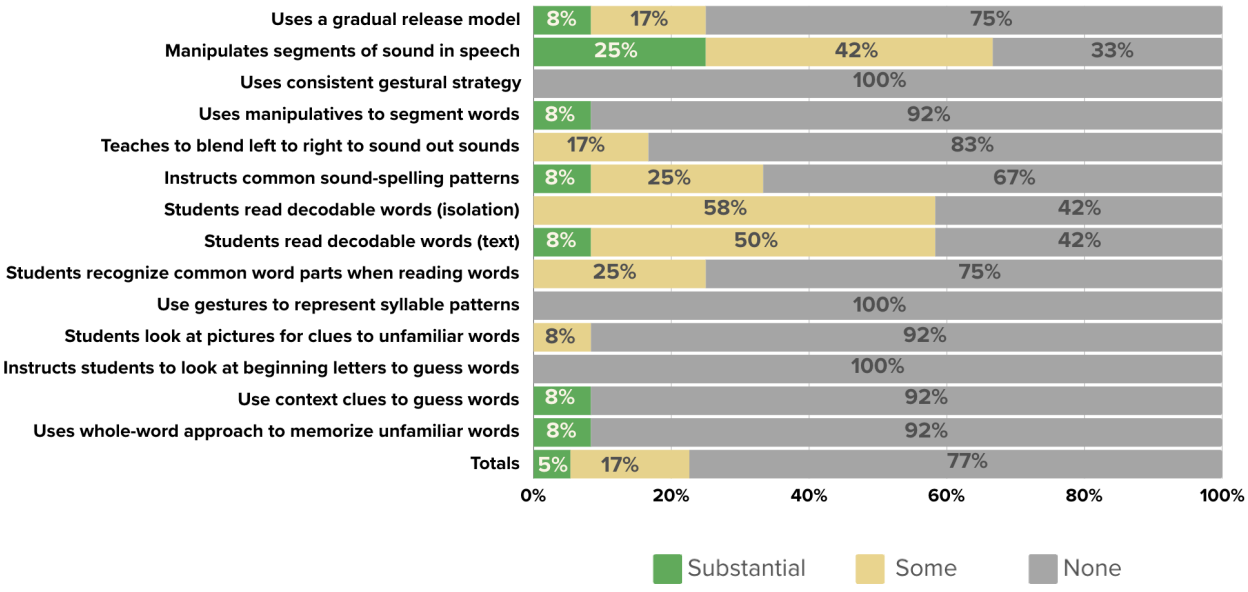


Figure 3b. Phonics Instructional Strategies in Comparison Classrooms



Regarding other practices, researchers observed that resources and activities used in the 95 PLL lessons were organized along a gradient of difficulty that aligned to the skills order in the program a substantial amount (25%). In the comparison classrooms, this alignment was more challenging to observe - researchers noted that no comparison group teacher had a substantial level of this practice, and only 8% of classrooms observed had some alignment between resources and program skill order. Refer to Figure 4a-4b below for a visual representation.

Figure 4a. Other Practices in 95 PLL Classrooms

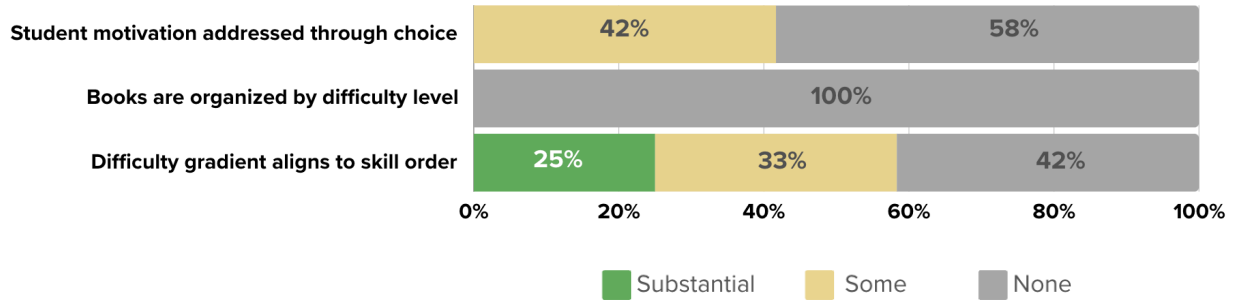
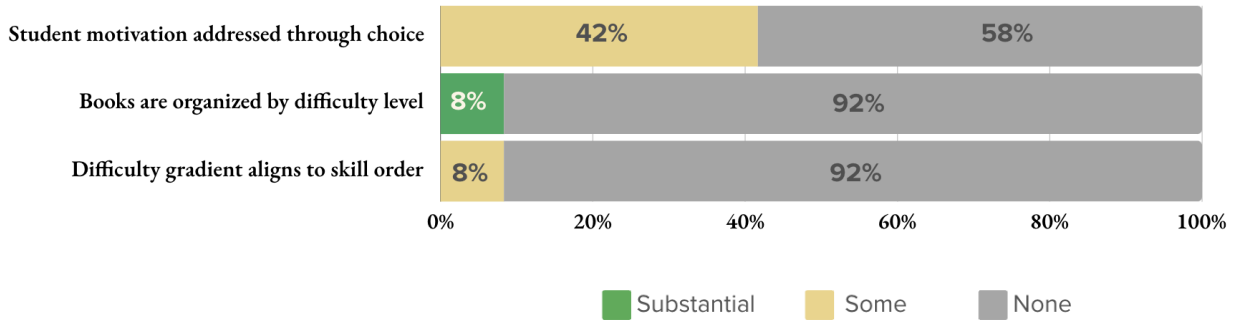
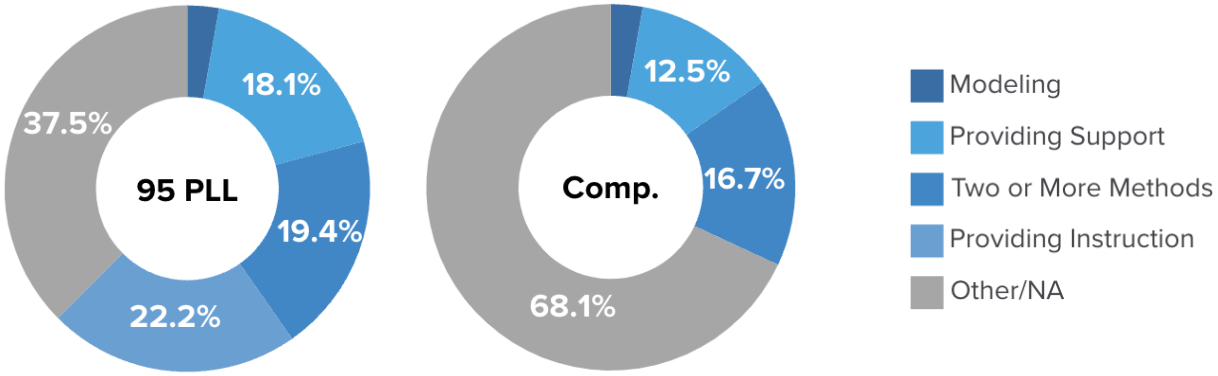


Figure 4b. Other Practices in Comparison Classrooms



Based on these same site observations, researchers also noted differences in teaching methods throughout the observed lesson. In 95 PLL classrooms, researchers observed teachers mainly providing instruction (22.2%), providing support (18.1%) or using multiple methods to instruct (19.4%, i.e. supporting, modeling, specifically instructing). While in the comparison classrooms, the majority of teachers were either providing specific instruction (16.7%) or fell under the category of "other" which researchers then identified as mostly progress monitoring students or completing other activities while students were working (68.1%). Refer to Figure 5 below for more details.

Figure 5. 95 PLL and Comparison Classroom Teaching Methods



Teacher Survey Summary

A survey was conducted among 14 participants from the two treatment schools, primarily consisting of classroom teachers, with three participants serving as interventionists. The participants' teaching experience varied, from 1 to 20 years. The most frequently used Tier 1 product was Benchmark and all teachers used 95 PLL for their Tier 2/3 interventions. Intervention instruction was provided by a combination of teachers, special educators, and reading interventionists. Approximately half of the participants reported dedicating 60 minutes daily to intervention, with 29% spending 30 minutes a day. All participants expressed some level of comfort with using and teaching 95 PLL, although 29% reported only being somewhat comfortable. 15% of participants felt that 95 PLL was not well aligned with the Tier 1 reading program, and 23% were “unsure” of its alignment. However, most participants found 95 PLL to be beneficial for struggling readers and supportive of students' foundational literacy skills. Additionally, the least reported benefit of using 95 PLL was its ability to expose students to diverse books and texts, specifically at the fourth-grade level.

Regarding 95 PLL components, the placement tests, word cards, and student manipulative kits were reported to work well for most teachers and were most frequently used. The STAR digital teacher companion was the least used. More than half of the participants felt they had sufficient time to implement 95 PLL as instructed, although passages were reported to be the areas where teachers spent more time as it takes struggling readers longer to read the passages. Two participants mentioned that sight words and chip kits had to be removed to fit the lesson within the given timeframe. Furthermore, the majority of participants received professional learning to support the implementation of 95 PLL through 95 Percent Group. Specifically, 46% of participants attended the initial implementation training provided by the 95 percent group, and 36% received onsite coaching. The quality of the 95 PLL professional learning was reported to range from fair to excellent by the participants. Half of the participants indicated that they felt objectives were

fully met in the professional learning sessions. While all participants attended these sessions, 17% found them to be not engaging, and a small minority (two) teachers expressed that the training was insufficient. However, the majority of participants felt that the pacing of the sessions was ideal. This feedback suggests the need for a review of the professional learning sessions to ensure they are engaging and adequately comprehensive for all participants.

Admin Interview Summary

Treatment

LXD Research conducted four interviews with administrators from schools implementing 95 PLL. These interviews revealed various perspectives on the program's implementation and efficacy. The participants' education experience ranged from a second-year instructional coach to a principal with seven years of leadership and 31 years of teaching. Participants had minimal prior experience with 95 Percent Group instructional programs, but instead used West Virginia Phonics Intervention and Keys to Literacy and Vocabulary.

95 PLL interventions were generally scheduled five days a week, with sessions ranging from 20-30 minutes each. One participant reports having an hour-long intervention period for 4th grade. It was common to use Acadience for initial student assessment and 95 Percent Group's Phonics Screener for Intervention (95 PSI) for group formation during the implementation of 95 PLL. Upon using 95 PLL, participants characterized the materials to be of high quality, appreciating the structured and purposeful instruction. It was noted by one educator that the detailed scripts were particularly helpful for instruction. Teachers reported seeing significant growth and confidence in students, with notable improvements in accuracy scores on Acadience assessments across all grades. For example, one educator noted 4th-grade scores improved from 29% at or above grade level at the BOY to 44% at or above by the EOY. One educator also noted English Language Learners (ELL) and Special Education (SPED) students showed marked improvements in accuracy. More specifically, it is reported that students gained confidence in decoding multisyllabic words, which was an area of difficulty before using 95 PLL. This improvement was perceived to support student reading fluency and comprehension.

Educators also reported a significant boost in confidence in providing intervention instruction. The specificity and clarity of the 95 PLL materials reduced guesswork and provided a reliable framework for teaching. However, some participants noted the frustration at the beginning due to acclimation to new materials, but overall, teachers found the routines and pacing beneficial by the end of the year. All administrators report their teachers wanting more onboarding to the materials. The professional learning provided by 95 Percent Group was perceived to not be sufficient in making the teachers feel proficient in the materials. Administrators noted that an educator strike occurred right after the training so this could have impacted the uptake. The teachers went into more detail in the focus group (summary below).

Comparison

To understand what the comparison schools are using for Tier 2 and Tier 3 instruction, in December 2023 and January 2024, LXD Research conducted interviews with three instructional coaches from separate comparison schools in the Youngstown School District in Youngstown, Ohio. The instructional coaches have extensive experience in education, averaging over 23 years of classroom teaching and coaching experience across grades K-7. They oversee Tier 2 and 3 curricula for grades K-6 at their respective schools where they provide teaching support and resources. The coaches also participate in weekly professional learning community (PLC) sessions to analyze student achievement data and identify appropriate interventions. Students receive 50 minutes of intervention daily, focusing on reading four days a week and math for one day. All coaches shared that their schools use West Virginia Phonics as the primary resource for intervention and utilize supplemental material as necessary. These supplemental materials include 95 Percent Group Vocabulary Surge, Kid LiPS (Lindamood Phoneme Sequencing®), and other materials found on Teacher Pay Teachers, an online marketplace for buying and selling educator resources.

All coaches use Acadience scores for student placement in interventions and base instructional decisions on current data discussions with teachers. They also conduct classroom walkthroughs to assess reading instruction and provide support where needed. Overall, the comparison schools in Youngstown have experienced coaches working to support teachers in understanding Acadience data to support the decision-making process with teachers about teacher moves and placing students in the right intervention tier.

Focus Group Summary

LXD Research conducted two focus groups with each treatment school where interventionists, SPED specialists, teaching assistants, and classroom teachers who used 95 PLL during the 2023-2024 school year with their 4th and 5th grade students were able to discuss and share their thoughts on its quality, impact, and professional development. Overall, participants held a largely positive view of the program, its student materials, and the supporting resources for educators. This district has extensive Science of Reading training and appreciated that 95 PLL aligns with and supports much of what they have in place already. However, as 4th and 5th grade teachers, many of them do not have a solid understanding of phonics instruction specifically as the upper elementary grades tend to focus on comprehension. This impacted how quickly the teachers felt comfortable implementing the program with the majority of them saying it took 4-6 weeks or even longer using the program with their students. Their concerns revolved around professional development and support as they suggested having trainings include more specific details for upper elementary grades, more hands-on experience with the materials before using with students, and videos be more realistic to actual classroom settings. A notable event that could have impacted their feelings on the professional development and comfortability timeline is that at the beginning of the school year right after the 95 PLL training day, all of the teachers

went on strike for 23 days. Teachers noted that this gap in training to practice and a feeling of rushing back to normalcy after concluding the strike impacted their implementation of 95 PLL in the Fall heavily. However, teachers valued the structure of 95 PLL and could rely on the teacher's edition and resources to deliver quality instruction to their students.

Conclusion and Next Steps

Intervention programs are responsible for closing reading gaps so these programs must be strong and effective. 95 PLL's systematic, explicit, and repeated instruction allowed students to accelerate their development in foundational reading skills. Fourth and fifth grade students in 95 PLL schools showed more growth in literacy scores across the year than in comparison schools. Importantly, groups of students were able to catch up to their grade-level peers and end the year at or above grade level in reading.

On Acadience Reading, fourth graders made meaningful progress across the year, with schools in each condition ending with statistically similar scores. Fifth grade students in 95 PLL schools outperformed the comparison schools by 66 points, a statistically larger gain with an effect size of .50. This progress translated into a higher proportion of students reaching their grade level benchmark while comparison students' Well Below Benchmark group increased in size.

The NWEA MAP Growth assessment also showed growth for 95 PLL students. Fourth and fifth graders using 95 PLL had significantly higher scores on the EOY assessment than the comparison students. Additionally, 95 PLL fifth graders made enough progress to reduce the proportion of students in the Low quintile, while the comparison group's Low quintile increased in size. In other words, 95 PLL students caught up throughout the year, while the comparison students fell farther behind.

Supplementarily, on the Ohio State Test, 95 PLL fifth graders grew significantly more from Spring 2023 to Spring 2024 than the comparison fifth graders, showing almost triple the growth over comparison scores. This finding encourages that growth on district wide assessments such as MAP Growth and Acadience Reading can be evident on the state assessment.

This study did have some limitations. The attrition was larger than expected, most likely due to a highly transient student population. Because of the attrition, not all students from the start of the year could be included in this analytic sample. Interviews with the schools revealed that fourth graders in the study increased the intensity of the 95 PLL intervention with additional lessons each week during Winter 2024. However, there was no empirical data to account for this inconsistent implementation in the analysis. Likewise, monitoring of the comparison group's usage per student was not available. The potential impact of various intensities of usage of reading interventions with fourth and fifth graders could be a focus of future research.

Based on this study's extensive qualitative data collection, educators implementing 95 PLL expressed an overall positive view of the program, its materials, and its impact on student reading. Educators expressed how students were improving as one teacher put, "*I would 100% recommend PLL to a colleague. We had fifth graders who entered on a second grade reading level who are performing on grade level thanks to PLL*". Teachers also pointed out that they were becoming better educators as they were now equipped with the tools and knowledge to teach phonics effectively as a teacher said, "*I learned a lot from PLL as compared to other curricula. It explains why you're doing what you're doing, which makes it quicker to get on board with*". While educators had overall positive feelings, they had a large learning curve when beginning to implement, partially because fourth and fifth grade teachers do not typically have training in teaching phonics, but mostly because a teacher strike created a gap between the professional development and the application which naturally impacted the comfortability of program implementation.

Overall, the findings show significant and meaningful results indicating the use of 95 PLL can improve a student's reading knowledge and assessment scores for striving older readers. These results are consistent with previous research on 95 PLL showing that explicit instruction of science of reading skills can improve reading. To conclude, it is important for curriculum developers to invest in third-party research of their products to understand the impact and learn from educators on its usage in a real classroom. 95 Percent Group has shown a commitment to third-party research, and commented, "*Our commitment to evidence-based practices underscores our dedication to equity in education, ensuring that every learner has access to high-quality literacy instruction supported by research-driven practices.*" Such research not only advances the field of education and best practices as a whole, but it also serves as an example to guide education product development that encourages the prioritization of equitable, evidence-based strategies and resources.

References

Acadience Learning. (2020). Acadience Reading Information [PDF]. Retrieved from https://acadiencelearning.org/wp-content/uploads/2020/07/Acadience_Reading_Info.pdf

Amplify. (2023). With end-of-year data showing continued academic recovery in early literacy, worries remain for third grade students. RESEARCH BRIEF.

Evidence for ESSA: Standards and Procedures, Version 2.1, August 2024, Evidence for ESSA, Available online from: www.evidenceforessa.org

King, Gary, Christopher Lucas, and Richard A. Nielsen. 2017. "The Balance-Sample Size Frontier in Matching Methods for Causal Inference." *American Journal of Political Science* 61(2): 473-89.

Kuhfeld, M., Lewis, K., & Peltier, T. (2023). Reading achievement declines during the COVID-19 pandemic: evidence from 5 million US students in grades 3–8. *Reading and Writing*, 36(2), 245-261.

National Center for Education Statistics. (2022). Nation's report card. National Assessment of Educational Progress. Retrieved from https://www.nationsreportcard.gov/highlights/reading/2022/#closer-look-student-performance-grade-4

NWEA. (2022) What RIT is used to determine the goal area ranges like Lo, LoAvg? https://connection.nwea.org/s/article/What-RIT-is-used-to-determine-the-goal-area-quintiles?language=en_US

Shanahan, T. (2020). What constitutes a science of reading instruction?. Reading Research Quarterly, 55, S235-S247.

U.S. Department of Education Mentoring Resource Center (2008). Making the transition to middle school: How mentoring can help. MRC: Mentoring Resource Center Fact Sheet, No. 24. Retrieved from http://fbmentorcenter.squarespace.com/storage/MiddleSchoolTransition.pdf

Toste, J. R., Capin, P., Williams, K. J., Cho, E., & Vaughn, S. (2019). Replication of an experimental study investigating the efficacy of a multisyllabic word reading intervention with and without motivational beliefs training for struggling readers. Journal of Learning Disabilities, 52(1), 45-58.

Vaughn, S., Kieffer, M. J., McKeown, M., Reed, D. K., Sanchez, M., St Martin, K., ... & Yañez, A. (2022). Providing Reading Interventions for Students in Grades 4-9. Educator's Practice Guide. WWC 2022007. What Works Clearinghouse.

West Virginia Board of Education & Marshall University. (2023). WEST VIRGINIA PHONICS AND WORD RECOGNITION STANDARDS COMPANION. Retrieved from https://www.marshall.edu/eltac/files/2023/12/FINAL-EDUCATOR-GUIDE.pdf

Appendix

Table A1. Acadience Reading Composite Statuses

Grade	Time of Year	Treatment Group				Comparison Group			
		N	% On/Above Benchmark	% Below Benchmark	% Well Below Benchmark	N	% On/Above Benchmark	% Below Benchmark	% Well Below Benchmark
Fourth	BOY	73	–	15.1%	84.9%	62	–	14.5%	85.5%
Fourth	EOY	73	26.0%	19.2%	54.8%	62	22.6%	21.0%	56.5%
Fifth	BOY	48	–	27.1%	72.9%	67	–	23.9%	76.1%
Fifth	EOY	48	18.7%	27.1%	54.2%	67	3%	14.9%	82.1%

Note. Percentages that do not add to precisely 100 are due to rounding.

Table A2. Multilevel Model Results for 4th and 5th Grade MAP Growth from BOY to EOY, Accounting for School Membership, Minority Status, and BOY Scores

Fixed Effects	*b*	*SE*	*t*	*p*
(Intercept)	34.63*	11.35	3.05	.00
Group (treatment)	**6.77***	1.78	3.79	.02
BOY MAP Score	**-0.27***	.05	-5.86	.00
Minority	-2.28	1.66	-1.37	.17
Gifted	9.68	4.91	1.97	.05
Emotional disability	2.20	8.83	.25	.80
Intellectual Disability	**15.38***	7.59	2.03	.04

Multiple Disabilities	-2.07	7.80	-.27	.79
No Disability	19.69*	7.02	2.81	.01
Minor Disability	11.04	7.64	1.45	.15
Specific Learning Disability	10.98	7.19	1.53	.13
1st Tear LEP	-4.34	4.92	-.88	.38
2+ Years LEP	**3.22**	2.79	1.16	.25
Male	**1.52**	1.28	1.19	.24
Random Effects	**Variance**			
School (Intercept)	4.70			
Group (treatment)	**5.26**			

Results for Acadience Subdomains for Fourth and Fifth Graders

Fourth Grade:

- ORF WC
  - EOY means: t = .16, p = .87, Cohen's d = .03
  - Growth from BOY to EOY: t = 1.10, p = .27, Cohen's d = .19
- ORF Accuracy
  - EOY means: t = .50, p = .62, Cohen's d = .08
  - Growth from BOY to EOY: t = .45, p = .66, Cohen's d = .08
- Retell Score
  - EOY means: t =.19 , p = .85 , Cohen's d = .04
  - Growth from BOY to EOY: t = 2.06, p = .04, Cohen's d = .403
- Maze

- EOY means: t = .90, p = .37, Cohen's d = .16
- Growth from BOY to EOY: t = .34, p = .74, Cohen's d = .06

Fifth Grade:

- ORF WC
  - EOY means: t = 2.11, p = .04, Cohen's d = .42
  - Growth from BOY to EOY: t = 1.82, p = .07, Cohen's d = .35
- ORF Accuracy
  - EOY means: t = .61, p = .54, Cohen's d = .13
  - Growth from BOY to EOY: t = 2.48, p = .01, Cohen's d = .43
- Retell Score
  - EOY means: t = 2.38, p = .02, Cohen's d = .48
  - Growth from BOY to EOY: t = 2.74, p = .01, Cohen's d = .58
- Maze
  - EOY means: t = 3.28, p = .00, Cohen's d = .64
  - Growth from BOY to EOY: t = 3.73, p = .00, Cohen's d = .73

Results for MAP Subdomains for Fourth and Fifth Graders

Fourth Grade:

- Goal 1: Literary Text: Key Ideas and Details
  - EOY means: t = 1.85, p = .07, Cohen's d = .32
  - Growth from BOY to EOY: t = .91, p = .37, Cohen's d = .16
- Goal 2: Literary Text: Language, Craft, and Structure
  - EOY means: t =3.55 , p = .00, Cohen's d = .62
  - Growth from BOY to EOY: t = 3.22 , p = .00, Cohen's d = .55
- Goal 3: Informational Text: Key Ideas and Details
  - EOY means: t = 1.78 , p = .08, Cohen's d = .30
  - Growth from BOY to EOY: t = .48, p = .63, Cohen's d = .08
- Goal 4: Informational Text: Language, Craft, and Structure
  - EOY means: t = 2.44, p = .02, Cohen's d = .42
  - Growth from BOY to EOY: t = 1.44, p = .15, Cohen's d = .25
- Goal 5: Vocabulary: Acquisition and Use
  - EOY means: t = 2.06, p = .04, Cohen's d = .35
  - Growth from BOY to EOY: t = 1.13, p = .26, Cohen's d = .20

Fifth Grade:

- Goal 1: Literary Text: Key Ideas and Details
  - EOY means: t = 2.49, p = .01, Cohen's d = .48
  - Growth from BOY to EOY: t = 2.15, p = .03, Cohen's d = .42

- Goal 2: Literary Text: Language, Craft, and Structure
    - EOY means: $t = 2.14$, $p = .03$, Cohen's $d = .39$
    - Growth from BOY to EOY: $t = 1.06$, $p = .29$, Cohen's $d = .19$
- Goal 3: Informational Text: Key Ideas and Details
    - EOY means: $t = 2.50$, $p = .01$, Cohen's $d = .48$
    - Growth from BOY to EOY: $t = 3.40$, $p = .00$, Cohen's $d = .64$
- Goal 4: Informational Text: Language, Craft, and Structure
    - EOY means: $t = 3.21$, $p = .00$, Cohen's $d = .62$
    - Growth from BOY to EOY: $t = 3.38$, $p = .00$, Cohen's $d = .62$
- Goal 5: Vocabulary: Acquisition and Use
    - EOY means: $t = 1.57$, $p = .12$, Cohen's $d = .29$
    - Growth from BOY to EOY: $t = 1.46$, $p = .15$, Cohen's $d = .27$

LXD Research is an independent research firm that evaluates educational programs with ESSA-aligned methods.

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