



PHONOLOGICAL AWARENESS
LESSONS RESEARCH STUDY
KINDERGARTEN,
2022-2023 SCHOOL YEAR,
FINAL REPORT

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August, 2023

LXD RESEARCH
95 PERCENT GROUP LLC



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 2: Moderate

- ✓ Study has compared experimental groups to control groups through matching
- ✓ Matching/weighting conducted prior to posttest collection or during the early stage of intervention implementation
- ✓ Studies with fewer than 50 clusters or 350 students need to demonstrate pretest equivalence
- ✓ The dependent variable(s) include a quantitative measure of academic achievement
- ✓ Study duration is at least 12 weeks, from program inception to posttest
- ✓ Study has at least 2 teachers and 30 students per treatment
- ✓ From pretest to posttest, attrition (dropout) is similar between experimental and control groups
- ✓ Study uses a form of a program that could in principle be replicated
- ✓ If subjects were assigned or treated in clusters (classes or schools), statistical significance for clustered designs used HLM, with pretests and other variables as covariates, or other methods accounting for clustering



95 Phonological Awareness Lessons Research Study

Kindergarten, 2022-2023 School Year, Final Report

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Abstract

This study measures the impact of 95 Percent Group's Phonological Awareness Lessons (PA Lessons), an intervention program designed for kindergartners for Tier 2 or 3. The study is a replication of a study conducted in the same medium-sized school district in California during 2021-2022. Students Below or Well Below Benchmark in Fall 2022 were assessed with Acadience® Reading was used to compare literacy growth from 2022-2023 using a quasi-experimental design, aligning with Moderate evidence standards associated with ESSA Level. The study follows 536 kindergarten students from 11 schools, 260 in the treatment group, and 276 in the comparison group. The demographic characteristics of the comparison group included 56% males, 3% with special education (SPED) status, 45% English Language Learners (ELL), 88% were Hispanic, and 24% identified as foster/homeless. Similarly, the treatment group demographics comprise 51% males, 2% with SPED status, 36% ELL, 87% were Hispanic, and 21% identified as foster/homeless. Results showed that using PA Lessons substantially impacted student growth for Tiers 2 & 3 across the school year with a Cohen's d effect size .84, which is more than twice as large as previous studies. PA Lesson schools reduced Well Below Grade Level by 25 percentage points from Fall to Spring (72% to 47%). Alternatively, comparison schools only reduced the group by 20 percentage points from Fall to Spring (79% to 59%). Notably, an additional 10% of students ended the year At or Above Benchmark for the grade level (36% PA Lessons vs. 26% Other Schools).

Keywords: 95 Percent Group, literacy, phonological awareness, Acadience Reading assessment, intervention, kindergarten, evaluation

Introduction

Reading is a necessary skill to have in order to learn. Some students may struggle with reading and need more intensive, individualized instruction outside of the core curriculum. The Multi-tiered system of support (MTSS) is a framework for reading instruction that outlines 3 tiers of support: Tier 1 is the core program for all students, Tier 2 is more intensive intervention to close the achievement gap for struggling readers, and Tier 3 is for at-risk readers and is the most intensive and individualized intervention. Having struggling readers participate in an intervention program can help them significantly progress their reading ability than if they did not participate in an intervention (Carta et al). Specifically, kindergarten through first grade is a critical time period for reading instruction (Mader, 2021). Stanley, Petscher, and Catts (2015) completed a longitudinal study showing direct effects between kindergarteners' nonsense word and letter naming fluency to tenth graders' reading comprehension indicating the importance of gaining foundational reading skills in kindergarten for their future skills. Additionally, Hogan, Catts, and Little (2005) found that specifically phonological awareness instruction and achievement can predict second grade word reading. A meta-analysis of the impact of phonemic awareness instruction on learning to read conducted by the National Reading Panel detailed how systematically teaching phonemic awareness improved reading ability for not only students who are on-track for reading, but also for at-risk readers (Ehri et al., 2001). Phonological awareness is an umbrella term referring to an individual's ability to discern the phonological structure or the smaller units of a word such as the syllable, onset and rime, phoneme structure (Gillon, 2018). Providing phonological awareness lessons to kindergarten students can improve their reading acquisition, but students need to be explicitly taught phonological skills in order to successfully develop them (Bentin & Leshem, 1993). A longitudinal study looking at a group of students who received phonological intervention in kindergarten outperformed the students who did not received the phonological intervention in word reading and reading comprehension in grades 1-9 (Kjeldsen et al., 2019) showing how specifically teaching phonological awareness skills in kindergarten can have a lasting impact on students' reading ability.

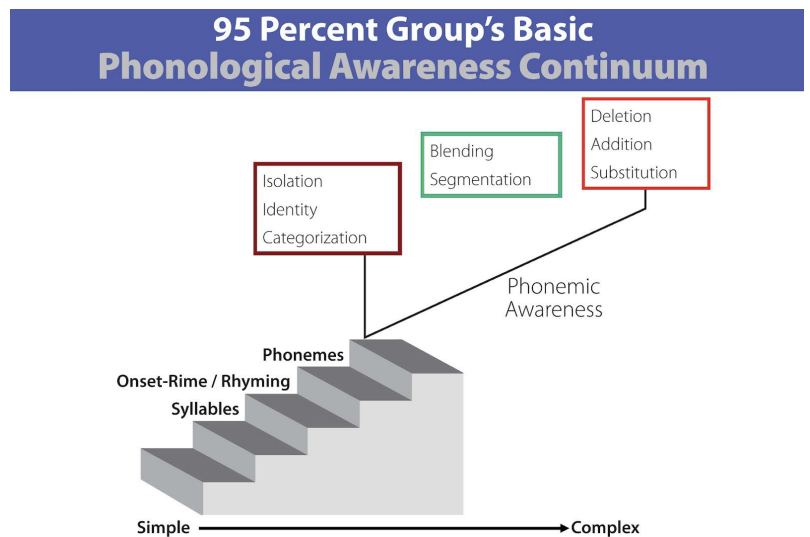
95 Percent Group, LLC contracted with Learning Experience Design Research (LXD Research), an independent research firm within Charles River Media Group focusing on education. LXD Research designs rigorous research studies, multifaceted data analytic reporting, and dynamic content to disseminate insights. This 2022/2023 study measures the full-year impact of Phonological Awareness Lessons (PA Lessons) in a medium-sized school district in California. The study is a replication study of Schechter & Lynch (2023a), conducted in the same school district (Val Verde Unified School District) during the 2021-2022 school year. This study keeps the same school groups (treatment with PA Lessons and comparison without the PA Lessons), and therefore uses a quasi-experimental design to generate evidence of the program's impact that aligns with evidence standards associated with ESSA Level 2 (Moderate). Half of the schools used the program last year and are continuing to use PA Lessons with a new group of kindergartners. The other half of the schools are

continuing to use their usual programs, as they did last year. This report describes the full year results from September 2022 to May 2023.

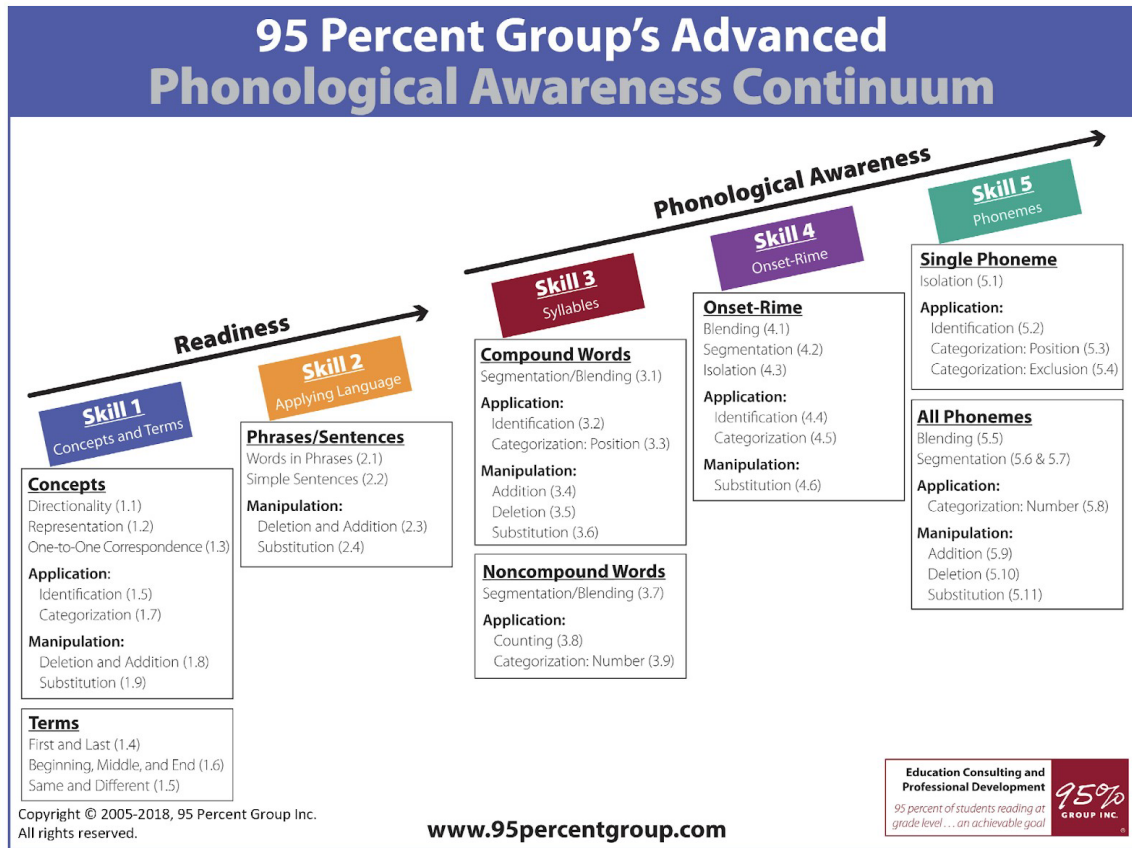
Determining the impact of a new program in a classroom may benefit from evaluating the program over a few years after initial implementation to capture how the teacher experience and comfort with the program might alter student outcomes. Teacher experience has been shown to be positively correlated with student achievement gains and other student success metrics in a meta-review of 30 studies that were conducted across multiple grade levels, content areas, and geographic locations (Kini & Podolsky, 2016). In particular, teaching effectiveness rises sharply in the first few years and continues to rise through the teacher’s second or third decade of teaching (Kini & Podolsky, 2016). For instance, one study found that teachers reported the administration of a Kindergarten Readiness Assessment to be less burdensome in implementation Year 2 when compared to Year 1 (Schachter et al., 2019). Teacher comfort with implementing a new program might also positively correlate with teaching effectiveness and observing an impact on measures of student outcome.

Study Program Description

The Phonological Awareness (PA) Lessons are designed primarily for Tier 2 or Tier 3 phonological awareness intervention for kindergarten. In the study, the PA Lesson intervention included the use of an initial diagnostic screener, and then the use of the 95 Percent Group’s Phonological Awareness Screener for Intervention™ (PASI) to group students into intervention groups based on skill needs every three weeks. Students who were Below or Well Below Benchmark are identified for intervention through use of Acadience® Reading and then placed into lessons along the Phonological Awareness Continuum using the PASI. The PA Lessons support students who are not meeting benchmarks through comprehensive lesson plans that target skills aligned with the Phonological Awareness Continuum, from readiness (understanding concepts and terms; applying language) through phonological awareness (syllables; onset rimes; phonemes). Students received 20-30 minutes of daily intervention through a push-in model, in small groups of three to four students who are at similar levels. Instructors monitor progress through alternate forms of the PASI and use this data to re-group students every 3 weeks based on the lowest skill on the continuum that needs



support. Instruction is grounded in and aligned with evidence-based instructional practices in literacy. Once students reach mastery of skills for their grade level, they have completed the intervention.



Comparison Programs

A comparison school survey was conducted during the 2021/2022 school year to better understand what “business as usual” looked like in their classrooms. Most teachers (42%) responded that they used their core curriculum, Wonders, to support Tier 2 and Tier 3 reading intervention. A small group of teachers also mentioned using Heggerty Phonemic Awareness resources (17%). At the time of this report, neither of these products had efficacy research for Kindergarten (Table 1). Comparison schools implemented intervention in a variety of ways, usually pulling students out for thirty minutes for Tier 3 and using small group instruction during the reading block for Tier 2.

Table 1. ESSA-Level Evidence on Comparison School programs for Kindergarten

Product	Evidence for Tier 1	Evidence Tiers 2 - 3
Wonders	None	None
Heggerty	None	None

Research Methods

The goals of the research activities were to measure student literacy progress. District leaders supported data collection and arranged support product coaching services. Those activities included:

- Conducting Acadience Reading K-6 with all students at the beginning of the year (BOY)
- Conducting PASI at the start of the year and every three weeks for progress monitoring (with treatment schools)
- Conducting and sharing Acadience Reading with all students in the middle of the year (MOY)
- Conducting and sharing Acadience Reading with all students in the end of the year (EOY)

This report focuses on the gains from BOY to EOY on Acadience Reading.

Reading Assessments

Acadience Reading K-6 assessments were administered by a special assessment team (not classroom teachers). As a set of curriculum-based measures Acadience Reading assesses student development as a reader. Designed for universal screening and progress monitoring to determine the appropriate supports for each student, Acadience is administered three times per year in the fall, winter, and spring. Assessments take between 3 and 11 minutes per student to complete. Scores include standardized scale scores and on-grade achievement-level placements. Kindergarten Acadience Reading subtests are listed in Table 2, along with the skills they assess and the benchmark goals for the times of year they are administered (the measures administered vary by time of year based on expected skill development). Note that the LNF measure does not have benchmark goals because it is an indicator of risk rather than an indicator of a basic early literacy skill. At each administration period, subtest scores are weighted and combined into a Composite Score, which is an overall indicator of reading ability. Since this is a full year study, the only scores presented in this report are the Composite Score and LNF Score.

Table 2. Acadience Reading Subtests, Skill Coverage, and Benchmark Goals in Kindergarten

Subtest	Indicators of These Basic Early Literacy Skills	Benchmark Goals		
		BOY	MOY	EOY
First Sound Fluency	Phonemic Awareness	X	X	
Phoneme Segmentation Fluency	Phonemic Awareness		X	X
Letter Naming Fluency	Indicator of Risk	N/A	N/A	N/A
Nonsense Word Fluency	The Alphabetic Principle and Basic Phonics		X	X
Composite	Overall Estimate of Reading Ability	X	X	X

Implementation Description

Training to support kindergarten teachers was provided throughout last year and this year (2022-2023). The special assessment team participated in an initial workshop followed by three coaching visits at their respective schools. Coaches provided guidance on how to use the beginning of year assessments to place students in initial groups. Treatment schools used the PASI to place students into groups for the PA Lessons, used during intervention time. With each cycle, teachers created student groups to focus on specific PA or Phonics skills. Over time, students advance through the 95 Percent Group PA Continuum. In addition to a virtual training at the start of the year, instructional coaches visited classrooms and provided feedback three times during the 2022-2023 school year.

Teacher Survey

To learn more about the teacher experiences with using 95 Percent Group intervention products for a second year, a teacher survey went out to all teachers at the district. While a relatively small sample of teachers replied, respondents represented a variety of schools.

Sample Description

A total of 536 kindergarten students from 11 schools who were well below/below benchmark in the Fall of 2022 participated in a quasi-experimental design examining the effects of the 95 Percent Group's PA Lessons in the Val Verde, California school district between the Beginning of Year (BOY) 2022 and End of Year (EOY) 2023. Of these students, 260 were in the treatment group and 276 were in the comparison group (see Table 3).

We employed Chi-Square analyses to compare students in the treatment and control groups in regard to gender, special education status (SPED), English Language Learner status (ELL), Hispanic race/ethnicity and rates of Foster/Homelessness. Results suggested there were no statistically meaningful differences between the treatment and control groups in regard to gender, SPED, Hispanic race/ethnicity and rates of Foster/Homelessness (see Table 4). However, students enrolled in the control group were more likely to be ELL ($\chi^2=4.66$, $p = .03$) than students enrolled in the treatment group.

Table 3. Sample sizes at baseline and the end of year

School Group	BOY	EOY	Matched Sample
	# of Students	# of Students	# of Students
Treatment	260	251	251
Comparison	276	260	260
Total	536	511	511

Table 4. Sample demographics

Group	Male	SPED	ELL	Hispanic	Foster/ Homelessness
Comparison	56%	3%	45%	88%	24%
Treatment	51%	2%	36%	87%	21%

Baseline Reading Assessment Scores

In Tables 5a-b, we report t-test results comparing baseline assessment scores in the students enrolled in treatment and comparison groups and their effect sizes (Cohen's d). Students enrolled in the treatment and comparison groups were similar in their baseline (BOY) Composite and LNF scores.

Table 5a. Reading Composite Score: T-tests were run for Kindergarten Well Below/ Below students.

Condition	Number of Students	BOY Composite Average Score	SD	Significance	Effect Size Cohen's d
Comparison	260	8.71	7.88	.81	.02
Treatment	251	8.87	7.92		

Table 5b. LNF Score: T-tests were run for Kindergarten Well below/ Below students.

Condition	Number of Students	BOY LNF Average Score	SD	Significance	Effect Size Cohen's d
Comparison	260	4.07	5.09	.30	.09
Treatment	251	4.53	5.00		

Analytical Approach

Three level hierarchical linear regression models (HLMs) with time (level 1) nested within students (level 2) nested with schools (level 3) were employed to examine growth in composite and subscale scores. All models contained a series of covariates including gender ("female"; 1=female, 0=male), SPED status ("sp"; 1=SPED, 0=non-SPED), ELL status ("ELL"; 1=ELL, 0=non-ELL), Hispanic ethnicity ("his"; 1= Hispanic, 0=Not Hispanic), an indicator of fostering/homelessness ("foshom"; 1= in foster care or homeless, 0=not in foster care or homeless), an indicator of time ("Time"; 1=BOY, 2=EOY), an indicator of whether the student was in the treatment or control group ("kintervention"; 1=Treatment, 0=Control), and an interaction between time and group calculated as the product of Time*group ("Tigr").

We explored main effects of treatment vs control group by considering the significance of the interaction between time and group (“Tigr”). A significant interaction term would suggest that the slope (i.e., growth) in composite or subscale score is different for the treatment versus control groups. All analyses were conducted using the statistical software package R 3.6.2.

Results

Teacher Survey

A total of 10 teachers responded to the phonics intervention survey, 4 of which were Kindergarten teachers or interventionists. 100% of Kindergarten teachers agreed/strongly agreed that PA Lessons were easy to use, implement, and understand learning goals. Additionally, respondents agreed that they have the confidence to teach a full lesson. 75% of Kindergarten respondents used the PA Lessons for the second year in a row. All Kindergarten teachers felt very comfortable using PA Lessons and 75% of them felt the program aligns to literacy standards. Even though the teacher's level of experience varied from 7 years to 31 years, there was agreement that they found the interventions easier to use and more effective the second year of implementation. In response to why it's easier the second year, teachers responded, “First year it took us time to fully understand and iron out all the kinks. This year we started right away with a plan we already knew worked” and noted the biggest differences between the first year and second year were, “Knowledge and comfort of instruction”, “More consistent and slightly more significant growth”, and “I know what to expect. My cognitive load is lighter”. These snippets of insights from the educators allows us to get a better understanding of their perspective using PA Lessons after the second year.

Fall to Spring Literacy Gains

Within the Kindergarten Well Below/Below Benchmark sample, we examined growth in Composite and Letter Naming Fluency (LNF) scores. Within the Kindergarten well below/below benchmark sample, we examined growth in Composite and LNF scores. There was a significant effect of treatment on composite ($B=34.78$, $p<.001$, $f^2=.02$) scores (see Figure 1) and LNF ($B=4.17$, $p=.006$, $f^2=.01$) scores (see Figure 2) with students in the treatment group demonstrating more growth in composite and LNF scores than students in the comparison group. Since there was not a significant effect of treatment on LNF scores from BOY to MOY (Schechter & Lynch, 2023b), it seems a full year of use was needed to see an impact on this measure. Complete output for each model can be found in [Appendix 1](#). Results of t-tests (and their associated effect sizes) comparing growth in composite scores between the treatment and comparison groups can be found in [Appendix 2](#).

Table 6. BOY to EOY Gains

Test	School Group	Gains BOY-EOY	Standard Deviation	Statistically Different?	Effect Size Cohen's d
Composite Scores	Comparison	87.27	44.19	Yes, the PA Lesson group had higher gains than the comparison group (p<.001).	.84
	PA Lessons	121.55	37.35		
LNF Scores	Comparison	32.64	18.03	Yes, the PA Lesson group had higher gains than the comparison group (p=.01).	.23
	PA Lessons	36.57	16.64		

Figure 1. Kindergarten students in the treatment group demonstrated significantly more growth in Composite scores than students in the comparison group

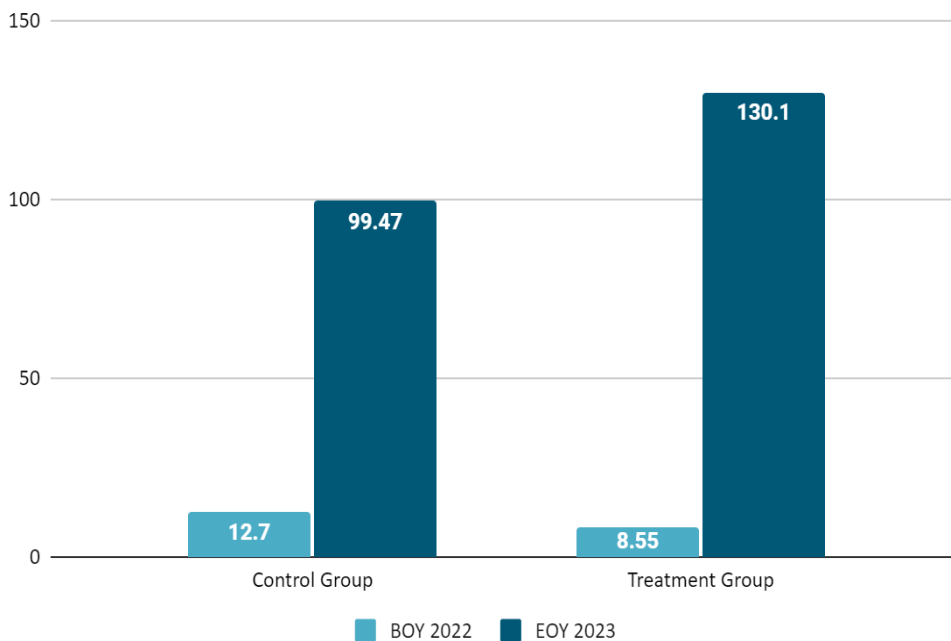
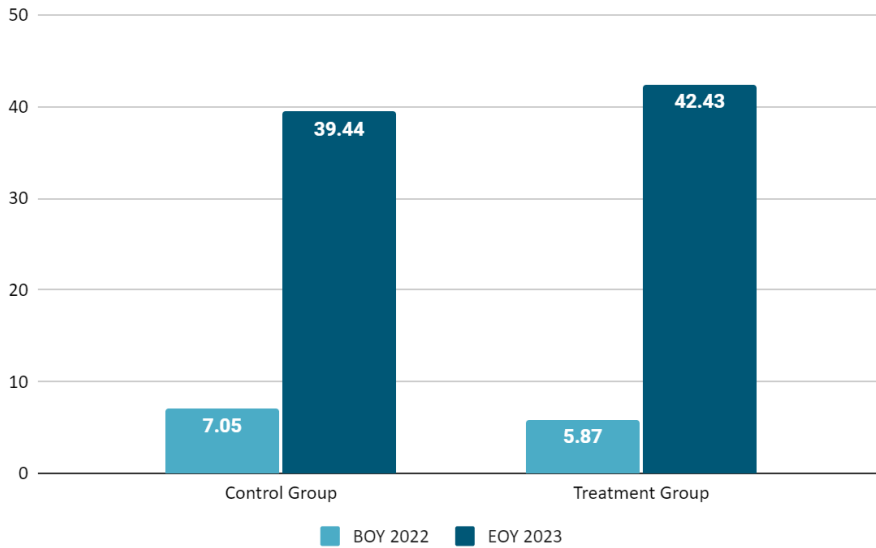


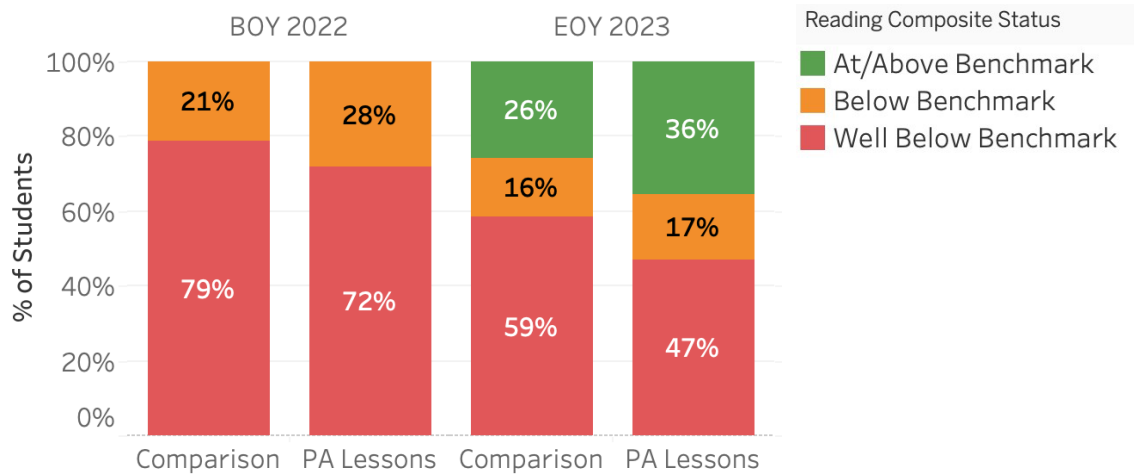
Figure 2. Kindergarten students in the treatment group demonstrated significantly more growth in LNF scores than students in the comparison group



Change of Composite Levels

Using PA Lessons made a substantial impact on student growth for Tiers 2 & 3 over the course of the year. PA Lesson schools had reduced Well Below Grade Level by 25 percentage points from Fall to Spring (72% to 47%). Comparison schools only reduced the group by 20 percentage points from Fall to Spring (79% to 59%). Notably, an additional 10% of students ended the year At or Above Benchmark for the grade level (36% PA Lessons vs. 26% Comparison Schools).

Figure 3. Kindergarten students in the treatment group a larger proportion of students At/ Above Benchmark by the end of the year



Note: percentages may not add up to 100% due to rounding

Conclusion


The impact of the PA Lessons during its second year of use by the treatment schools resulted in twice the effect size than seen in the last BOY to MOY study (Schechter & Lynch, 2022). These large effects demonstrate that after a year or more of experience using the PA Lessons, teachers can use them more effectively to change student's performance levels by the end of the year. Not only did the PA Lessons group outperform the comparison group on the Acadience Reading Composite Scores and the Letter Naming Fluency Scores, the PA Lesson sample had an additional 10 percent of students at or above grade level at the end of the year.

The teacher survey revealed most notably that all teachers felt comfortable implementing PA Lessons, thought the program was easy to use, and could understand the learning goals. Teacher experience levels varied from 7 to 31 years and all teachers felt the second year of intervention was easier to use and more effective than the first year. Respondents indicated that the second year allowed the teachers to already know how the program worked, the benefits, and they could see more student growth.

There were a few limitations in the present study that future studies could help address. The study did not include observations of students or monitor students' weekly regrouping, which leaves open questions about implementation and how the PA Lessons were used. Additionally, the comparison group was not observed directly, but was instead based on what the previous year showed for the comparison group. Following these students over time would allow for better understanding of how strong PA skills impact student literacy trajectories.

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Appendix 1: Statistical Output

For below or well below students:

- Composite score: (B=34.78, p<.001) - significant differences between treatment and control group
- LNF score: (B=4.17, p=.006) - significant differences between treatment and control group

Composite Score

<i>Predictors</i>	<i>Estimates</i>	comp	
		<i>CI</i>	<i>p</i>
(Intercept)	-74.07	-87.17 – -60.98	<0.001
Time	86.77	81.81 – 91.73	<0.001
female	4.15	0.51 – 7.80	0.025
hispanic	0.73	-4.91 – 6.37	0.800
ELL	-4.11	-7.92 – -0.29	0.035
sp	-52.67	-65.69 – -39.65	<0.001
foshom	-1.90	-6.30 – 2.50	0.398
kintervention	-38.93	-56.37 – -21.50	<0.001
Tigr	34.78	27.71 – 41.85	<0.001
Random Effects			
σ^2	824.74		
τ_{00} X.95ID:M_SchoolName	4.52		
τ_{00} M_SchoolName	126.31		
ICC	0.14		
$N_{X.95ID}$	510		
$N_{M_SchoolName}$	11		
Observations	1018		
Marginal R ² / Conditional R ²	0.752 / 0.786		

LNF Score

<i>Predictors</i>	<i>Estimates</i>	lnf	
		<i>CI</i>	<i>p</i>
(Intercept)	-25.34	-30.55 – -20.13	<0.001
Time	32.39	30.30 – 34.48	<0.001
female	0.83	-0.81 – 2.47	0.319
hisp	-0.61	-3.14 – 1.92	0.634
ELL	-2.47	-4.19 – -0.76	0.005
sp	-15.91	-21.65 – -10.17	<0.001
foshom	-1.21	-3.19 – 0.77	0.230
kintervention	-5.35	-12.07 – 1.37	0.118
Tigr	4.17	1.19 – 7.15	0.006
Random Effects			
σ^2	146.90		
$\tau_{00} X.95ID:M_SchoolName$	11.01		
$\tau_{00} M_SchoolName$	15.88		
ICC	0.15		
$N_{X.95ID}$	510		
$N_{M_SchoolName}$	11		
Observations	1020		
Marginal R^2 / Conditional R^2	0.638 / 0.694		

Appendix 2: Effect Sizes Based on t-tests

In the tables below we report effect sizes (Cohen's d) resulting from dependent samples t-test that compared growth, BOY average and EOY average in Composite and LNF Scores in the treatment and control groups.

Condition	Number of Students	Average difference in Composite between BOY and EOY	SD	Significance	Effect Size Cohen's d
Control	258	87.27	44.19	p<.001	.84
Treatment	251	121.55	37.35		

Condition	Number of Students	BOY Composite Average	SD	Significance	Effect Size Cohen's d
Control	260	8.71	7.88	.81	.02
Treatment	251	8.87	7.92		

Condition	Number of Students	EOY Composite Average	SD	Significance	Effect Size Cohen's d
Control	258	95.97	47.19	<.001	.79
Treatment	251	130.42	39.40		

Condition	Number of Students	Average difference in LNF between BOY and EOY	SD	Significance	Effect Size Cohen's d
Control	260	32.64	18.03	p=.01	.23
Treatment	251	36.57	16.64		

Condition	Number of Students	BOY LNF Average	SD	Significance	Effect Size Cohen's d
Control	260	4.07	5.09	.30	.09
Treatment	251	4.53	5.00		

Condition	Number of Students	EOY LNF Average	SD	Significance	Effect Size Cohen's d
Control	260	36.71	18.76	.006	.24
Treatment	251	41.09	17.35		