Impact of the RedThread Literacy Program in New York Charter Schools: A School-Level Quasi-Experimental Study

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EXECUTIVE SUMMARY

In this quasi-experimental study, we examined the impact of the RedThread Literacy Program on student achievement in 32 New York charter schools. The study was designed according to the *What Works Clearinghouse Procedures and Standards Handbook v5.0* (WWC, 2022). Measures included school-level achievement (i.e., percent of students meeting or exceeding proficiency benchmarks) on the New York State English Language Arts (ELA) assessment and school-level demographics.

- The study used a school-level Intent-to-Treat (ITT) design. Schools that contracted with Lavinia Group, a division of K12 Coalition, to use the RedThread curricula were matched to comparison schools that did not use RedThread.
- Propensity score matching was used to achieve a well-balanced analytic sample of 92 schools, including all 32 treatment schools with available data and 60 comparison schools with similar characteristics.
- The analytic sample included students in grades 3-8 from demographically diverse charter schools across the state of New York.
- Data sources were publicly available datasets from the New York State Education Department, including demographics and ELA achievement percentages from the 2023-2024 and the 2024-2025 school years. Data was retrieved at the grade-level within each school and aggregated to the school-level based on the grade levels included (3-8).
- Impact analyses using multiple linear regression and controlling for prior-year school-level achievement and demographics found a statistically significant effect of RedThread on literacy achievement: on average, schools that used RedThread had a four-percentage-point higher proportion of students meeting ELA proficiency benchmarks in 2024–2025 than similar comparison schools that did not use the program (ES = .23)
- Subgroup analyses found an even larger and statistically significant effect of RedThread in grades 6-8 (ES = .39) but did not find a statistically significant effect in grades 3-5.

INTRODUCTION

Overview of the RedThread Program

RedThread Literacy is a comprehensive K-8 English Language Arts (ELA) program developed by the Lavinia Group. The program is comprised of two core curriculum components. *RedThread Foundations* (K-5) is a systematic, structured phonics program teaching phonemic awareness, phonics, morphology, fluency, vocabulary, and comprehension, with students applying these skills through decodable texts in K-2 and complex grade-level texts in grades 3-5. *RedThread Knowledge* (K-8) is a multicultural, project-based reading and writing curriculum that integrates knowledge-building content, complex texts, and evidence-based writing.

Overview of the Evaluation

In September 2026, the Lavinia Group contracted with the Center for Research and Reform in Education (CRRE) at Johns Hopkins University to conduct a quasi-experimental design (QED) study to examine the impacts of RedThread Literacy on student achievement in New York charter schools that used the curricula in the 2024-2025 school year. To assess program impact, CRRE retrieved unaltered publicly available school-level demographic and performance data from the New York State Education Department (NYSED) website, along with a list of schools that implemented RedThread during the 2024-2025 school year. Data included ELA achievement proficiency percentages for the 2023-2024 (pretest) and 2024-2025 (posttest) school years for all charter schools in New York State. The following research questions guided the study design:

Research Questions

1. What are the impacts of using the RedThread curricula on school-level ELA proficiency?
2. Do program effects vary based on grade level and school characteristics (e.g., student ethnicity, ELL%, prior achievement)?

METHOD

Research Design

This study used a quasi-experimental, Intent-to-Treat (ITT) quasi-experimental design (QED) following the *What Works Clearinghouse Procedures and Standards Handbook v5.0* (WWC, 2022). Prior to the start of the 2024-2025 school year, 37 New York State charter schools contracted with the Lavinia Group to use the RedThread Literacy curricula, thus being assigned to the treatment group. The outcome measure for this study was the school-level percentage of students that met or exceeded the state's ELA achievement benchmark in the Spring of 2025.

Matching

Since assignment to the treatment group was not random (i.e., schools chose to contract with the Lavinia Group to implement RedThread curricula), Propensity Score Matching (PSM) was used to create a matched comparison group with similar baseline characteristics relative to the treatment group. The propensity score represents the probability of treatment assignment conditional upon observed baseline characteristics and is widely used as a balancing score (Austin, 2011). Propensity scores for all schools were calculated by using school-level characteristics to predict the probability of assignment to the treatment condition using a logistic function. School-level characteristics used during matching included prior ELA proficiency (i.e., percentages of students that met or exceeded ELA proficiency benchmarks in 2023-2024), the number of students in grades 3-5 and grades 6-8, and the percentage of students that were identified as Hispanic, Black, socioeconomically disadvantaged, English language learners (ELL), or receiving special education. Matches were selected from the comparison pool using a 1:2 nearest neighbor approach, meaning that up to two comparison schools could be matched to each treatment school. All matching procedures were conducted in Stata (v19).

Attrition and Missing Data

All schools with available pretest data were included in the matching process. Three treatment schools that were not eligible for inclusion due to missing pretest data were excluded prior to matching. Thirty-four treatment schools were successfully matched to 62 comparison schools. After matching (n = 96), four schools (4%) were considered attrited due to missing posttest data. The proportion of matched schools that were excluded from the analytic sample due to attrition was low in both the treatment (6%) and matched comparison (3%) groups (see Table 1). There were no other missing school-level demographic data in the matched analytic sample.

Table 1
School-Level Attrition

	# with pretest	# with posttest	Attrition
Treatment	34	32	6%
Comparison (matched)	62	60	3%
	Differential Attrition[2]		**3%**
	Overall Attrition[3]		**4%**

[2]Treatment group attrition minus Comparison group attrition.

[3]Total with pretest but no posttest data divided by total with pretest data.

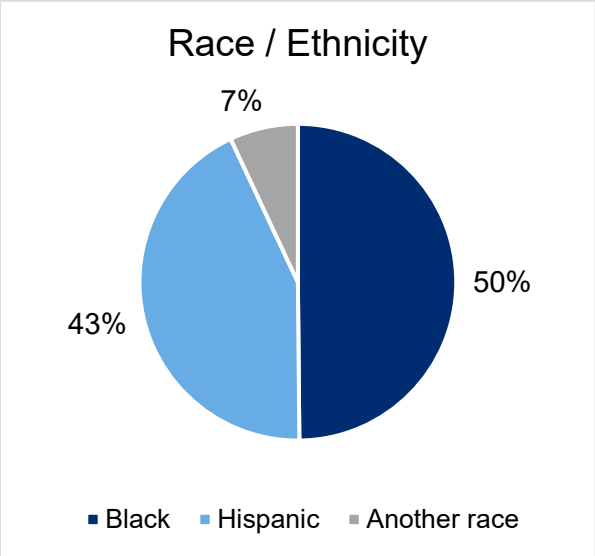
Participants

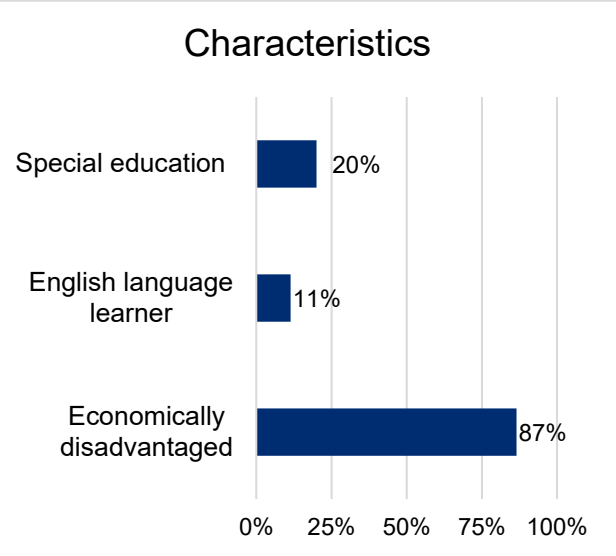
Details about participating schools included in the analytic sample are presented below.

79 school districts
(32 T; 47 C)

92 Grade K-12 schools
(32 T; 60 C)

Demographic snapshot of participating schools[1]





Most students in participating schools within the analytic sample were identified as Black (50%) or Hispanic (43%). Eighty-seven percent of these students were identified as economically disadvantaged, 20% were receiving special education, and 11% were English language learners. Table 1 displays baseline characteristics of the matched sample by study condition.

Baseline difference effect sizes were used to compare means and proportions of baseline characteristics across the treatment and comparison groups, using the procedures outlined by the What Works Clearinghouse (WWC, 2022). For continuous variables, the Hedges' *g* effect size was computed by dividing the unstandardized mean difference by the pooled within-group standard deviation and multiplying the result by a

[1] School-level averages. Publicly available data acquired from the New York State Department of Education.

small-sample correction factor (Hedges, 1981). For dichotomous variables, effect size differences were calculated using Cox's Index, which is designed to produce a comparable effect size measure to Hedges' *g* (WWC, 2022). Cox's Index applies a logarithmic to the odds ratio for the intervention group, subtracts the same for the comparison group and then divides by 1.65. As shown in Table 2, the matched groups were well balanced in terms of all characteristics.

Table 2
Demographics of the Schools in the Analytic Sample (N= 92)

	All N=92	Treatment schools n=32	Comparison schools n=60	Standardized mean difference	Effect size[1]
% Black	50%	47%	52%	0.10	0.20
% Hispanic	43%	47%	42%	0.10	0.20
% Economic disadvantage	87%	88%	86%	0.06	0.17
% English language learner	11%	12%	10%	0.06	0.20
% Special education	20%	21%	20%	0.03	0.06
# students grade 3-5 (Mean)	188.46	176.09	195.05	0.08	0.08
# students grade 6-8 (Mean)	132.14	136.19	130.00	0.02	0.02
ELA percent proficient in 2023-2024 (pretest)	56%	55%	56%	0.02	0.04

[1]Hedges' g or Cox's Index.

Measures

To address the research questions, the CRRE study team processed and analyzed administrative data housed at NYSED from the Spring of 2024 and the Spring of 2025. Measures included grade- and school-level percent achievement benchmarks, demographic characteristics, and treatment assignment, as described below:

School-level English language arts (ELA) achievement benchmarks were obtained from NYSED publicly available administrative datasets. The ELA assessment utilizes computer-based tests and performance tasks to measure English language arts/literacy competencies and is administered in grades 3-8. The outcome measure for the current study was the school-level percentage of students who tested at or above the state benchmark. The What Works Clearinghouse considers administrative data, such as NYSED records, to be valid and reliable (WWC, 2022).

School-level demographic characteristics. NYSED administrative datasets submitted by local school districts were also used to obtain demographic indicators, including race/ethnicity, economic disadvantage, English language learner status, special education status, district, school size, and grade bands.

School-level RedThread assignment. Lavinia Group provided CRRE with a list of NYSED charter schools that contracted to use the RedThread Literacy curricula. Usage metrics were not available for the current study and not necessary, given the Intent-to-Treat design.

Analytical Approach

Data for schools were analyzed descriptively by examining the mean, standard deviation, and range of ELA achievement benchmarks, as well as change from pretest (2024) to outcome (2025). Gains were calculated by subtracting pretest (2023-2024 literacy achievement) from the outcome (2024-2025 literacy achievement), with t-tests used to determine statistical significance. Multiple Linear Regression (MLR) was used to determine the impact of RedThread Literacy on ELA achievement benchmarks, controlling for demographic variables including race/ethnicity, economic disadvantage status, English language learner status, special education, and school size. Covariates were grand mean centered in order to obtain an interpretable intercept. All quantitative analyses were completed in Stata (version 19).

To facilitate the interpretation of the treatment effect, the unstandardized regression coefficient for the dichotomous predictor was transformed into a standardized effect size. Following conventional procedures (see Bornstein et al., 2019), the effect size was calculated by dividing the unstandardized regression coefficient by the pooled within-group standard deviation of the dependent variable. This transformation allowed for a scale-free measure of the treatment's magnitude relative to the variability of the outcome.

Finally, for the subgroup analyses, we created separate pretest and outcome measures of mean literacy achievement for grades 3-5 and 6-8 within each school in the analytic sample. We then estimated the same models used in the impact analysis separately for each grade band, restricting each analysis to schools serving that grade band.

RESULTS

The results section of the report begins with descriptive achievement results, followed by impact analyses comparing achievement outcomes controlling for baseline characteristics. Subgroup analyses are at the end of the results section.

Descriptive Achievement Results

Table 3 describes raw gains in school-level attainment of literacy achievement benchmarks, calculated by subtracting pretest (2023-2024 literacy achievement) from the outcome (2024-2025 literacy achievement).

Table 3

Descriptive Analysis of School-Level Literacy Gains

	Treatment *N* = 32		Comparison *N* = 60		Sig.	Effect size
	Mean	SD	Mean	SD		
Pre-test	0.55	0.02	0.56	0.02	0.743	0.07
Post-test	0.68	0.02	0.66	0.03	0.609	0.11
Pre-to-post gains	0.13	0.02	0.10	0.01	0.127	0.33

As shown in Table 3, schools in the treatment and comparison groups had similar proportions (~55%) of students that met or exceeded state benchmarks for literacy achievement during the 2023-2024 school year. While schools in both groups showed improvements in achievement in the 2024-2025 school year, gains were greater for the treatment group. On average, schools in the treatment group gained 13 percentage points from pre- to post-test, compared to 10 percentage points in the comparison group, however, this difference in gains was not statistically significant.

RedThread Literacy Impact Results

The impact analyses compared literacy achievement between conditions while accounting for baseline differences, including demographic characteristics (i.e., race/ethnicity, economic disadvantage, special education, English language learners, and school size), and pre-test scores. Table 4 presents impact results for the multiple regression model.

Table 4

Impact Analysis of RedThread on 2024-2025 School-Level Literacy Achievement (N = 92)

	Estimate	Standard error	*p* value	95% CI		Effect size
Treatment	0.04*	0.02	0.031	0.00	0.08	0.23
Constant	0.65***	0.01	0.000	0.63	0.68	

Note. * $p < .05$, *** $p < .001$.

The regression estimate can be interpreted as the average difference in 2024-2025 literacy achievement between the treatment and comparison groups, controlling for baseline characteristics and the previous year's literacy performance**.** On average, the treatment group scored four percentage points higher than the comparison group on school-level 2024-2025 literacy proficiency. This difference was statistically significant and associated with a strong effect size, indicating a meaningful positive impact of RedThread on school-level literacy achievement. Since covariates were centered on the grand-mean, the constant (i.e., intercept) can be interpreted as indicating that on average, 65% of students in a comparison school met or exceeded the state's literacy

achievement benchmark (compared to 69% of students in an average treatment school).

As expected, 2024 achievement was positively and significantly associated with 2025 achievement ($p < .001$). There was also a small but statistically significant effect of school size, which varied by grade bands: schools with more grade 6-8 students had lower achievement ($p < .001$), whereas schools with more grade 3-5 students had higher achievement ($p < .001$). None of the demographic characteristics included in the model (i.e., race/ethnicity, special education status, English language learner status, economic disadvantage, and special education) were statistically significant. Full regression results are shown in Table A1 in the Appendix.

Subgroup Analyses

Subgroup analyses included 80 schools (29 T, 51 C) in grades 3-5 and 53 schools in the grades 6-8 (23 T, 30 C). Schools in each subsample were balanced in terms of pretest scores between the treatment and comparison groups, with baseline effect size differences below <.25 SDs. Since some schools served grades K-8, the same school could be represented in both grade bands. Mean gain scores for each grade band subsample are shown in Table 5.

Table 5

Descriptive Analysis of School-Level Literacy Gains for Grade Band Subsamples

	N	Treatment		Comparison		Sig.
		Mean	SD	Mean	SD	
Pre-to-post gains in 3-5 grade band (M)	80	.17	.02	.14	.01	.142
Pre-to-post gains in 6-8 grade band (M)	53	.07	.10	.01	.05	.003

As shown in Table 5, schools in the treatment group had higher mean change than schools in the comparison group across both grade bands. Adjusted analyses comparing the impact of RedThread on achievement for each subgroup are shown in Tables 6 and 7.

Table 6

Impact Analysis of RedThread on 2024-2025 Literacy Achievement for Grades 3-5 (N = 80)

	Estimate	Standard error	*p* value	95% CI		Effect size
Treatment	0.03	0.02	0.156	-0.01	0.06	.19
Constant	0.67***	0.01	0.000	0.65	0.69	

Note. *** $p < .001$.

Table 7

Impact Analysis of RedThread on 2024-2025 Literacy Achievement for Grades 6-8 (N = 53)

	Estimate	Standard error	*p* value	95% CI		Effect size
Treatment	0.07**	0.02	0.005	0.02	0.11	.39
Constant	0.63***	0.01	0.000	0.60	0.66	

Note. ** $p < .01$, *** $p < .001$.

Consistent with the unadjusted results, the regression models adjusted for demographics and 2024 literacy achievement, showed that the impact of RedThread was statistically significant for grades 6-8 ($p = .005$, ES = .39) but not for grades 3-5 ($p = .156$). Given that matching was conducted at the school level (and not the grade level), the subgroup analyses should be considered exploratory.

DISCUSSION

The purpose of the present study was to evaluate the impact of RedThread Literacy on school-level literacy achievement. A quasi-experimental design was conducted to compare school-level ELA achievement percentages for schools that contracted with the Lavinia Group to use RedThread, relative to similar schools who did not use RedThread. Propensity Score Matching was performed to achieve a well-balanced analytic sample for the comparison.

RedThread Literacy's Impact on Achievement

Results showed a directionally positive and statistically significant effect of RedThread on school-level literacy achievement. The main model's effect size of .23 SDs is considered large and educationally meaningful in applied program evaluations (Kraft, 2020). Exploratory subgroup analyses also showed an even larger (ES = .39) and statistically significant effect of RedThread on school-level literacy achievement for grades 6-8, but the effect did not reach statistical significance for grades 3-5.

Methodological Considerations and Future Directions

The study was conducted according to WWC standards (2022), which conventionally form the basis for determining the Every Student Succeeds Act (ESSA) tiers of evidence. Analyses were conducted by a third-party evaluator (CRRE) and relied on publicly available administrative data from the New York State Education Department. All New York State schools assigned to use RedThread in the 2024-25 school year that had ELA score data were included in the study, consistent with an ITT design. Comparison schools were chosen based on prior ELA proficiency and school-level demographic variables. Both overall and differential attrition were low (4% and 3%,

respectively). Baseline differences on all variables were less than .25 standard deviations between the treatment and matched comparison samples. These design components helped to minimize potential bias in impact estimates. Results showed a large positive (ES = .23 SDs) and statistically significant effect of RedThread on school-level literacy achievement, with an even larger effect (.39 SDs) in exploratory analyses for grades 6-8. Future studies using student-level data to explore subgroup variation in achievement across study conditions would further illuminate patterns of response to the intervention. In conclusion, the findings provide evidence that RedThread literacy instruction can improve school-level literacy achievement.

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APPENDIX A:

Table A1

Results of Regression Model showing them Impact of RedThread on 2025 achievement (N = 92)

Variable	Coefficient	SE	t	p	[95%	CI]
RedThread	0.04	0.02	2.19	0.031	0.00	0.08
Literacy proficiency benchmark (M)	0.89	0.07	12.19	0.000	0.75	1.04
% Black	0.43	0.24	1.82	0.072	-0.04	0.90
% Hispanic	0.40	0.24	1.70	0.092	-0.07	0.87
% Economic disadvantage	-0.11	0.16	-0.73	0.468	-0.43	0.20
% English language learner	0.05	0.15	0.35	0.731	-0.25	0.36
% Special education	-0.08	0.13	-0.60	0.553	-0.33	0.18
# Grade 6-8 students (M)	-0.00	0.00	-3.89	0.000	-0.00	-0.00
# Grade 3-5 students (M)	0.00	0.00	3.29	0.001	0.00	0.00
Constant	0.65	0.01	50.76	0.000	0.63	0.68

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ESSA EVIDENCE

IMPACT OF THE REDTHREAD LITERACY PROGRAM IN NEW YORK CHARTER SCHOOLS:

A SCHOOL-LEVEL QUASI-EXPERIMENTAL STUDY

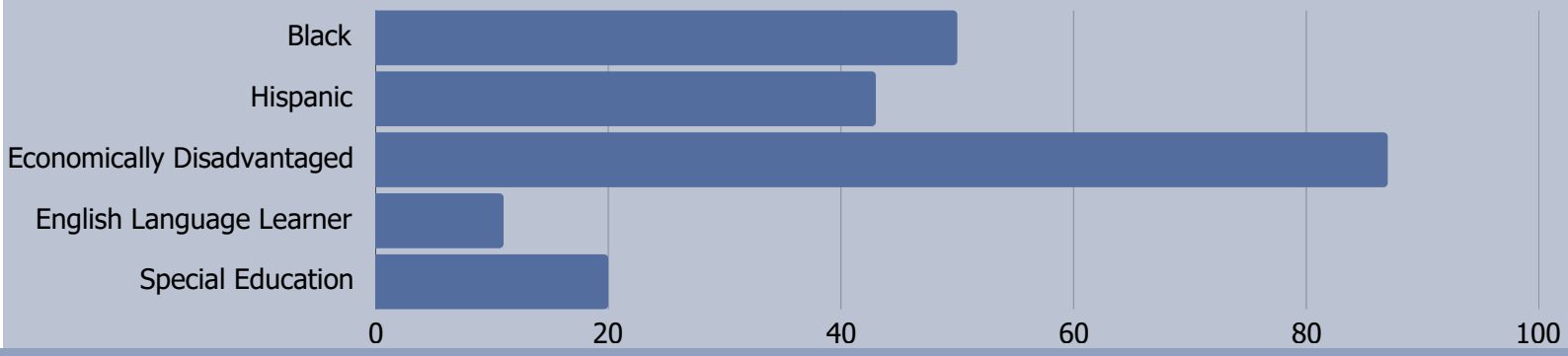
ESSA TIERS OF EVIDENCE

The CRRE authors of this study judge the evidence obtained to meet criteria for the Every Student Succeeds Act (ESSA) at:

TIER 2 (MODERATE EVIDENCE)

Demographics & Setting

92 Schools



Study Design

Quasi-Experimental Design (QED)

Two School Years

New York State English Language Arts (ELA) assessmen

Treatment
32 schools
Matched Comparison
60 schools

Results

This study examined the impact of the RedThread literacy program on school-level English language arts (ELA) achievement in New York State charter schools. A school-level, quasi-experimental intent-to-treat design used publicly available achievement and demographic data from the 2023–2024 and 2024–2025 school years. Using propensity score matching, treatment schools were matched to comparison schools that did not use RedThread based on prior ELA proficiency, enrollment, and student demographic characteristics. The final analytic sample included 92 schools: 32 treatment schools and 60 comparison schools.

Multiple linear regression estimated differences in 2024–2025 ELA proficiency while controlling for baseline achievement and demographics. Adjusted analyses indicated that treatment schools had proficiency rates approximately 4 percentage points higher than comparison schools ($p = .031$), with a large effect size of 0.23 SDs. These findings suggest that RedThread adoption was associated with improved school-level literacy achievement relative to schools that did not use RedThread.