

# Implementation and Impact Study of Imagine Language & Literacy: 2023-2024



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## EXECUTIVE SUMMARY

Imagine Learning partnered with RMC Research Corporation to conduct a study of the implementation and impact of Imagine Language & Literacy during 2023/24. Imagine Language & Literacy is a supplemental digital program designed to provide personalized, adaptive instructional sequencing to accelerate reading achievement of students in grades K-6. The study examined student outcomes in two large districts: Indianapolis Public Schools (IPS) in Indiana and Northwest Independent School District (NISD) in Texas. Analyses compare the NWEA MAP Growth reading scores of program participants to a matched comparison group of nonparticipants to estimate program impact, examine differences in impact by student subgroup, and examine how variations in student program usage relate to reading performance.

### Findings

**There were no statistically significant differences among Imagine Language & Literacy participants and nonparticipants on reading achievement outcomes.** Analyses of outcomes in IPS revealed no differences in spring 2024 achievement scores among Imagine Language & Literacy participants and matched comparison students.

**Student program usage was consistently and positively related to student reading achievement.** The implementation analysis revealed statistically significant and positive relationships between all measured usage variables (lessons completed, lessons passed, active program time, total program time, and meeting expectations for lessons completed and passed) and student MAP reading scores.

**Subgroup analyses suggest that the impact of Imagine Language & Literacy on student achievement did not differ across student characteristics.** Analytic models including interaction terms examining the moderating effects of gender, race/ethnicity, English learner status, and socioeconomic status found no statistically significant differences. In other words, impact of participation in Imagine Language & Literacy was consistent across student groups.

**The proportion of Imagine Language & Literacy participants who met usage expectations was low and usage varied substantially by grade level.** Imagine Language & Literacy participants are expected to complete 20 or more lessons and to pass 20 or more lessons during an academic year. In the combined two-district sample in 2023/24, about 42% of Imagine Language & Literacy participants met expectations for lessons completed and about 38% met expectations for lessons passed. The proportion of participants who met expectations was lower in IPS where 31% met expectations for lessons completed and 26% met expectations for lessons passed. In IPS, students in grades 1 through 3 met expectations in terms of average lessons completed while students in later grades had lower average usage. For example, grade 1 students averaged 20 lessons completed and 17 lessons passed while students in grade 6 averaged 5 lessons completed and 4 lessons passed.

# INTRODUCTION

## Background

Imagine Language & Literacy is a supplemental software program provided by Imagine Learning. The program is designed to provide personalized, adaptive, and standards-based instruction in phonemic awareness, phonics, fluency, vocabulary, and comprehension. The program is used to build skills across the four domains of language - listening, speaking, reading, and writing for students in Pre-K through Grade 6 and for English Learner students in pre-K through eighth grade. The program's instructional path is tailored by an adaptive benchmark assessment, which estimates the student's initial performance and continually refines the content sequence based on performance data. This continuous, data-driven adjustment is designed to ensure that instruction remains within the student's development and provides targeted support for struggling readers while also offering enrichment opportunities for advanced learners. Instruction is delivered to students through an engaging, media-rich platform that utilizes interactive activities and animated lessons.<sup>1</sup>

Prior studies have found positive impacts of participation in Imagine Language & Literacy. An experimental study was conducted with K-4 students across five elementary schools in Brazosport Independent School District in 2021/22 (Cook, et. al., 2022)<sup>2</sup>. Findings showed that students who used Imagine Language & Literacy demonstrated a positive yet nonsignificant achievement gain on the Renaissance Star Reading assessment compared to the control students. Significant positive correlations between program usage and achievement were identified for students in Grades 1 and 3. Students who exceeded 25 hours of total program usage achieved significantly higher reading gains than control students. Another quasi-experimental study compared the literacy achievement of English learners who used Imagine Language & Literacy to those who did not in a Florida public school district (Freeman, et. al, 2024)<sup>3</sup>. Achievement was measured using the WIDA ACCESS assessment for Grades 1–5 and the Florida Assessment of Student Thinking (FAST) for Grades 4–5. Findings revealed statistically significant positive program effects for both assessments: program participants scored higher on the 2023 WIDA ACCESS and the Spring 2023 FAST assessment compared to matched nonparticipants. Program impact varied by grade.

Imagine Learning partnered with RMC Research Corporation (RMC) to conduct a quasi-experimental study of the impact of Imagine Language & Literacy during the 2023/24 academic year. In addition to documenting impact on student outcomes, the study is designed to examine variation in outcomes among student subgroups, and how student program usage relates to student reading outcomes.

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<sup>1</sup> <https://www.imaginelearning.com/products/ela/language-and-literacy/>

<sup>2</sup> Cook, M., Eisinger, J., Ross, S. & Reid, A. (2022). *ESSA Tier 1 Efficacy Study of Imagine Language & Literacy – Brazosport ISD*. Center for Research and Reform in Education, John Hopkins University, Baltimore, MD. Retrieved from <https://www.imaginelearning.com/wp-content/uploads/2022/11/Brazosport-Final-Report.pdf>

<sup>3</sup> Freeman, K., Wilson, N., & Berrett, D. (2024). *Impact Evaluation of Imagine Language & Literacy in a Florida Public School District*. Retrieved from <https://www.imaginelearning.com/wp-content/uploads/2024/05/LNL-FL-Impact-Evaluation.pdf>

## METHODOLOGY

This section presents study research questions and the Imagine Language & Literacy logic model. Next, the study design, study setting, study data and samples, and analysis methods are described.

### Research Questions

The following research questions related to program impact and implementation were addressed in this study.

#### Impact

1. How does achievement (NWEA MAP scores) for students who use the Imagine Language & Literacy program compare to achievement of students who do not use the program?
2. Is Imagine Language & Literacy differentially beneficial for students of varying characteristics (e.g., gender, race/ethnicity, socio-economic status, or English learner classification)?

#### Implementation

3. Are changes in achievement by students who use Imagine Language & Literacy associated with variations in the way the program is used (e.g., number of lessons completed)?

### Logic Model

Exhibit 1 presents the Imagine Language & Literacy logic model. This representation focuses on aspects of the program's resources and implementation and of student program participation that are expected to affect their reading achievement. The model also provides a framework to guide study questions and analyses.

**Exhibit 1. Logic Model for Imagine Language & Literacy**

<b>INPUTS</b> Program Resources	<b>ACTIVITIES</b> Ensure Successful Implementation	<b>OUTPUTS</b> Evidence of Implementation and Participation	<b>STUDENT OUTCOMES</b> Evidence of Positive Change
<p><b>Imagine Language &amp; Literacy</b></p> <ul style="list-style-type: none"> <li>▶ Research-based, standards-aligned curriculum</li> <li>▶ Targeted individualized/adaptive instruction</li> <li>▶ Strategic first-language support in 15 languages for English learners</li> <li>▶ Integrated motivational tools and performance-based rewards</li> <li>▶ Integrated ongoing assessments, benchmark tests, and tri-annual, third-party measures (Reading Level Assessments) to inform instruction</li> <li>▶ Comprehensive, customized reports for whole class or individual students</li> <li>▶ Action Areas Tool to identify gaps, group students with common needs</li> <li>▶ Training and support from Imagine Learning</li> </ul> <p><b>District</b></p> <ul style="list-style-type: none"> <li>▶ Equipment necessary for using Imagine Learning (devices and headphones)</li> <li>▶ Access to Imagine Language &amp; Literacy instruction content via individual or site licenses</li> <li>▶ School and district infrastructure to support technology use</li> <li>▶ Teacher buy-in and readiness to adopt technology</li> <li>▶ School implementation plan</li> <li>▶ School or district learning goals</li> </ul>	<p><b>Student Activities</b></p> <ul style="list-style-type: none"> <li>▶ Spend at least 15 minutes per session for 2 or more sessions a week (PreK-K)</li> <li>▶ Spend at least 20 minutes per session for 2 or more sessions per week (Grades 1 &amp; 2)</li> <li>▶ Spend at least 25-30 minutes for 2 or more sessions per week (Grades 3+)</li> <li>▶ Engage with offline worksheets and other printed materials.</li> </ul> <p><b>Teacher Activities:</b></p> <ul style="list-style-type: none"> <li>▶ Teachers implement blended learning model(s): whole-class instruction, computer labs, in-class rotations, or intervention</li> <li>▶ Use actionable data to monitor student progress and plan for differentiated or targeted instruction</li> <li>▶ Teachers access Imagine Learning support and services as needed (Tech Support, Teacher Care, Customer Service)</li> </ul>	<p><b>Student Usage</b></p> <ul style="list-style-type: none"> <li>▶ Number of total students using or enrolled in Imagine Language &amp; Literacy</li> <li>▶ Number of active students using Imagine Language &amp; Literacy</li> <li>▶ Average Student usage</li> <li>▶ Percent of goal</li> </ul> <p><b>Student Progress Lessons</b></p> <ul style="list-style-type: none"> <li>▶ Current lesson in progress</li> <li>▶ Most recent lesson passed</li> <li>▶ Number of lessons passed</li> <li>▶ Number of lessons completed</li> <li>▶ Time spent on lessons</li> </ul> <p><b>Student Progress</b></p> <ul style="list-style-type: none"> <li>▶ Number of assessments completed</li> <li>▶ Student scaled scores</li> </ul>	<p><b>Short-term Outcomes</b></p> <ul style="list-style-type: none"> <li>▶ Students exhibit increased engagement as measured by usage and progress in Imagine Language &amp; Literacy</li> <li>▶ Students increase in language and literacy proficiency as evidenced by their performance on the Imagine Language &amp; Literacy benchmark assessment</li> </ul> <p><b>Long-term Outcomes</b></p> <ul style="list-style-type: none"> <li>▶ Students increase in literacy achievement on nationally normed or standardized assessments</li> <li>▶ Students increase academic achievement in other subject areas as demonstrated in local/classroom assessments and/or portfolios</li> <li>▶ Students' self-confidence for language and literacy increases, as indicated in student survey</li> <li>▶ Teachers feel prepared to implement Imagine Language &amp; Literacy in their classrooms</li> <li>▶ Teachers acquire understanding of students' language and literacy skill</li> </ul>

*Note.* Adapted from Imagine Language & Literacy Logic Model.  
<https://www.imaginelearning.com/pdf-viewer/?file=https://www.imaginelearning.com/wp-content/uploads/2023/03/LNL-Logic-Model.pdf#zoom=auto&pagemode=none>

# Design

RMC used a quasi-experimental design (QED) to examine the impact of Imagine Language & Literacy on reading achievement during the 2023/24 academic year for students who used Imagine Language & Literacy as a supplementary program relative to matched comparison students within the district who did not. In addition to documenting impact on student outcomes, the study also examined differences in outcomes by student characteristics, variations in student program usage, and how that variation relates to reading achievement outcomes.

**Intervention and Comparison Conditions.** Students in the intervention condition were those identified as Imagine Language & Literacy participants (defined as students who logged any time in the Imagine Language & Literacy program during the 2023/24 academic year). The program was offered as a supplement to core English language arts (ELA) instruction. The comparison group included students who did not log time in Imagine Language & Literacy during the school year. Study districts determined which students participated in Imagine Language & Literacy.

# Study Data

To address the research questions, the study used Imagine Language & Literacy program data and district administrative data for the 2023/24 school year. In spring 2024, student program usage data were collected from Imagine Learning. Deidentified student-level and school-level data were provided by Indianapolis Public Schools (IPS) in Indiana and Northwest Independent School District (NISD) in Texas. Spring 2024 outcome data were used to estimate program impact, controlling for baseline data from fall 2023. Data sources are summarized in Exhibit 2.

Exhibit 2. Data Sources

Data Source	Data Elements
District Administrative Records	<p><b>Student characteristics</b>, including gender, grade, race/ethnicity, English learner (EL) status, economic disadvantage status, homeless status, foster status, at-risk or unaccompanied status<sup>a</sup>, special education status, 504 plan status, gifted status.</p> <p><b>Student performance data</b>, including baseline (fall 2023) scores on the NWEA Measures of Academic Progress (MAP) Growth Reading, and outcome (spring 2024) scores on the NWEA MAP Growth Reading.</p>
Program Usage Data	Student time spent on online activities, active time, lessons completed, and lessons passed.

<sup>a</sup>At-risk and unaccompanied status were considered one variable across districts as unaccompanied is a component of at-risk student factors. See: [ERIC definition of “at-risk.”](#)

# Samples

The initial sample comprised 21,137 students who had both baseline (fall 2023) and outcome (spring 2024) MAP data (Exhibit 3). This sample was drawn from IPS, contributing 9,669 students, and NISD,

contributing 11,468 students. While students in grades 1 through 8 were represented, most students were in grades 3-8 (13-15% at each grade level). A clear distinction in student characteristics existed between the two districts. The IPS sample was predominantly economically disadvantaged (63%) and had a higher percentage of Black/African American and Hispanic/Latino students, while the NISD sample consisted of 51% White students and had fewer who were economically disadvantaged (26%). Four separate analytic samples were identified based on this initial sample, including impact analysis samples for IPS<sup>4</sup> (RQ1 and RQ2), and an implementation analysis sample for each district and across both districts (RQ3).

**Exhibit 3. Pre-Matching Student Characteristics by District and Total Samples**

Variable	Category	IPS (n = 9,669)		NISD (n = 11,468)		Total (N = 21,137)	
		n	%	n	%	n	%
Gender <sup>a</sup>	Male	5,090	52.6	5,800	50.6	10,890	51.5
	Female	4,577	47.3	5,668	49.4	10,245	48.5
Grade <sup>a</sup>	Grade 1	1,261	13.0	-	-	1,261	6.0
	Grade 2	1,312	13.6	-	-	1,312	6.2
	Grade 3	1,405	14.5	1,829	15.9	3,234	15.3
	Grade 4	1,369	14.2	1,911	16.7	3,280	15.5
	Grade 5	1,394	14.4	1,922	16.8	3,316	15.7
	Grade 6	1,029	10.6	2,038	17.8	3,067	14.5
	Grade 7	1,009	10.4	1,883	16.4	2,892	13.7
	Grade 8	882	9.1	1,884	16.4	2,766	13.1
Race <sup>a</sup>	American Indian or Alaska Native	-	-	61	0.5	69	0.3
	Asian	102	1.1	854	7.4	956	4.5
	Black/African American	3,200	33.1	1,382	12.1	4,582	21.7
	Hispanic/Latino	3,411	35.3	2,900	25.3	6,311	29.9
	Native Hawaiian or Pacific Islander	-	-	35	0.3	38	0.2
	White	2,305	23.8	5,837	50.9	8,142	38.5
	Multiple Races	639	6.6	399	3.5	1,038	4.9
Economic Disadvantage	Yes	6,045	62.5	2,993	26.1	9,038	42.8
English Learner	Yes	2,870	29.7	720	6.3	3,590	17.0

<sup>4</sup> Due to limited sample sizes of nonparticipants of Imagine Language & Literacy in NISD, we were unable to identify a matched comparison group for intervention students within the district. Therefore, NISD was excluded from the impact analysis of Imagine Language & Literacy.

Special Education	Yes	1,553	16.1	2,146	18.7	3,699	17.5
504 Plan	Yes	110	1.1	1,486	13.0	1,596	7.6
Gifted	Yes	1,776	18.4	2,016	17.6	3,792	17.9
Homeless	Yes	139	1.4	12	0.1	151	0.7
Foster	Yes	13	0.1	11	0.1	24	0.1
At-Risk or Unaccompanied <sup>a</sup>	Yes	-	-	4,636	40.4	4,637	21.9

<sup>a</sup> Variable categories with  $n < 10$  are suppressed, resulting in the sum of variable categories not equaling the total  $N$ .  
*Note.* For binary yes/no demographic indicators, “no” comprises the remaining  $n$  and percent. No values were missing.

## Impact Analysis Sample

We conducted propensity score matching (PSM) to generate a matched comparison group of students within IPS. District administrative data were used to select a matched sample of comparison students with characteristics similar to intervention students at baseline in IPS. The matching algorithm used a comprehensive set of baseline covariates, including an exact grade match and baseline NWEA MAP reading scores, alongside demographic indicators such as gender, race/ethnicity (nonwhite), special education status, gifted status, 504 plan status, and socioeconomic indicators including homeless and foster status. To maximize the available analytic sample size, no caliper was specified during the matching process. Due to limited sample sizes of nonparticipants of Imagine Language & Literacy in NISD, we were unable to identify a matched comparison group for intervention students within the district. Therefore, NISD was excluded from the impact analysis of Imagine Language & Literacy.

In some grade levels, the number of comparison students was fewer than the number of Imagine Language & Literacy students. The matching ratios were adjusted by district and grade level to maximize the sample size, retaining as many Imagine Language & Literacy and comparison students as possible while also maintaining balance in proportion of Language & Literacy and comparison students. In grade 8, a 1:2 ratio was employed, matching 158 treatment students to 316 comparison students. For grade 7, a 1:1 ratio was utilized to match 459 treatment students with 459 comparison students. In grades 1 through 6, a 2:1 ratio was applied, matching 3,098 treatment students to 1,549 comparison students; in these grades, priority was given to retaining all available comparison students.

Exhibit 4 presents the post-matching study sample of IPS students ( $N = 6,039$ ; 3,715 intervention students and 2,324 comparison students) used to estimate the impact of Imagine Language & Literacy on NWEA Map Reading scores for the impact analysis. The matched sample included a slightly higher proportion of male students (53%) and students in grades 1 through 8, with the highest concentration of students in grade 5 (18%) and grade 6 (16%). Most students were Black/African American (36%) and Hispanic/Latino (36%), followed by White students (21%). Most were economically disadvantaged (67%), 15% received Special Education services, and 17% were classified as Gifted.

**Exhibit 4. Post-Matching Student Characteristics of IPS Impact Analysis Sample**

Variable	Category	IPS (n = 6,039)	
		n	%
Gender <sup>a</sup>	Male	3,168	52.5
	Female	2,869	47.5
Grade <sup>a</sup>	Grade 1	543	9.0
	Grade 2	666	11.0
	Grade 3	681	11.3
	Grade 4	738	12.2
	Grade 5	1,071	17.7
	Grade 6	948	15.7
	Grade 7	918	15.2
	Grade 8	474	7.8
Race <sup>a</sup>	Asian	53	0.9
	Black/African American	2,151	35.6
	Hispanic/Latino	2,150	35.6
	White	1,285	21.3
	Multiple Races	392	6.5
Economic Disadvantage	Yes	4,029	66.7
English Learner	Yes	1,742	28.8
Special Education	Yes	922	15.3
504 Plan	Yes	83	1.4
Gifted	Yes	1,029	17.0
Homeless	Yes	81	1.3

<sup>a</sup> Variable categories with  $n < 10$  are suppressed, resulting in the sum of variable categories not equaling the total  $N$ . Note. for binary yes/no demographic indicators, “no” comprises the remaining  $n$  and percent. No values were missing. Foster was suppressed as the variable had fewer than 10 “yes” cases.

Exhibit 5 presents student characteristics for the post-matched sample for IPS, separately for treatment ( $n = 3,715$ ) and matched comparison ( $n = 2,324$ ) groups. Student characteristics across groups were comparable within a few percentage points. For example, both groups have similar proportions of male students (52% treatment vs. 54% comparison), students identified as nonwhite (both 79%), and those identified as economically disadvantaged (67% vs. 66%), special education students (both 15%), and English learners (31% vs. 25%). There were slightly higher percentages of grade 7 and grade 8 students in the comparison group based on how the matched samples were created (i.e., 1:1 match for grade 7 students, 1:2 match for grade students, and a 2:1 match for students in grades 1-6).

## Exhibit 5. Post-Matching Student Characteristics of IPS Impact Analysis Sample by Treatment and Comparison Groups

Variable	Category	Treatment (n = 3,715)		Comparison (n = 2,324)	
		n	%	n	%
Gender <sup>a</sup>	Male	1,914	51.5	1,254	54.0
	Female	1,801	48.5	1,068	46.0
Grade <sup>a</sup>	Grade 1	362	9.7	181	7.8
	Grade 2	444	12.0	222	9.6
	Grade 3	454	12.2	227	9.8
	Grade 4	492	13.2	246	10.6
	Grade 5	714	19.2	357	15.4
	Grade 6	632	17	316	13.6
	Grade 7	459	12.4	459	19.8
	Grade 8	158	4.3	316	13.6
Nonwhite	Yes	2,926	78.8	1,828	78.7
Economic Disadvantage	Yes	2,505	67.4	1,524	65.6
English Learner	Yes	1,167	31.4	575	24.7
Special Education	Yes	564	15.2	358	15.4
504 Plan	Yes	48	1.3	35	1.5
Gifted	Yes	598	16.1	431	18.5
Homeless	Yes	47	1.3	34	1.5

<sup>a</sup> Variable categories with  $n < 10$  are suppressed, resulting in the sum of variable categories not equaling the total  $N$ .  
*Note.* for binary yes/no demographic indicators, “no” comprises the remaining  $n$  and percent. No values were missing.  
 Foster was suppressed as the variable had fewer than 10 “yes” cases.

Overall, IPS students in the impact analysis sample showed low usage of Imagine Language & Literacy. On average, treatment students completed 13.3 lessons, passed 11.0 lessons, and logged 12.4 total hours in the program. Only about 25% of these students met the expectation of completing 20 or more lessons of Imagine Language & Literacy, while 20.6% passed at least 20 lessons. Detailed program usage information for the treatment group in the impact analysis sample can be found in Exhibits C1-C6 in Appendix C.

## Baseline Equivalence

The impact analysis sample, constructed using propensity score matching, was examined for baseline equivalence using fall 2023 NWEA MAP Reading scores (Exhibit 6) and student characteristics (Exhibit 7). Baseline equivalence was demonstrated for the impact analysis sample in IPS for MAP reading scores ( $g$

= 0.21) and student demographics. This result supports the use of subsequent regression analysis to reliably estimate the program's intervention effect, controlling for baseline measures.

#### Exhibit 6. NWEA MAP Reading Baseline Equivalence Statistics: IPS Impact Analysis Sample

Group	Students	Mean	SD	Mean Diff.	Effect Size (g)
Language & Literacy	3,715	177.42	27.35	5.90	0.21
Comparison	2,324	183.32	28.56		

#### Exhibit 7. Student Characteristics Baseline Equivalence Statistics: IPS Impact Analysis Sample

Variable	Imagine Language & Literacy	Comparison	Effect Size Cox's <i>d</i>
	( <i>n</i> = 3,715) % ( <i>n</i> )	( <i>n</i> = 2,324) % ( <i>n</i> )	
Gender (Female)	48.5 (1,801)	46.0 (1,068)	0.06
Economic Disadvantage	67.4 (2,505)	65.6 (1,524)	0.05
Non-white	78.8 (2,926)	78.7 (1,828)	< 0.01
Special Education	15.2 (564)	15.4 (358)	0.01
504 Plan	1.3 (48)	1.5 (35)	0.09
Gifted	16.1 (598)	18.5 (431)	0.10
Homeless	1.3 (47)	1.5 (34)	0.09

Note: Foster and At-Risk/Unaccompanied were suppressed as the variables had fewer than 10 "yes" cases.

## Implementation Analysis Samples

Exhibit 8 displays characteristics of three implementation analysis samples, which included Imagine Language & Literacy participants in IPS (*n* = 6,907), Imagine Language & Literacy participants in NISD (*n* = 5,656), and all participants combined from both districts (*n* = 12,563). Students who logged any time in the program according to data from Imagine Learning were considered participants and were included in these samples. Data for these students were used to examine the relationship between Imagine Language & Literacy program usage and student outcomes (Research Questions 3). The implementation study samples revealed demographic and grade-level distinctions between the two participating districts. The IPS implementation sample (*n* = 6,907) consists primarily of students in the early and middle grades (grades 1-8), whereas the NISD sample (*n* = 5,656) is concentrated in elementary school (grades 3-5). Demographically, the IPS implementation sample is predominantly Black/African American (31%) and Hispanic/Latino (36%), while the NISD intervention students are primarily White (49%) and Hispanic/Latino (25%).

## Exhibit 8. Student Characteristics: Implementation Analysis Samples

Variable	IPS Students (n = 6,907) % (n)	NISD Students (n = 5,656) % (n)	Total Students (N = 12,563) % (n)
Grade 1	15.6 (1,077)	-	8.6 (1,077)
Grade 2	15.7 (1,087)	-	8.7 (1,087)
Grade 3	17.0 (1,173)	32.3 (1,826)	23.9 (2,999)
Grade 4	16.2 (1,116)	33.8 (1,909)	24.1 (3,025)
Grade 5	15.0 (1,034)	33.9 (1,917)	23.5 (2,951)
Grade 6	10.3 (712)	-	5.7 (714)
Grade 7	7.9 (543)	-	4.3 (545)
Grade 8	2.3 (161)	-	1.3 (161)
Gender (Female)	47.2 (3,262)	48.6 (2,748)	47.8 (6,010)
American Indian or Alaska Native	-	0.4 (22)	0.2 (29)
Asian	1.3 (87)	7.7 (434)	4.1 (521)
Black/African American	30.9 (2,132)	11.8 (667)	22.3 (2,799)
Hispanic/Latino	36.2 (2,502)	25.2 (1,427)	31.3 (3,929)
Native Hawaiian or Pacific Islander	-	0.3 (15)	0.1 (18)
White	25.0 (1,729)	50.5 (2,859)	36.5 (4,588)
Multiple Races	6.5 (447)	4.1 (232)	5.4 (679)
SPED	16.1 (1,109)	23.3 (1,319)	19.3 (2,428)
504 Plan	1.0 (68)	9.5 (535)	4.8 (603)
Gifted	18.9 (1,306)	18.9 (1,067)	18.9 (2,373)
Homeless	1.5 (101)	-	0.8 (106)
At Risk	-	39.8 (2,251)	17.9 (2,252)
Foster	0.1 (10)	-	0.1 (16)

Note. Variable categories with  $n < 10$  are suppressed, resulting in the sum of variable categories not equaling the total  $N$ . The implementation samples in this table include all Imagine Language & Literacy users.

## Analyses

### Impact Analyses

To address **research question 1**, RMC used hierarchical linear modeling (HLM) to estimate the impact of participation in the Imagine Language & Literacy intervention on students' NWEA MAP reading achievement. Students' gender, grade level, race (nonwhite), special education status, English learner

status, economic disadvantage status, gifted status, 504 Plan status, foster status, and homeless status were included as covariates in the impact models. At level-2 of the model, a random intercept for school was added to account for students being nested within different schools. The intraclass correlation coefficient (ICC) was calculated to assess the amount of variance that could be attributed to students' attendance at different schools. Fall scores served as baseline measures and spring scores served as outcome measures. The following general model was used:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \beta_1 \text{Baseline}_{ij} + \beta_2 T_{ij} + \lambda_1 \text{Stud\_Cov}_{ij} + e_{ij}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \mu_{0j}$$

Where  $Y_{ij}$  represents the outcome variable (the spring score on the NWEA MAP assessment for student  $i$  in school  $j$  after participation in Imagine Language & Literacy),  $\beta_{0j}$  is the intercept for school  $j$ ,  $\beta_1$  is a parameter representing the association between the baseline achievement measure and the outcome,  $\text{Baseline}_{ij}$  is each student's baseline achievement measure,  $T_{ij}$  is the intervention indicator variable (1 = intervention; 0 = comparison),  $\beta_2$  is the coefficient representing the impact of Imagine Language & Literacy on  $Y_{ij}$  (outcome variable),  $\text{Stud\_Cov}_{ij}$  is a vector of student covariates (gender, grade, nonwhite, English learner, special education, economic disadvantage, gifted, 504 plan, homeless, foster),  $\lambda_1$  is a vector of the corresponding parameters for the student covariates,  $e_{ij}$  represents the random error for student  $i$ 's outcome score from the predicted score based on the model. At Level 2,  $\gamma_{00}$  represents the overall grand mean (intercept) and  $\mu_{0j}$  represents the random effect for school  $j$ . Our focus is on  $\beta_2$ , the Imagine Language & Literacy intervention effect which is used to estimate the mean difference in scores between intervention participants and nonparticipants, adjusting for model covariates. The adjusted mean differences were used to calculate the effect size (Hedges'  $g$ ). The full analytic model was examined first, followed by the final model which excluded trimmed covariates that did not reach statistical significance.

The final HLM examining the impact of Imagine Language & Literacy included a random intercept to account for students' school, baseline (fall) NWEA MAP reading scores, treatment status, gender, grade, race (nonwhite), special education status, socioeconomic status, gifted status, foster status, and homeless status. A covariate for students' 504 plan was nonsignificant and trimmed from the final impact analysis model. The covariate for students' gender was also nonsignificant, but this was retained in the final impact analysis model to examine moderation by gender for research question 2.

To address **research question 2**, analyses that examined the extent to which program outcomes were moderated by factors such as gender, race/ethnicity, English learner status, and socio-economic status, were conducted by including interaction terms between the characteristic and the intervention indicator. The models used the same structure and covariates as the final trimmed HLM in research question 1, with the addition of an interaction term for each relevant student characteristic (product of the intervention indicator and student characteristic measures). Regarding the models examining moderation by race/ethnicity, four models were conducted to examine differences in outcomes for Black, White, Hispanic, and Asian students. Groups were selected based on sufficient sample size. In each model examining differences by race/ethnicity, students from one group were compared to all remaining students in the sample (e.g., Hispanic vs. non-Hispanic).

## Implementation Analyses

To address **research question 3**, student NWEA MAP scores were regressed on measures of Imagine Language & Literacy participation in analyses that included only intervention participants. The models used the same structure and covariates as the final trimmed HLM in research question 1, with the addition of a measure of Imagine Language & Literacy usage. The measures of Imagine Language & Literacy usage included: (1) total number of lessons completed, (2) a dichotomous indicator of whether students completed 20 or more lessons (annual program expectation), (3) total number of lessons passed, (4) a dichotomous indicator of whether students passed 20 or more lessons (annual program expectation), (5) total hours of program usage, and (6) total active hours of program use. These analyses were conducted on a combined sample of Imagine Language & Literacy students from both districts, and separately for students from IPS and NISD. This yielded a total of eighteen models – each of the six measures of program participation were applied to the combined, IPS, and NISD samples.

## FINDINGS

This section summarizes findings from data collected in 2023/24 including administrative data from the two participating districts and Imagine Language & Literacy program data. First, findings related to the impact of Imagine Language & Literacy on student outcomes and outcomes for student subgroups are presented, followed by information about Imagine Language & Literacy student usage and its relationship to student outcomes.

### Impact on Student Outcomes

HLM analysis results indicated that Imagine Language & Literacy did not have a statistically significant impact on outcomes ( $p = 0.94$ ; Exhibit 9). Detailed analysis output for the full analytic model is presented in Exhibit A1 and output for the final trimmed model is presented in Exhibit A2 in Appendix A.

#### Exhibit 9. Impact Analysis Results for Imagine Language & Literacy in IPS

Group	Students	Schools	Unadjusted Scale Score Mean (SD)	ICC	Scale Score Adjusted Mean Diff (SE)	p-value	Effect Size (g)
Intervention	3,715	50	188.29 (24.60)	0.25	-0.03 (0.34)	0.94	-0.003
Comparison	2,324		192.58 (25.39)				

Note. The intraclass correlation coefficient (ICC) was computed based on the null model. Hedges'  $g$  was calculated using adjusted model means.  $M_{ILL} = 181.95$  (SE = 2.50),  $M_{Comparison} = 181.97$  (SE = 2.50).

Additional analyses were conducted to examine the impact of Imagine Language & Literacy in particular grades. Students were categorized into three grade bands:

- Early Elementary: Grades 1 and 2.
- Upper Elementary: Grades 3, 4, and 5.
- Middle School: Grades 6, 7, and 8

Analysis results did not show statistically significant program effect by grade band. Detailed results are presented in Exhibits D1 to D3 in Appendix D.

To answer research question 2, analyses examined the interaction effects to determine if Imagine Language & Literacy was differentially beneficial for student subgroups. Interaction terms were added to the final trimmed analytic model. The subgroup analysis for IPS indicated that Imagine Language & Literacy did not have a statistically significant differential impact based on gender ( $p = 0.46$ ), economic status ( $p = 0.72$ ), EL status ( $p = 0.18$ ), or race/ethnicity (Exhibit 10). Complete results from the IPS subgroup analyses are presented in Exhibits A3-A9 in Appendix A.

### Exhibit 10. Subgroup Analysis by Treatment Interaction in IPS Impact Sample

Treatment Interaction	Group	N Students	Interaction Coefficient (SE)	p-value
Gender (Female)	Intervention	1,801	0.46 (0.51)	0.36
	Comparison	1,068		
English Learner	Intervention	1,167	-0.78 (0.59)	0.18
	Comparison	575		
Economically Disadvantaged	Intervention	2,505	0.19 (0.55)	0.72
	Comparison	1,524		
White	Intervention	789	-0.72 (0.64)	0.26
	Comparison	496		
Black/African American	Intervention	1,255	-0.03 (0.54)	0.96
	Comparison	896		
Hispanic	Intervention	1,399	0.001 (0.002)	0.99
	Comparison	751		
Asian	Intervention	40	-1.46 (3.08)	0.64
	Comparison	13		

Note. The number of students from each subgroup in the treatment and comparison group is reported in the column labeled *N* Students. For all interactions by race/ethnicity, students from each group were compared to the remainder of the sample (e.g., white vs. nonwhite, Hispanic vs. non-Hispanic).

## Implementation Analysis

Implementation analysis examined the extent to which changes in MAP reading achievement for students who used Imagine Language & Literacy were associated with variations in student program usage (lessons completed, lessons passed, active time in the program, total time in the program, and recommended program usage threshold).

Differences in student program usage were observed for Imagine Language & Literacy across districts. Exhibit 11 summarizes program usage for IPS students across grades 1-8, showing variation by grade level. Average usage for lessons completed, lessons passed, active hours, and total hours in the program generally declined as grade level increased. There was highest program usage in grades 1 through 3, with students in each grade completing over 20 lessons and passing over 17 lessons, on average. Usage was substantially lower in grades 6 through 8.

**Exhibit 11. Summary of Imagine Language & Literacy Program Usage for IPS by Grade Level**

Grades	Lessons Completed <i>M (SD)</i>	Lessons Passed <i>M (SD)</i>	Active Hours in Program <i>M (SD)</i>	Total Hours in Program <i>M (SD)</i>
Grade 1	20.38 (15.95)	17.64 (13.59)	14.34 (10.52)	19.88 (13.96)
Grade 2	21.21 (20.35)	17.69 (17.28)	11.65 (10.12)	17.2 (14.38)
Grade 3	21.35 (22.01)	18.16 (19.32)	9.89 (9.23)	15.35 (13.58)
Grade 4	17.52 (19.28)	14.66 (16.57)	7.73 (7.58)	14.32 (13.39)
Grade 5	11.45 (16.17)	9.46 (13.85)	6.09 (7.11)	12.11 (13.76)
Grade 6	5.46 (9.54)	4.20 (7.70)	3.73 (4.96)	7.65 (9.77)
Grade 7	6.73 (14.73)	4.93 (11.46)	4.21 (7.43)	8.47 (13.88)
Grade 8	2.17 (9.43)	1.43 (7.96)	1.01 (4.70)	2.29 (10.28)

Exhibit 12 provides usage data for NISD, where students in the elementary grades demonstrated more program usage compared to their IPS counterparts. Students in grades 3 through 5 completed over 25 lessons and passed over 22 lessons, on average.

**Exhibit 12. Summary of Imagine Language & Literacy Program Usage for NISD by Grade Level**

Grades	Lessons Completed <i>M (SD)</i>	Lessons Passed <i>M (SD)</i>	Active Hours in Program <i>M (SD)</i>	Total Hours in Program <i>M (SD)</i>
Grade 3	31.09 (22.45)	28.69 (20.92)	11.77 (6.85)	20.49 (11.35)
Grade 4	28.16 (22.20)	25.91 (20.56)	11.32 (7.31)	20.92 (11.94)
Grade 5	24.93 (20.97)	22.78 (19.37)	11.18 (6.90)	21.55 (12.19)

The proportions of students who met expectations for lessons completed and passed are presented for the combined sample and each district (Exhibit 13). For the combined two-district sample, about 42% of Imagine Language & Literacy participants completed 20 or more lessons and about 38% passed 20 or more lessons. The proportion of participants who met expectations was much lower in IPS than NISD.

**Exhibit 13. Proportion of Imagine Language & Literacy Participants Who Met Expectations for Lessons Completed and Lessons Passed, by District**

	IPS ( <i>n</i> = 6,907) % ( <i>n</i> )	NISD ( <i>n</i> = 5,656) % ( <i>n</i> )	Two-District Sample ( <i>N</i> = 12,563) % ( <i>n</i> )
20 or More Lessons Completed	31.2 (2,155)	56.0 (3,170)	42.4 (5,325)
20 or More Lessons Passed	25.9 (1,787)	52.4 (2,965)	37.8 (4,752)

Note. The implementation samples in this table include all Imagine Language & Literacy participants.

In addition to the summary of student program usage for all students included in implementation analyses (i.e., “implementation analysis samples;” presented in Exhibit 12), program usage was examined separately for the Imagine Language & Literacy participants included in impact analyses (i.e., the “impact analysis samples”) for IPS and NISD. Analysis of IPS student program usage in the impact analysis sample reveals that students had lower average program usage than those in the implementation analysis sample. The average number of lessons completed was 16 for the implementation analysis sample compared to 13 for the impact analysis sample, and the average lessons passed followed a similar trend at 13 and 11 passed for the implementation and impact analysis samples, respectively. The proportion of students who reached expected usage milestones followed a similar pattern. About 31% of students in the implementation analysis sample completed at least 20 lessons, while only about 25% of students in the impact analysis sample met this threshold. See Exhibits C1 and C2 in Appendix C for additional information.

Although no impact analyses were conducted for NISD, additional analysis of the implementation analysis samples in each district revealed additional information about differences in program usage. About 57% of NISD students completed 20 or more lessons, compared to 31% of students in IPS (see Exhibit C2 in Appendix C). Comparison of the number of lessons completed (Exhibit C3 in Appendix C) shows that 41% of students in IPS completed 5 or fewer lessons compared to about 14% in NISD. Similar differences were found for the number of lessons passed, active hours in the program, and total hours in the program (Exhibits C4 through C6 in Appendix C).

Exhibit 14 shows statistically significant and positive relationships between all student usage measures and MAP reading achievement ( $p < 0.001$ ). For additional lessons completed or passed, there was a corresponding increase in student reading scores. Further, students who met the thresholds of completing or passing 20 or more lessons had significantly higher reading achievement, with unstandardized beta coefficients<sup>5</sup> of 1.96 and 2.19 respectively, compared to those who completed or passed fewer than 20 lessons. Active time ( $b = 0.14$ ) and total time ( $b = 0.06$ ) spent in the program was also significantly related to higher student reading outcomes. Predicted scores for students who did and did not meet expectations for the number of lessons completed and passed are presented in Exhibit 15. Complete results from the cross-district implementation analysis are presented in Exhibits B1-B6 in Appendix B.

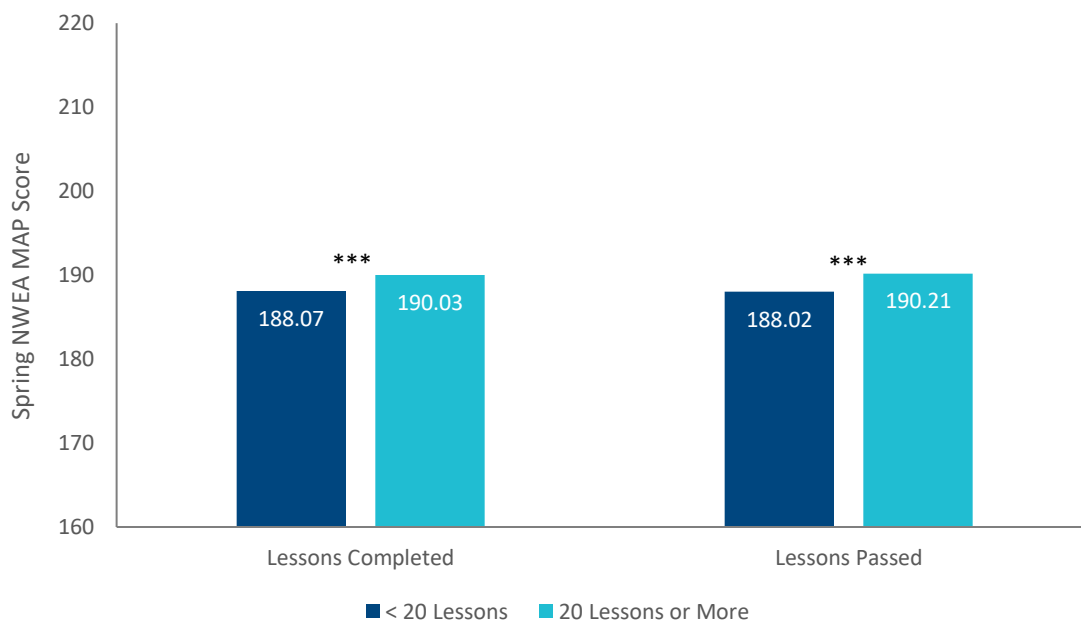
<sup>5</sup> An unstandardized beta coefficient represents the amount of change in a dependent variable for every one-unit change in an independent variable, assuming all other variables in the model stay the same.

### Exhibit 14. Summary of Implementation Analyses for Imagine Language & Literacy – IPS and NISD Combined

Program Variable	Coefficient (SE)	p-value
Lessons Completed	0.05 (0.004)	<0.001***
20 or More Lessons Completed	1.96 (0.18)	<0.001***
Lessons Passed	0.06 (0.005)	<0.001***
20 or More Lessons Passed	2.19 (0.18)	<0.001***
Total Time in Program	0.06 (0.01)	<0.001***
Active Time in Program	0.14 (0.01)	<0.001***

Note. N = 12,475 students. Unstandardized beta coefficients are reported. Lessons completed, lessons passed, active time, and total time in program were entered as continuous variables. Only treatment students with baseline and outcome data were included in these analyses. \*p < .05, \*\* p < .01, \*\*\*p < 0.001.

### Exhibit 15. Spring NWEA MAP Scores for Students Below and Above a 20-Lesson Imagine Language & Literacy Threshold – IPS and NISD Combined



Note. Students' adjusted means from the analytic model are displayed. Significance testing was calculated between students below and above the 20-lesson threshold. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Implementation analysis for each district yielded similar findings. Exhibits 15 through 18 provide district-specific implementation analyses for IPS and NISD. In IPS, higher program usage was strongly correlated with academic achievement (Exhibit 16). Students who achieved the program usage goals of 20 or more lessons completed or passed saw significant reading gains, with coefficients of 2.71 and 3.21, respectively. Predicted scores for students who did and did not meet expectations for the number of

lessons completed and passed are presented in Exhibit 17. Complete results from the IPS implementation analysis are presented in Exhibits B7-B12 in Appendix B.

**Exhibit 16. Summary of Implementation Analyses for Imagine Language & Literacy – IPS**

Program Variable	Coefficient (SE)	p-value
Lessons Completed	0.08 (0.01)	<0.001***
20 or More Lessons Completed	2.71 (0.28)	<0.001***
Lessons Passed	0.10 (0.01)	<0.001***
20 or More Lessons Passed	3.21 (0.29)	<0.001***
Total Time in Program	0.09 (0.01)	<0.001***
Active Time in Program	0.17 (0.01)	<0.001***

Note. N = 6,869 students. Unstandardized beta coefficients are reported. Lessons completed, lessons passed, and total time in program were entered as continuous variables. Only treatment students with baseline and outcome data were included in these analyses. \*p < .05, \*\* p < .01, \*\*\*p < 0.001.

**Exhibit 17. Spring NWEA MAP Scores for Students Below and Above a 20-Lesson Imagine Language & Literacy Threshold – IPS**



Note. Students’ adjusted means from the analytic model are displayed. Significance testing was calculated between students below and above the 20-lesson threshold. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

The implementation analysis for NISD also revealed a highly significant positive correlation between program usage and student performance (Exhibit 18). While the coefficients were slightly lower than

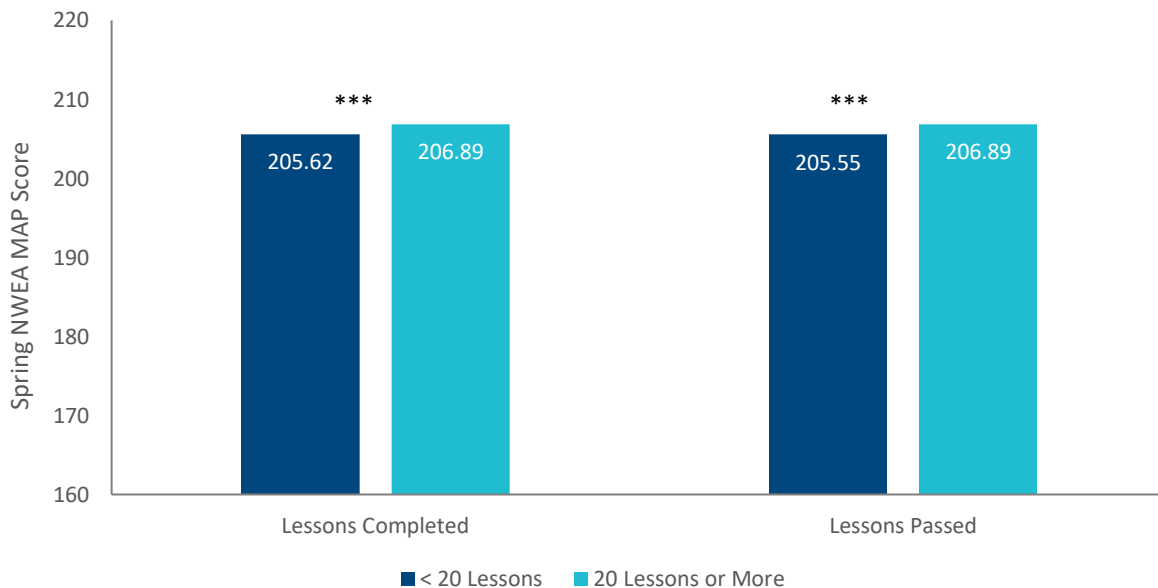
those observed in IPS, students who completed at least 20 lessons ( $b = 1.26$ ) and passed at least 20 lessons ( $b = 1.34$ ) had significantly higher achievement than students who did not meet these thresholds. Predicted scores for students who did and did not meet expectations for the number of lessons completed and passed are presented in Exhibit 19. Complete results from the NISD implementation analysis are presented in Exhibits B13-B18 in Appendix B.

**Exhibit 18. Summary of Implementation Analyses for Imagine Language & Literacy – NISD**

Program Variable	Coefficient (SE)	p-value
Lessons Completed	0.03 (0.005)	<0.001***
20 or More Lessons Completed	1.26 (0.22)	<0.001***
Lessons Passed	0.04 (0.01)	<0.001***
20 or More Lessons Passed	1.34 (0.22)	<0.001***
Total Time in Program	0.02 (0.01)	0.04*
Active Time in Program	0.08 (0.02)	<0.001***

Note.  $N = 5,606$  students. Unstandardized beta coefficients are reported. Lessons completed, lessons passed, and total time in program were entered as continuous variables. Only treatment students with baseline and outcome data were included in these analyses. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < 0.001$ .

**Exhibit 19. Spring NWEA MAP Scores for Students Below and Above a 20-Lesson Imagine Language & Literacy Threshold – NISD**



Note. Students’ adjusted means from the analytic model are displayed. Significance testing was calculated between students below and above the 20-lesson threshold. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

## CONCLUSIONS

In this section, conclusions from the data analysis are presented, followed by study limitations and considerations for interpretation.

The study of Imagine Language & Literacy across IPS and NISD used a quasi-experimental design, employing propensity score matching to establish a matched comparison group in IPS. The primary impact analyses did not show statistically significant effects of Imagine Language & Literacy participation on student reading achievement in the district during 2023/24. Analysis of Imagine Language & Literacy impact across student subgroups also showed no significant differences suggesting that student characteristics (gender, race/ethnicity, EL status, or economic disadvantage) did not influence the relationship between Imagine Language & Literacy participation and reading achievement.

Analysis of the relationship between program implementation and student outcomes revealed consistent and positive relationships between all measures of Imagine Language & Literacy program usage and student reading achievement. Across districts, the number of lessons completed, number of lessons passed, total active time, and total time in program were statistically significant predictors of improved reading achievement. Students who met usage recommendations also had significantly higher average reading achievement scores than those who did not. The relationship between student program usage and reading achievement was more pronounced in IPS where a smaller proportion of students met implementation expectations.

### Limitations and Considerations for Interpretation

As with all evaluation studies, this one has limitations that should be considered alongside interpretation of findings. First, the study was conducted during a single academic year in two school districts (and analyses of impact were limited to students in just one district) which limits the generalizability of findings to the broad range of settings in which Imagine Language & Literacy is routinely implemented over time. Second, overall student program usage was low. Less than 31 percent of IPS students met expectations for lessons completed and fewer than 26 percent passed the expected number of lessons. In NISD just over half met expectations for lessons completed and lessons passed. Had implementation in study districts been better aligned with expectations, findings would likely have been more positive. Third, information about program implementation was limited to student usage data collected by Imagine Learning which has only basic information about how students engaged with the online program. The extent to which classroom teachers or others in study schools supported or encouraged student participation, for example, is not known and such factors may influence outcomes. Fourth, no information was available about how students were selected to participate in Imagine Language & Literacy. The proportion of students who participated varied by grade level and district. Information about what led to this variation may have helped to explain outcomes. Fifth, there was no available information about programing in which comparison students may have participated. If nonparticipating students engaged in other literacy intervention programs or supports, this participation may have attenuated outcomes. Lastly, while the study initially intended to analyze the program impact in both districts, NISD was excluded from the impact analysis due to a lack of sufficient nonparticipants to form the comparison group.

# APPENDIX A

## Full Model Information for Impact Analyses

Exhibit A1. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Full Analytic Model

Covariates	Coef.	SE	t	p-value	95% Confidence Intervals	
Treatment	-0.03	0.34	-0.08	0.94	-0.68	0.63
Baseline	0.74	0.01	76.71	< 0.01	0.72	0.76
Gender	0.08	0.25	0.31	0.75	-0.42	0.57
Grade 2	0.52	0.57	0.90	0.37	-0.61	1.64
Grade 3	5.74	0.62	9.21	< 0.01	4.52	6.97
Grade 4	3.99	0.69	5.78	< 0.01	2.64	5.34
Grade 5	4.75	0.73	6.54	< 0.01	3.32	6.17
Grade 6	4.66	0.93	5.04	< 0.01	2.85	6.48
Grade 7	5.55	1.00	5.57	< 0.01	3.60	7.51
Grade 8	4.47	1.07	4.16	< 0.01	2.36	6.57
Nonwhite	-1.89	0.36	-5.24	< 0.01	-2.60	-1.18
SPED	-2.52	0.37	-6.91	< 0.01	-3.24	-1.81
Gifted	3.47	0.40	8.69	< 0.01	2.69	4.25
Homeless	-2.60	1.08	-2.41	0.02	-4.72	-0.48
Foster	-14.28	4.81	-2.97	< 0.01	-23.70	-4.86
504 Plan	0.32	1.07	0.30	0.76	-1.78	2.42
Economic Disadvantage	-1.02	0.29	-3.50	< 0.01	-1.59	-0.45
English Learner	-1.69	0.32	-5.26	< 0.01	-2.33	-1.06
Intercept	55.71	1.55	36.03	< 0.01	52.67	58.74

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit A2. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Final Trimmed Model**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment	-0.03	0.34	-0.08	0.94	-0.68	0.63
Baseline	0.74	0.01	76.73	< 0.01	0.72	0.76
Gender	0.08	0.25	0.31	0.76	-0.42	0.57
Grade 2	0.52	0.57	0.91	0.37	-0.61	1.65
Grade 3	5.75	0.62	9.22	< 0.01	4.53	6.97
Grade 4	4.00	0.69	5.79	< 0.01	2.64	5.35
Grade 5	4.75	0.73	6.55	< 0.01	3.33	6.18
Grade 6	4.67	0.93	5.05	< 0.01	2.86	6.49
Grade 7	5.56	1.00	5.58	< 0.01	3.61	7.51
Grade 8	4.47	1.07	4.16	< 0.01	2.36	6.58
Nonwhite	-1.90	0.36	-5.27	< 0.01	-2.60	-1.19
SPED	-2.53	0.37	-6.93	< 0.01	-3.24	-1.81
Gifted	3.47	0.40	8.70	< 0.01	2.69	4.25
Homeless	-2.61	1.08	-2.41	0.02	-4.72	-0.49
Foster	-14.29	4.81	-2.97	< 0.01	-23.71	-4.87
Economic Disadvantage	-1.02	0.29	-3.50	< 0.01	-1.60	-0.45
English Learner	-1.70	0.32	-5.28	< 0.01	-2.33	-1.07
Intercept	55.72	1.55	36.07	< 0.01	52.69	58.75

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit A3. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup (Gender)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x Gender	0.47	0.51	0.91	0.36	-0.54	1.47
Treatment	-0.24	0.41	-0.58	0.56	-1.03	0.56
Baseline	0.74	0.01	76.72	< 0.01	0.72	0.76
Gender	-0.21	0.40	-0.52	0.60	-1.00	0.58
Grade 2	0.52	0.57	0.91	0.37	-0.61	1.65
Grade 3	5.76	0.62	9.23	< 0.01	4.54	6.98
Grade 4	3.99	0.69	5.79	< 0.01	2.64	5.34
Grade 5	4.76	0.73	6.56	< 0.01	3.34	6.18
Grade 6	4.67	0.93	5.05	< 0.01	2.85	6.48
Grade 7	5.56	1.00	5.58	< 0.01	3.61	7.51
Grade 8	4.46	1.07	4.15	< 0.01	2.36	6.57
Nonwhite	-1.89	0.36	-5.25	< 0.01	-2.60	-1.19
SPED	-2.53	0.37	-6.94	< 0.01	-3.25	-1.82
Gifted	3.47	0.40	8.70	< 0.01	2.69	4.26
Homeless	-2.59	1.08	-2.39	0.02	-4.71	-0.47
Foster	-14.16	4.81	-2.95	< 0.01	-23.58	-4.74
Economic Disadvantage	-1.02	0.29	-3.49	< 0.01	-1.59	-0.45
English Learner	-1.70	0.32	-5.28	< 0.01	-2.33	-1.07
Intercept	55.84	1.55	36.01	< 0.01	52.80	58.88

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit A4. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup (English Learner)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x English Learner	-0.78	0.59	-1.33	0.18	-1.94	0.37
Treatment	0.17	0.37	0.46	0.64	-0.55	0.89
Baseline	0.74	0.01	76.74	< 0.01	0.72	0.76
Gender	0.08	0.25	0.30	0.76	-0.42	0.57
Grade 2	0.52	0.57	0.90	0.37	-0.61	1.64
Grade 3	5.76	0.62	9.23	< 0.01	4.53	6.98
Grade 4	3.99	0.69	5.78	< 0.01	2.63	5.34
Grade 5	4.75	0.73	6.55	< 0.01	3.33	6.17
Grade 6	4.66	0.93	5.04	< 0.01	2.84	6.47
Grade 7	5.57	1.00	5.59	< 0.01	3.61	7.52
Grade 8	4.46	1.07	4.15	< 0.01	2.35	6.57
Nonwhite	-1.90	0.36	-5.26	< 0.01	-2.60	-1.19
SPED	-2.53	0.37	-6.93	< 0.01	-3.25	-1.82
Gifted	3.48	0.40	8.71	< 0.01	2.69	4.26
Homeless	-2.59	1.08	-2.40	0.02	-4.71	-0.47
Foster	-14.19	4.81	-2.95	< 0.01	-23.61	-4.77
Economic Disadvantage	-1.02	0.29	-3.50	< 0.01	-1.59	-0.45
English Learner	-1.21	0.49	-2.50	0.01	-2.17	-0.26
Intercept	55.60	1.55	35.93	< 0.01	52.57	58.64

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit A5. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup (Economic Disadvantage)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x Economic Disadvantage	0.19	0.55	0.35	0.73	-0.89	1.27
Treatment	-0.15	0.48	-0.31	0.76	-1.10	0.80
Baseline	0.74	0.01	76.70	< 0.01	0.72	0.76
Gender	0.08	0.25	0.32	0.75	-0.41	0.57
Grade 2	0.52	0.57	0.91	0.36	-0.60	1.65
Grade 3	5.75	0.62	9.22	< 0.01	4.53	6.97
Grade 4	4.00	0.69	5.80	< 0.01	2.65	5.35
Grade 5	4.76	0.73	6.56	< 0.01	3.33	6.18
Grade 6	4.67	0.93	5.05	< 0.01	2.86	6.48
Grade 7	5.56	1.00	5.58	< 0.01	3.61	7.52
Grade 8	4.47	1.07	4.16	< 0.01	2.36	6.58
Nonwhite	-1.90	0.36	-5.27	< 0.01	-2.60	-1.19
SPED	-2.53	0.37	-6.93	< 0.01	-3.24	-1.81
Gifted	3.47	0.40	8.70	< 0.01	2.69	4.25
Homeless	-2.61	1.08	-2.41	0.02	-4.73	-0.49
Foster	-14.31	4.81	-2.98	< 0.01	-23.73	-4.89
Economic Disadvantage	-1.14	0.44	-2.57	0.01	-2.01	-0.27
English Learner	-1.70	0.32	-5.28	< 0.01	-2.33	-1.07
Intercept	55.80	1.56	35.71	< 0.01	52.74	58.87

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit A6. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup  
(Race/Ethnicity: Black/African American)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x Black/African American	-0.03	0.54	-0.05	0.96	-1.08	1.03
Treatment	-0.02	0.39	-0.04	0.97	-0.78	0.75
Baseline	0.74	0.01	76.41	< 0.01	0.72	0.76
Gender	0.07	0.25	0.26	0.79	-0.43	0.56
Grade 2	0.52	0.57	0.90	0.37	-0.61	1.64
Grade 3	5.81	0.63	9.29	< 0.01	4.58	7.03
Grade 4	4.07	0.69	5.89	< 0.01	2.71	5.42
Grade 5	4.83	0.73	6.64	< 0.01	3.41	6.26
Grade 6	4.73	0.92	5.12	< 0.01	2.92	6.54
Grade 7	5.64	1.00	5.67	< 0.01	3.69	7.60
Grade 8	4.57	1.07	4.26	< 0.01	2.46	6.68
Black	-1.68	0.45	-3.75	< 0.01	-2.56	-0.80
SPED	-2.48	0.37	-6.80	< 0.01	-3.19	-1.76
Gifted	3.41	0.40	8.55	< 0.01	2.62	4.19
Homeless	-2.44	1.08	-2.26	0.02	-4.56	-0.32
Foster	-14.45	4.81	-3.01	< 0.01	-23.87	-5.03
Economic Disadvantage	-1.15	0.29	-4.01	< 0.01	-1.71	-0.59
English Learner	-2.86	0.35	-8.06	< 0.01	-3.55	-2.16
Intercept	55.36	1.53	36.27	< 0.01	52.37	58.35

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit A7. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup  
(Race/Ethnicity: Hispanic)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x Hispanic	0.00	0.55	0.00	1.00	-1.08	1.09
Treatment	-0.04	0.38	-0.10	0.92	-0.78	0.71
Baseline	0.75	0.01	79.25	< 0.01	0.73	0.77
Gender	0.05	0.25	0.18	0.86	-0.45	0.54
Grade 2	0.41	0.58	0.71	0.48	-0.72	1.54
Grade 3	5.51	0.62	8.83	< 0.01	4.28	6.73
Grade 4	3.59	0.69	5.23	< 0.01	2.24	4.94
Grade 5	4.25	0.72	5.90	< 0.01	2.84	5.67
Grade 6	4.12	0.93	4.44	< 0.01	2.30	5.94
Grade 7	4.91	1.00	4.92	< 0.01	2.96	6.87
Grade 8	3.84	1.08	3.56	< 0.01	1.72	5.95
Hispanic	-0.41	0.51	-0.80	0.43	-1.40	0.59
SPED	-2.42	0.37	-6.63	< 0.01	-3.14	-1.70
Gifted	3.35	0.40	8.38	< 0.01	2.57	4.13
Homeless	-2.82	1.08	-2.60	0.01	-4.94	-0.70
Foster	-14.12	4.82	-2.93	< 0.01	-23.56	-4.67
Economic Disadvantage	-1.40	0.28	-4.94	< 0.01	-1.95	-0.84
English Learner	-1.71	0.42	-4.07	< 0.01	-2.53	-0.89
Intercept	53.22	1.48	35.99	< 0.01	50.32	56.12

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit A8. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup  
(Race/Ethnicity: White)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x White	-0.72	0.64	-1.12	0.26	-1.98	0.54
Treatment	0.15	0.37	0.40	0.69	-0.58	0.88
Baseline	0.74	0.01	76.73	< 0.01	0.72	0.76
Gender	0.09	0.25	0.34	0.74	-0.41	0.58
Grade 2	0.52	0.57	0.90	0.37	-0.61	1.64
Grade 3	5.75	0.62	9.22	< 0.01	4.53	6.97
Grade 4	4.00	0.69	5.80	< 0.01	2.65	5.35
Grade 5	4.76	0.73	6.56	< 0.01	3.33	6.18
Grade 6	4.69	0.93	5.06	< 0.01	2.87	6.50
Grade 7	5.57	1.00	5.59	< 0.01	3.61	7.52
Grade 8	4.48	1.08	4.17	< 0.01	2.37	6.59
White	2.33	0.53	4.41	< 0.01	1.29	3.37
SPED	-2.52	0.37	-6.92	< 0.01	-3.24	-1.81
Gifted	3.46	0.40	8.66	< 0.01	2.68	4.24
Homeless	-2.60	1.08	-2.41	0.02	-4.72	-0.48
Foster	-14.38	4.81	-2.99	< 0.01	-23.80	-4.96
Economic Disadvantage	-1.02	0.29	-3.51	< 0.01	-1.60	-0.45
English Learner	-1.71	0.32	-5.30	< 0.01	-2.34	-1.07
Intercept	53.71	1.48	36.37	< 0.01	50.81	56.60

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit A9. Imagine Language & Literacy Impact on MAP Reading Scores: IPS Subgroup  
(Race/Ethnicity: Asian)**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Treatment x Asian	-1.46	3.08	-0.47	0.64	-7.50	4.59
Treatment	-0.02	0.34	-0.07	0.95	-0.69	0.64
Baseline	0.75	0.01	79.21	< 0.01	0.73	0.77
Gender	0.04	0.25	0.16	0.87	-0.46	0.54
Grade 2	0.40	0.58	0.70	0.49	-0.73	1.53
Grade 3	5.52	0.62	8.85	< 0.01	4.30	6.74
Grade 4	3.60	0.69	5.24	< 0.01	2.25	4.95
Grade 5	4.27	0.72	5.92	< 0.01	2.85	5.68
Grade 6	4.12	0.93	4.45	< 0.01	2.30	5.94
Grade 7	4.93	1.00	4.94	< 0.01	2.97	6.88
Grade 8	3.85	1.08	3.58	< 0.01	1.74	5.96
Asian	1.10	2.68	0.41	0.68	-4.15	6.34
SPED	-2.41	0.37	-6.60	< 0.01	-3.12	-1.69
Gifted	3.33	0.40	8.34	< 0.01	2.55	4.12
Homeless	-2.77	1.08	-2.56	0.01	-4.89	-0.65
Foster	-14.20	4.82	-2.95	< 0.01	-23.64	-4.76
Economic Disadvantage	-1.42	0.28	-5.01	< 0.01	-1.97	-0.86
English Learner	-2.00	0.32	-6.28	< 0.01	-2.62	-1.38
Intercept	53.20	1.48	36.05	< 0.01	50.31	56.10

Note: All models included a random intercept to account for students being nested in schools.

# APPENDIX B

## Full Model Information for Implementation Analyses

**Exhibit B1. Relationship of Imagine Language & Literacy Lessons Completed to MAP Reading Scores: Cross-District**

Covariates	Coef.	SE	t	p-value	95% Confidence Interval	
Lessons Completed	0.05	0.00	11.81	< 0.01	0.04	0.06
Baseline	0.74	0.01	112.10	< 0.01	0.72	0.75
Gender	0.33	0.16	2.07	0.04	0.02	0.65
Grade 1	14.98	4.49	3.34	< 0.01	6.18	23.77
Grade 2	14.83	4.49	3.30	< 0.01	6.03	23.63
Grade 3	19.12	4.49	4.26	< 0.01	10.32	27.93
Grade 4	18.57	4.50	4.13	< 0.01	9.76	27.39
Grade 5	19.31	4.50	4.29	< 0.01	10.48	28.13
Grade 6	18.85	4.56	4.14	< 0.01	9.92	27.78
Grade 7	20.65	4.57	4.52	< 0.01	11.69	29.61
Grade 8	19.37	4.61	4.20	< 0.01	10.33	28.41
Nonwhite	-0.88	0.19	-4.50	< 0.01	-1.26	-0.49
SPED	-3.52	0.22	-15.78	< 0.01	-3.96	-3.08
Gifted	3.35	0.24	14.28	< 0.01	2.89	3.81
Homeless	-3.22	0.89	-3.63	< 0.01	-4.96	-1.48
Foster	0.15	2.24	0.07	0.95	-4.24	4.54
Economic Disadvantage	-0.72	0.19	-3.83	< 0.01	-1.09	-0.35
English Learner	-2.74	0.25	-10.94	< 0.01	-3.23	-2.25
Intercept	40.43	4.58	8.82	< 0.01	31.45	49.41

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B2. Relationship of Imagine Language & Literacy Lessons Passed to MAP Reading Scores: Cross-District**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Passed	0.06	0.01	13.20	< 0.01	0.05	0.07
Baseline	0.73	0.01	111.78	< 0.01	0.72	0.75
Gender	0.35	0.16	2.13	0.03	0.03	0.66
Grade 1	14.94	4.48	3.33	< 0.01	6.16	23.72
Grade 2	14.86	4.48	3.32	< 0.01	6.08	23.65
Grade 3	19.16	4.49	4.27	< 0.01	10.36	27.95
Grade 4	18.67	4.49	4.16	< 0.01	9.87	27.48
Grade 5	19.45	4.50	4.33	< 0.01	10.64	28.27
Grade 6	19.07	4.55	4.19	< 0.01	10.15	27.99
Grade 7	20.90	4.57	4.58	< 0.01	11.95	29.85
Grade 8	19.63	4.61	4.26	< 0.01	10.60	28.65
Nonwhite	-0.88	0.19	-4.54	< 0.01	-1.26	-0.50
SPED	-3.48	0.22	-15.59	< 0.01	-3.91	-3.04
Gifted	3.35	0.24	14.27	< 0.01	2.89	3.81
Homeless	-3.23	0.89	-3.64	< 0.01	-4.96	-1.49
Foster	0.09	2.24	0.04	0.97	-4.30	4.48
Economic Disadvantage	-0.70	0.19	-3.73	< 0.01	-1.07	-0.33
English Learner	-2.75	0.25	-10.98	< 0.01	-3.23	-2.26
Intercept	40.64	4.58	8.88	< 0.01	31.67	49.61

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B3. Relationship of Imagine Language & Literacy Total Time in Program to MAP Reading Scores: Cross-District**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Total Time	0.06	0.01	8.67	< 0.01	0.05	0.07
Baseline	0.74	0.01	111.97	< 0.01	0.72	0.75
Gender	0.34	0.16	2.10	0.04	0.02	0.66
Grade 1	15.07	4.50	3.35	< 0.01	6.25	23.89
Grade 2	15.12	4.50	3.36	< 0.01	6.29	23.94
Grade 3	19.53	4.50	4.34	< 0.01	10.71	28.36
Grade 4	18.82	4.51	4.18	< 0.01	9.99	27.66
Grade 5	19.36	4.51	4.29	< 0.01	10.52	28.21
Grade 6	18.85	4.57	4.13	< 0.01	9.90	27.81
Grade 7	20.67	4.58	4.51	< 0.01	11.69	29.65
Grade 8	19.51	4.62	4.22	< 0.01	10.45	28.57
Nonwhite	-0.90	0.20	-4.61	< 0.01	-1.28	-0.52
SPED	-3.54	0.22	-15.80	< 0.01	-3.98	-3.10
Gifted	3.36	0.24	14.27	< 0.01	2.90	3.82
Homeless	-3.18	0.89	-3.58	< 0.01	-4.92	-1.44
Foster	0.15	2.25	0.06	0.95	-4.26	4.55
Economic Disadvantage	-0.78	0.19	-4.14	< 0.01	-1.15	-0.41
English Learner	-2.66	0.25	-10.60	< 0.01	-3.15	-2.17
Intercept	40.11	4.60	8.73	< 0.01	31.10	49.12

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B4. Relationship of Imagine Language & Literacy Active Time in Program to MAP Reading Scores: Cross-District**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Active Time	0.14	0.01	12.39	< 0.01	0.12	0.16
Baseline	0.73	0.01	111.88	< 0.01	0.72	0.75
Gender	0.32	0.16	1.99	0.05	0.01	0.64
Grade 1	14.67	4.49	3.27	< 0.01	5.88	23.46
Grade 2	14.96	4.49	3.33	< 0.01	6.16	23.75
Grade 3	19.55	4.49	4.35	< 0.01	10.75	28.35
Grade 4	19.11	4.50	4.25	< 0.01	10.30	27.92
Grade 5	19.74	4.50	4.39	< 0.01	10.92	28.56
Grade 6	19.29	4.55	4.24	< 0.01	10.36	28.21
Grade 7	21.10	4.57	4.62	< 0.01	12.14	30.06
Grade 8	20.03	4.61	4.35	< 0.01	11.00	29.07
Nonwhite	-0.89	0.19	-4.58	< 0.01	-1.27	-0.51
SPED	-3.49	0.22	-15.66	< 0.01	-3.93	-3.06
Gifted	3.33	0.24	14.18	< 0.01	2.87	3.79
Homeless	-3.21	0.89	-3.63	< 0.01	-4.95	-1.48
Foster	0.21	2.24	0.09	0.93	-4.18	4.60
Economic Disadvantage	-0.73	0.19	-3.86	< 0.01	-1.10	-0.36
English Learner	-2.74	0.25	-10.94	< 0.01	-3.23	-2.25
Intercept	40.09	4.58	8.75	< 0.01	31.11	49.07

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B5. Relationship of Imagine Language & Literacy Lessons Completed (20 or more) to MAP Reading Scores: Cross-District**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Completed	1.96	0.18	10.84	< 0.01	1.61	2.31
Baseline	0.74	0.01	112.07	< 0.01	0.72	0.75
Gender	0.32	0.16	1.95	0.05	0.00	0.63
Grade 1	14.78	4.49	3.29	< 0.01	5.98	23.59
Grade 2	14.70	4.49	3.27	< 0.01	5.89	23.51
Grade 3	19.04	4.50	4.23	< 0.01	10.22	27.85
Grade 4	18.45	4.50	4.10	< 0.01	9.63	27.27
Grade 5	19.12	4.51	4.24	< 0.01	10.28	27.95
Grade 6	18.56	4.56	4.07	< 0.01	9.62	27.50
Grade 7	20.34	4.58	4.45	< 0.01	11.38	29.31
Grade 8	18.99	4.61	4.12	< 0.01	9.95	28.04
Nonwhite	-0.88	0.20	-4.51	< 0.01	-1.26	-0.50
SPED	-3.56	0.22	-15.94	< 0.01	-4.00	-3.12
Gifted	3.33	0.24	14.14	< 0.01	2.86	3.79
Homeless	-3.28	0.89	-3.70	< 0.01	-5.02	-1.55
Foster	0.35	2.24	0.16	0.88	-4.05	4.75
Economic Disadvantage	-0.74	0.19	-3.94	< 0.01	-1.11	-0.37
English Learner	-2.72	0.25	-10.87	< 0.01	-3.21	-2.23
Intercept	40.81	4.59	8.90	< 0.01	31.82	49.80

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B6. Relationship of Imagine Language & Literacy Lessons Passed (20 or more) to MAP Reading Scores: Cross-District**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Passed	2.19	0.18	11.93	< 0.01	1.83	2.55
Baseline	0.73	0.01	111.66	< 0.01	0.72	0.75
Gender	0.32	0.16	1.97	0.05	0.00	0.64
Grade 1	14.91	4.49	3.32	< 0.01	6.12	23.71
Grade 2	14.92	4.49	3.32	< 0.01	6.12	23.71
Grade 3	19.26	4.49	4.29	< 0.01	10.45	28.06
Grade 4	18.71	4.50	4.16	< 0.01	9.89	27.52
Grade 5	19.40	4.50	4.31	< 0.01	10.58	28.23
Grade 6	18.89	4.56	4.15	< 0.01	9.96	27.82
Grade 7	20.69	4.57	4.53	< 0.01	11.73	29.65
Grade 8	19.32	4.61	4.19	< 0.01	10.28	28.36
Nonwhite	-0.89	0.19	-4.55	< 0.01	-1.27	-0.50
SPED	-3.53	0.22	-15.84	< 0.01	-3.97	-3.10
Gifted	3.33	0.24	14.17	< 0.01	2.87	3.79
Homeless	-3.26	0.89	-3.68	< 0.01	-5.00	-1.52
Foster	0.25	2.24	0.11	0.91	-4.14	4.64
Economic Disadvantage	-0.74	0.19	-3.91	< 0.01	-1.11	-0.37
English Learner	-2.73	0.25	-10.90	< 0.01	-3.22	-2.24
Intercept	40.99	4.58	8.95	< 0.01	32.01	49.97

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B7. Relationship of Imagine Language & Literacy Lessons Completed to MAP Reading Scores:  
IPS**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Completed	0.08	0.01	11.37	< 0.01	0.07	0.09
Baseline	0.73	0.01	79.58	< 0.01	0.72	0.75
Gender	0.34	0.24	1.43	0.15	-0.12	0.80
Grade 1	14.89	4.83	3.08	< 0.01	5.42	24.36
Grade 2	14.73	4.84	3.05	< 0.01	5.25	24.21
Grade 3	19.04	4.84	3.93	< 0.01	9.55	28.53
Grade 4	18.17	4.86	3.74	< 0.01	8.65	27.68
Grade 5	19.99	4.87	4.11	< 0.01	10.46	29.53
Grade 6	19.15	4.93	3.89	< 0.01	9.50	28.81
Grade 7	21.02	4.95	4.25	< 0.01	11.33	30.72
Grade 8	19.83	4.99	3.98	< 0.01	10.05	29.61
Nonwhite	-1.94	0.33	-5.92	< 0.01	-2.59	-1.30
SPED	-2.96	0.34	-8.83	< 0.01	-3.62	-2.30
Gifted	3.42	0.35	9.71	< 0.01	2.73	4.10
Homeless	-3.47	0.98	-3.54	< 0.01	-5.40	-1.55
Foster	1.57	3.05	0.51	0.61	-4.41	7.55
Economic Disadvantage	-0.92	0.27	-3.45	< 0.01	-1.44	-0.40
English Learner	-2.94	0.31	-9.38	< 0.01	-3.55	-2.32
Intercept	41.09	5.00	8.22	< 0.01	31.29	50.89

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B8. Relationship of Imagine Language & Literacy Lessons Passed to MAP Reading Scores: IPS**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Passed	0.11	0.01	12.89	< 0.01	0.09	0.12
Baseline	0.73	0.01	79.55	< 0.01	0.71	0.75
Gender	0.36	0.24	1.54	0.12	-0.10	0.82
Grade 1	14.78	4.82	3.07	< 0.01	5.34	24.23
Grade 2	14.70	4.82	3.05	< 0.01	5.25	24.15
Grade 3	19.01	4.83	3.94	< 0.01	9.54	28.48
Grade 4	18.23	4.84	3.77	< 0.01	8.74	27.72
Grade 5	20.13	4.85	4.15	< 0.01	10.62	29.65
Grade 6	19.38	4.91	3.95	< 0.01	9.75	29.01
Grade 7	21.29	4.93	4.32	< 0.01	11.62	30.96
Grade 8	20.12	4.98	4.04	< 0.01	10.37	29.88
Nonwhite	-1.95	0.33	-5.96	< 0.01	-2.59	-1.31
SPED	-2.88	0.33	-8.61	< 0.01	-3.53	-2.22
Gifted	3.39	0.35	9.66	< 0.01	2.70	4.08
Homeless	-3.49	0.98	-3.57	< 0.01	-5.41	-1.58
Foster	1.54	3.04	0.51	0.61	-4.42	7.50
Economic Disadvantage	-0.90	0.27	-3.37	< 0.01	-1.42	-0.38
English Learner	-2.96	0.31	-9.48	< 0.01	-3.57	-2.35
Intercept	41.24	4.99	8.27	< 0.01	31.47	51.02

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B9. Relationship of Imagine Language & Literacy Total Time in Program to MAP Reading Scores: IPS**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Total Time	0.09	0.01	9.02	< 0.01	0.07	0.11
Baseline	0.73	0.01	79.28	< 0.01	0.72	0.75
Gender	0.30	0.24	1.25	0.21	-0.17	0.76
Grade 1	15.08	4.85	3.11	< 0.01	5.58	24.58
Grade 2	15.22	4.85	3.14	< 0.01	5.71	24.73
Grade 3	19.72	4.86	4.06	< 0.01	10.19	29.24
Grade 4	18.63	4.87	3.82	< 0.01	9.08	28.18
Grade 5	20.18	4.88	4.13	< 0.01	10.61	29.74
Grade 6	19.27	4.94	3.90	< 0.01	9.58	28.96
Grade 7	21.18	4.96	4.27	< 0.01	11.45	30.91
Grade 8	20.15	5.01	4.02	< 0.01	10.33	29.96
Nonwhite	-1.99	0.33	-6.04	< 0.01	-2.63	-1.34
SPED	-2.94	0.34	-8.74	< 0.01	-3.60	-2.28
Gifted	3.41	0.35	9.67	< 0.01	2.72	4.10
Homeless	-3.44	0.98	-3.50	< 0.01	-5.37	-1.51
Foster	1.54	3.06	0.50	0.61	-4.46	7.54
Economic Disadvantage	-0.95	0.27	-3.55	< 0.01	-1.47	-0.43
English Learner	-2.82	0.31	-8.98	< 0.01	-3.43	-2.20
Intercept	40.85	5.02	8.14	< 0.01	31.01	50.68

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B10. Relationship of Imagine Language & Literacy Active Time in Program to MAP Reading Scores: IPS**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Active Time	0.17	0.02	11.17	< 0.01	0.14	0.20
Baseline	0.73	0.01	79.37	< 0.01	0.71	0.75
Gender	0.32	0.24	1.35	0.18	-0.15	0.78
Grade 1	14.66	4.83	3.03	< 0.01	5.19	24.13
Grade 2	15.04	4.84	3.11	< 0.01	5.56	24.52
Grade 3	19.69	4.84	4.06	< 0.01	10.19	29.18
Grade 4	18.89	4.86	3.89	< 0.01	9.37	28.41
Grade 5	20.53	4.87	4.22	< 0.01	10.99	30.07
Grade 6	19.63	4.93	3.98	< 0.01	9.97	29.29
Grade 7	21.53	4.95	4.35	< 0.01	11.83	31.23
Grade 8	20.52	4.99	4.11	< 0.01	10.73	30.31
Nonwhite	-1.93	0.33	-5.90	< 0.01	-2.58	-1.29
SPED	-2.94	0.34	-8.78	< 0.01	-3.60	-2.29
Gifted	3.36	0.35	9.56	< 0.01	2.67	4.05
Homeless	-3.45	0.98	-3.52	< 0.01	-5.37	-1.53
Foster	1.55	3.05	0.51	0.61	-4.43	7.53
Economic Disadvantage	-0.92	0.27	-3.47	< 0.01	-1.44	-0.40
English Learner	-2.91	0.31	-9.30	< 0.01	-3.52	-2.30
Intercept	40.77	5.00	8.15	< 0.01	30.97	50.58

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B11. Relationship of Imagine Language & Literacy Lessons Completed (20 or more) to MAP Reading Scores: IPS**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Completed	2.71	0.28	9.62	< 0.01	2.16	3.27
Baseline	0.73	0.01	79.35	< 0.01	0.72	0.75
Gender	0.27	0.24	1.14	0.25	-0.19	0.73
Grade 1	14.73	4.84	3.04	< 0.01	5.23	24.22
Grade 2	14.66	4.85	3.02	< 0.01	5.16	24.17
Grade 3	19.03	4.86	3.92	< 0.01	9.51	28.55
Grade 4	18.12	4.87	3.72	< 0.01	8.58	27.66
Grade 5	19.75	4.88	4.05	< 0.01	10.18	29.31
Grade 6	18.79	4.94	3.81	< 0.01	9.11	28.47
Grade 7	20.65	4.96	4.17	< 0.01	10.93	30.37
Grade 8	19.32	5.00	3.86	< 0.01	9.51	29.12
Nonwhite	-1.94	0.33	-5.91	< 0.01	-2.59	-1.30
SPED	-2.96	0.34	-8.80	< 0.01	-3.62	-2.30
Gifted	3.42	0.35	9.69	< 0.01	2.72	4.11
Homeless	-3.54	0.98	-3.60	< 0.01	-5.46	-1.61
Foster	1.76	3.06	0.58	0.57	-4.23	7.75
Economic Disadvantage	-0.95	0.27	-3.55	< 0.01	-1.47	-0.42
English Learner	-2.90	0.31	-9.24	< 0.01	-3.51	-2.28
Intercept	41.74	5.01	8.33	< 0.01	31.92	51.56

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B12. Relationship of Imagine Language & Literacy Lessons Passed (20 or more) to MAP Reading Scores: IPS**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Passed	3.21	0.29	10.97	< 0.01	2.64	3.79
Baseline	0.73	0.01	79.08	< 0.01	0.71	0.75
Gender	0.30	0.24	1.26	0.21	-0.17	0.76
Grade 1	14.85	4.83	3.07	< 0.01	5.38	24.33
Grade 2	14.92	4.84	3.08	< 0.01	5.44	24.40
Grade 3	19.30	4.85	3.98	< 0.01	9.80	28.80
Grade 4	18.48	4.86	3.80	< 0.01	8.95	28.00
Grade 5	20.13	4.87	4.14	< 0.01	10.58	29.67
Grade 6	19.26	4.93	3.91	< 0.01	9.60	28.92
Grade 7	21.14	4.95	4.27	< 0.01	11.44	30.84
Grade 8	19.79	4.99	3.97	< 0.01	10.01	29.58
Nonwhite	-2.00	0.33	-6.10	< 0.01	-2.65	-1.36
SPED	-2.91	0.34	-8.66	< 0.01	-3.56	-2.25
Gifted	3.42	0.35	9.73	< 0.01	2.74	4.11
Homeless	-3.49	0.98	-3.56	< 0.01	-5.41	-1.57
Foster	1.64	3.05	0.54	0.59	-4.34	7.62
Economic Disadvantage	-0.92	0.27	-3.45	< 0.01	-1.44	-0.40
English Learner	-2.90	0.31	-9.27	< 0.01	-3.52	-2.29
Intercept	42.03	5.00	8.40	< 0.01	32.22	51.83

Note: All models included a random intercept to account for students being nested in schools.

**Exhibit B13. Relationship of Imagine Language & Literacy Lessons Completed to MAP Reading Scores:  
NISD**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Completed	0.03	0.01	5.46	< 0.01	0.02	0.04
Baseline	0.72	0.01	72.62	< 0.01	0.70	0.74
Gender	0.44	0.22	2.06	0.04	0.02	0.87
Grade 4	0.07	0.96	0.07	0.94	-1.91	2.05
Grade 5	0.31	0.97	0.32	0.76	-1.70	2.31
Grade 6	5.57	5.70	0.98	0.33	-5.61	16.75
Grade 7	-3.49	6.03	-0.58	0.56	-15.32	8.35
Nonwhite	-0.20	0.23	-0.86	0.39	-0.64	0.25
SPED	-4.39	0.30	-14.65	< 0.01	-4.98	-3.80
Gifted	3.58	0.31	11.51	< 0.01	2.97	4.19
Homeless	2.58	3.56	0.73	0.47	-4.40	9.57
Foster	-2.32	3.26	-0.71	0.48	-8.72	4.08
Economic Disadvantage	-0.56	0.26	-2.13	0.03	-1.08	-0.04
English Learner	-1.72	0.46	-3.74	< 0.01	-2.62	-0.82
Intercept	62.04	1.98	31.34	< 0.01	58.16	65.92

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B14. Relationship of Imagine Language & Literacy Lessons Passed to MAP Reading Scores: NISD**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Passed	0.04	0.01	6.38	< 0.01	0.03	0.05
Baseline	0.72	0.01	72.44	< 0.01	0.70	0.74
Gender	0.45	0.22	2.10	0.04	0.03	0.87
Grade 4	0.11	0.96	0.11	0.91	-1.87	2.09
Grade 5	0.38	0.97	0.39	0.70	-1.62	2.38
Grade 6	5.72	5.70	1.00	0.32	-5.45	16.89
Grade 7	-3.34	6.03	-0.55	0.58	-15.16	8.49
Nonwhite	-0.20	0.23	-0.87	0.38	-0.64	0.25
SPED	-4.37	0.30	-14.59	< 0.01	-4.96	-3.78
Gifted	3.59	0.31	11.54	< 0.01	2.98	4.20
Homeless	2.59	3.56	0.73	0.47	-4.39	9.57
Foster	-2.39	3.26	-0.73	0.46	-8.79	4.00
Economic Disadvantage	-0.55	0.26	-2.07	0.04	-1.06	-0.03
English Learner	-1.72	0.46	-3.76	< 0.01	-2.62	-0.82
Intercept	62.23	1.98	31.51	< 0.01	58.35	66.10

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B15. Relationship of Imagine Language & Literacy Total Time in Program to MAP Reading Scores: NISD**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Total Time	0.02	0.01	2.02	< 0.01	0.00	0.04
Baseline	0.72	0.01	72.58	< 0.01	0.70	0.74
Gender	0.44	0.22	2.02	0.04	0.01	0.86
Grade 4	-0.05	0.97	-0.05	0.96	-2.06	1.96
Grade 5	0.08	0.99	0.08	0.94	-1.95	2.11
Grade 6	5.12	5.72	0.90	0.37	-6.09	16.34
Grade 7	-3.78	6.06	-0.62	0.53	-15.66	8.11
Nonwhite	-0.20	0.23	-0.86	0.39	-0.64	0.25
SPED	-4.45	0.30	-14.80	< 0.01	-5.04	-3.86
Gifted	3.57	0.31	11.42	< 0.01	2.96	4.18
Homeless	2.57	3.57	0.72	0.47	-4.43	9.57
Foster	-2.18	3.27	-0.67	0.51	-8.60	4.23
Economic Disadvantage	-0.64	0.26	-2.42	0.02	-1.16	-0.12
English Learner	-1.63	0.46	-3.54	< 0.01	-2.53	-0.73
Intercept	62.35	1.99	31.34	< 0.01	58.45	66.25

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B16. Relationship of Imagine Learning Active Time in Program to MAP Reading Scores: NISD**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Active Time	0.08	0.02	5.10	< 0.01	0.05	0.12
Baseline	0.72	0.01	72.29	< 0.01	0.70	0.74
Gender	0.43	0.22	1.98	0.05	0.01	0.85
Grade 4	0.05	0.98	0.05	0.96	-1.97	2.06
Grade 5	0.22	0.99	0.23	0.82	-1.81	2.26
Grade 6	5.71	5.71	1.00	0.32	-5.48	16.90
Grade 7	-3.34	6.05	-0.55	0.58	-15.21	8.52
Nonwhite	-0.21	0.23	-0.94	0.35	-0.66	0.23
SPED	-4.37	0.30	-14.53	< 0.01	-4.95	-3.78
Gifted	3.60	0.31	11.56	< 0.01	2.99	4.21
Homeless	2.55	3.56	0.72	0.47	-4.44	9.53
Foster	-2.28	3.27	-0.70	0.49	-8.68	4.13
Economic Disadvantage	-0.57	0.26	-2.16	0.03	-1.09	-0.05
English Learner	-1.69	0.46	-3.69	< 0.01	-2.59	-0.79
Intercept	62.29	1.98	31.46	< 0.01	58.40	66.17

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B17. Relationship of Imagine Language & Literacy Lessons Completed (20 or more) to MAP Reading Scores: NISD**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Completed	1.27	0.22	5.66	< 0.01	0.83	1.70
Baseline	0.72	0.01	72.60	< 0.01	0.70	0.74
Gender	0.46	0.22	2.12	0.03	0.03	0.88
Grade 4	0.03	0.96	0.03	0.97	-1.95	2.02
Grade 5	0.26	0.97	0.27	0.79	-1.74	2.26
Grade 6	5.50	5.70	0.97	0.33	-5.67	16.68
Grade 7	-3.48	6.03	-0.58	0.56	-15.31	8.36
Nonwhite	-0.20	0.23	-0.89	0.37	-0.65	0.24
SPED	-4.43	0.30	-14.79	< 0.01	-5.01	-3.84
Gifted	3.56	0.31	11.46	< 0.01	2.95	4.17
Homeless	2.35	3.56	0.66	0.51	-4.63	9.33
Foster	-2.20	3.26	-0.67	0.50	-8.60	4.20
Economic Disadvantage	-0.57	0.26	-2.14	0.03	-1.08	-0.05
English Learner	-1.70	0.46	-3.71	< 0.01	-2.60	-0.80
Intercept	62.21	1.98	31.46	< 0.01	58.33	66.08

*Note:* All models included a random intercept to account for students being nested in schools.

**Exhibit B18. Relationship of Imagine Language & Literacy Lessons Passed (20 or more) to MAP Reading Scores: NISD**

<b>Covariates</b>	<b>Coef.</b>	<b>SE</b>	<b>t</b>	<b>p-value</b>	<b>95% Confidence Interval</b>	
Lessons Passed	1.34	0.22	6.02	< 0.01	0.90	1.78
Baseline	0.72	0.01	72.42	< 0.01	0.70	0.74
Gender	0.45	0.22	2.07	0.04	0.02	0.87
Grade 4	0.05	0.96	0.05	0.96	-1.93	2.03
Grade 5	0.29	0.97	0.30	0.77	-1.71	2.29
Grade 6	5.50	5.70	0.97	0.34	-5.67	16.67
Grade 7	-3.49	6.03	-0.58	0.56	-15.32	8.33
Nonwhite	-0.19	0.23	-0.85	0.40	-0.64	0.25
SPED	-4.42	0.30	-14.78	< 0.01	-5.01	-3.83
Gifted	3.56	0.31	11.45	< 0.01	2.95	4.17
Homeless	2.28	3.56	0.64	0.52	-4.70	9.26
Foster	-2.25	3.26	-0.69	0.49	-8.65	4.15
Economic Disadvantage	-0.57	0.26	-2.18	0.03	-1.09	-0.06
English Learner	-1.71	0.46	-3.73	< 0.01	-2.61	-0.81
Intercept	62.47	1.98	31.63	< 0.01	58.60	66.35

*Note:* All models included a random intercept to account for students being nested in schools.

# APPENDIX C

## Additional Information about Program Usage

Exhibit C1. Summary of Imagine Language & Literacy Program Usage for IPS Implementation and Impact Analysis Samples by Grade Level

Grades	Implementation Analysis Sample (n = 6,869)				Impact Analysis Sample (n = 3,715)			
	Lessons Completed	Lessons Passed	Active Hours in Program	Total Hours in Program	Lessons Completed	Lessons Passed	Active Hours in Program	Total Hours in Program
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
All Grades	15.9 (18.81)	13.3 (16.14)	8.7 (9.25)	14.1 (14.03)	13.3 (17.92)	11.0 (15.31)	7.3 (8.71)	12.4 (13.77)
Grade 1	20.4 (15.95)	17.6 (13.59)	14.3 (10.52)	19.9 (13.96)	20.7 (16.19)	17.8 (13.64)	14.5 (10.59)	20.2 (13.97)
Grade 2	21.2 (20.35)	17.7 (17.28)	11.6 (10.12)	17.2 (14.38)	21.0 (21.74)	17.3 (18.21)	11.5 (10.72)	16.9 (15.1)
Grade 3	21.3 (22.01)	18.1 (19.32)	9.9 (9.23)	15.3 (13.58)	20.7 (21.35)	17.7 (19.09)	9.6 (8.64)	15.1 (12.88)
Grade 4	17.5 (19.28)	14.7 (16.57)	7.7 (7.58)	14.3 (13.39)	17.3 (18.73)	14.5 (16.16)	7.7 (7.48)	14.3 (13.24)
Grade 5	11.4 (16.17)	9.5 (13.85)	6.1 (7.11)	12.1 (13.76)	11.1 (15.86)	9.2 (13.57)	6.1 (7.15)	12.1 (13.83)
Grade 6	5.5 (9.54)	4.2 (7.70)	3.7 (4.96)	7.6 (9.77)	5.5 (9.77)	4.2 (7.89)	3.7 (5.02)	7.6 (9.78)
Grade 7	6.7 (14.73)	4.9 (11.46)	4.2 (7.43)	8.5 (13.88)	6.2 (14.19)	4.6 (11.11)	4.1 (7.23)	8.1 (13.46)
Grade 8	2.2 (9.43)	1.4 (7.96)	1.0 (4.70)	2.3 (10.28)	2.2 (9.52)	1.5 (8.04)	1.0 (4.75)	2.3 (10.38)

**Exhibit C2. Proportion of Imagine Language & Literacy Participants who Met Expectations for Lessons Completed and Lessons Passed, by District, for Implementation and Impact Analysis Samples**

	Implementation Analysis Samples			Impact Analysis Samples
	IPS (n = 6,869)	NISD (n = 5,606)	Two-District Sample (N = 12,475)	IPS (n = 3715)
	% (n)	% (n)	% (n)	% (n)
20 or More Lessons Completed	31.4 (2,155)	56.5 (3,170)	42.7 (5,325)	25.4 (945)
20 or More Lessons Passed	26.0 (1,787)	52.9 (2,965)	38.1 (4,752)	20.6 (764)

*Note.* Implementation samples listed in this table include only students who were included in the implementation analyses (i.e., students with baseline and outcome assessment data). Impact analyses were conducted in IPS only.

**Exhibit C3. Summary of Number of Imagine Language & Literacy Lessons Completed, by District, for Implementation and Impact Analysis Samples**

Number of Lessons Completed	Implementation Analysis Samples			Impact Analysis Samples
	IPS (n = 6,869)	NISD (n = 5,606)	Two-District Sample (N = 12,475)	IPS (n = 3715)
	% (n)	% (n)	% (n)	% (n)
Less than 1 lesson	20.1 (1,379)	2.7 (150)	12.3 (1,529)	26.9 (1,000)
1-5	20.6 (1,415)	10.6 (597)	16.1 (2,012)	22.2 (825)
6-10	12 (824)	10.9 (613)	11.5 (1,437)	11.8 (439)
11-15	9.1 (628)	10.3 (578)	9.7 (1,206)	8.1 (301)
16-20	8.3 (569)	10.5 (591)	9.3 (1,160)	6.9 (257)
21-25	6.7 (460)	8.8 (494)	7.6 (954)	5.3 (196)
26-30	5.0 (344)	7.9 (443)	6.3 (787)	3.7 (138)
31 or more	18.2 (1,250)	38.2 (2,140)	27.2 (3,390)	15.0 (559)

*Note.* Implementation samples described in this table include only students who were included in the implementation analyses (i.e., students with baseline and outcome assessment data). Impact analyses were conducted in IPS only.

**Exhibit C4. Summary of Number of Imagine Language & Literacy Lessons Passed, by District, for Implementation and Impact Analysis Samples**

Number of Lessons Passed	Implementation Analysis Sample			Impact Analysis Sample
	IPS (n = 6,869) % (n)	NISD (n = 5,606) % (n)	Two-District Sample (N = 12,475) % (n)	IPS (n = 3715) % (n)
Less than 1 lesson	21.3 (1,463)	2.8 (155)	13 (1,618)	28.5 (1,059)
1-5	23.1 (1,590)	12 (674)	18.1 (2,264)	24.7 (918)
6-10	12.8 (879)	12 (675)	12.5 (1,554)	12.4 (460)
11-15	10 (687)	11.2 (627)	10.5 (1,314)	8.4 (313)
16-20	8.3 (572)	10.8 (604)	9.4 (1,176)	6.5 (243)
21-25	6.3 (431)	9.4 (526)	7.7 (957)	4.5 (166)
26-30	4.8 (333)	8.2 (459)	6.3 (792)	4.3 (160)
31 or more	13.3 (914)	33.6 (1,886)	22.4 (2,800)	10.7 (396)

Note. Implementation samples described in this table include only students who were included in the implementation analyses (i.e., students with baseline and outcome assessment data). Impact analyses were conducted in IPS only.

**Exhibit C5. Summary of Active Hours of Imagine Language & Literacy Use, by District, for Implementation and Impact Analysis Samples**

Active Hours in Program	Implementation Analysis Sample			Impact Analysis Sample
	IPS (n = 6,869)	NISD (n = 5,606)	Two-District Sample (N = 12,475)	IPS (n = 3715)
	% (n)	% (n)	% (n)	% (n)
Less than 1 hour	21.2 (1,459)	1.9 (109)	12.6 (1,568)	28.1 (1,044)
1-5	30.6 (2,101)	22.6 (1,266)	27.0 (3,367)	31.4 (1,168)
6-10	17.1 (1,172)	28.1 (1,577)	22.0 (2,749)	14.9 (554)
11-15	12.5 (858)	24.7 (1,383)	18.0 (2,241)	10.8 (403)
16-20	8.5 (585)	13 (728)	10.5 (1,313)	6.7 (248)
21-25	4.3 (293)	6.3 (351)	5.2 (644)	3.6 (133)
26-30	2.5 (170)	2.2 (126)	2.4 (296)	1.9 (69)
31 or more	3.4 (231)	1.2 (66)	2.4 (297)	2.6 (96)

Note. Implementation samples described in this table include only students who were included in the implementation analyses (i.e., students with baseline and outcome assessment data). Impact analyses were conducted in IPS only.

**Exhibit C6. Summary of Total Hours of Imagine Language & Literacy Use, by District, for Implementation and Impact Samples**

Total Hours In Program	Implementation Analysis Sample			Impact Analysis Sample
	IPS (n = 6,869)	NISD (n = 5,606)	Two-District Sample (N = 12,475)	IPS
	% (n)	% (n)	% (n)	% (n)
Less than 1 hour	14.5 (996)	0.6 (32)	8.2 (1,028)	19.8 (734)
1-5	23.8 (1,637)	7.3 (412)	16.4 (2,049)	25.8 (959)
6-10	15.2 (1,044)	13.2 (742)	14.3 (1,786)	14.3 (532)
11-15	11 (756)	15.7 (879)	13.1 (1,635)	9.3 (346)
16-20	9.5 (653)	16.7 (934)	12.7 (1,587)	8.3 (310)
21-25	7.7 (528)	17.3 (970)	12 (1,498)	6.4 (239)
26-30	5.6 (385)	11.8 (661)	8.4 (1,046)	5.1 (190)
31 or more	12.7 (870)	17.4 (976)	14.8 (1,846)	10.9 (405)

*Note.* Implementation samples described in this table include only students who were included in the implementation analyses (i.e., students with baseline and outcome assessment data). Impact analyses were conducted in IPS only.

# APPENDIX D

## Full Model Information for Grade Band Impact Analyses

**Exhibit D1. Imagine Language & Literacy Impact on MAP Reading Scores: Grades 1 and 2**

Group	Students	Schools	Unadjusted Scale Score Mean (SD)	ICC	Scale Score Adjusted Mean Diff (SE)	p-value	Effect Size (g)
Intervention	806	40	159.11 (15.79)	0.16	1.19 (1.14)	0.30	0.12
Comparison	403		157.23 (16.08)				

Note. The intraclass correlation coefficient (ICC) was computed based on the null model. Hedges' *g* was calculated using adjusted model means.  $M_{ILL} = 153.53$  (SE = 2.50),  $M_{Comparison} = 152.34$  (SE = 3.47).

**Exhibit D2. Imagine Language & Literacy Impact on MAP Reading Scores: Grades 3 to 5**

Group	Students	Schools	Unadjusted Scale Score Mean (SD)	ICC	Scale Score Adjusted Mean Diff (SE)	p-value	Effect Size (g)
Intervention	1,660	42	190.16 (19.81)	0.20	0.41 (0.59)	0.49	0.05
Comparison	830		190.60 (19.86)				

Note. The intraclass correlation coefficient (ICC) was computed based on the null model. Hedges' *g* was calculated using adjusted model means.  $M_{ILL} = 189.43$  (SE = 1.00),  $M_{Comparison} = 189.02$  (SE = 1.10).




**Exhibit D3. Imagine Language & Literacy Impact on MAP Reading Scores: Grades 6 to 8**

Group	Students	Schools	Unadjusted Scale Score Mean (SD)	ICC	Scale Score Adjusted Mean Diff (SE)	p-value	Effect Size (g)
Intervention	1,249	17	204.62 (17.23)	0.12	-0.39 (0.40)	0.33	0.04
Comparison	1,091		207.13 (17.38)				

Note. The intraclass correlation coefficient (ICC) was computed based on the null model. Hedges' *g* was calculated using adjusted model means.  $M_{ILL} = 191.43$  (SE = 4.60),  $M_{Comparison} = 191.82$  (SE = 4.59).



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