imagine language & literacy®

Impact Evaluation of Imagine Language & Literacy® in a Large Southeast School District

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Abstract

This study evaluated the impact of Imagine Language & Literacy on English language learners in Grades 1–5 within a large Southeast school district during the 2022–2023 school year. Using a quasi-experimental design with propensity score matching to ensure baseline equivalence, outcomes for program users (*n* = 628) were compared to non-users (*n* = 628) on the Louisiana English Language Proficiency Test (ELPT). Logistic regression analyses indicated that students who used Imagine Language & Literacy were significantly more likely to meet or exceed state-assigned growth trajectories than their peers who did not use the program, with odds of success 1.3 times higher for program users. Findings were robust across multiple analytic samples and demonstrated a positive effect size, providing evidence that Imagine Language & Literacy supports accelerated English language proficiency growth for elementary English language learners.

Introduction

According to the most recent National Assessment of Educational Progress (NAEP) Reading Report Card, elementary English language learners scored significantly lower on the 2022 reading assessment than non-English language learners (U.S. DOE, n.d.). Although it is critical to improve reading scores across all student subgroups, it is imperative to close this gap for English language learners as they make up about 10% of America's student population (NCES, 2023).

Digital learning tools can be a valuable way to support all students in developing English language proficiency (Rahmati et al., 2021). Imagine Language & Literacy by Imagine Learning is a digital supplemental English language solution designed to personalize learning for students through direct, explicit, and systematic instruction and practice that ensures students learn critical skills in four language domains. The program provides personalized learning pathways for each student that adapt automatically to maximize engagement and progress. As such, students who utilize Imagine Language & Literacy are expected to improve and accelerate their English language proficiency.

In partnership with a southeastern school district, Imagine Learning conducted a study designed to evaluate the efficacy of Imagine Language & Literacy. The primary research question was: how does use of Imagine Language & Literacy impact Grades 1–5 English language learners' performance on a test of English language proficiency? Reported study results demonstrate how the program positively impacted students' literacy proficiency by comparing the performance of Imagine Language & Literacy students to a highly similar group of students who did not use the Imagine Language & Literacy program.

Methods

POPULATION

During the 2022–2023 school year, Imagine Language & Literacy was made available to Grades 1–5 English language learners in a large Southeast school district. A total of 46 schools enrolled students who used the Imagine Language & Literacy program for more than zero minutes during the school year. In these schools, Imagine Language & Literacy was used at the discretion of teachers and families if it was deemed valuable to support the learning of an individual student. A total of 2,757 students in those schools used the program and 901 students did not. In addition, data were collected for 218 students from six schools that had no Imagine Language & Literacy usage. Ultimately, a total of 1,119 students did not use the Imagine Language & Literacy program while a total of 2,757 students were categorized as program users.

RESEARCH DESIGN

This study was conducted retrospectively using data from the 2022–2023 school year. It evaluated the difference in English language acquisition between treatment (users of Imagine Language & Literacy) and control (non-users of Imagine Language & Literacy) students. The treatment group was comprised of students who logged any usage in the Imagine Language & Literacy program during the 2022–2023 school year, whereas the control group included all students who did not. Assignment to the treatment and control groups was not random, so this study is a quasi-experimental design, and statistical procedures were used to ensure baseline equivalence of the treatment and control samples. Because use of Imagine Language & Literacy was determined for individual students rather than entire classrooms or schools, statistical corrections for clustering were not required.

MEASURES

Multiple data sources were compiled to describe students, their performance, and their work in Imagine Language & Literacy. Student English language proficiency outcomes were determined using a standardized progress monitoring assessment. Student demographic data were collected to provide additional information on student characteristics that may impact measures of learning outcomes. Data from the Imagine Language & Literacy program were incorporated to evaluate student engagement. These data sources are reviewed in more detail below.

English Language Proficiency. Students' English language proficiency was determined using Louisiana's English Language Proficiency Test (ELPT). ELPT scores were obtained for students who completed the assessment in 2022 and 2023. The ELPT is administered each year from mid-February to mid-March. Scores from 2022 were used to establish baseline equivalence between study groups, and 2023 scores were used to estimate the effect of Imagine Language & Literacy on English language proficiency. Students are not assigned an overall score on the ELPT but are assigned subscale scores. The district in the study is rated based on their students' performance on growth trajectories assigned by the state for the subscales. As such, student outcomes on the ELPT were categorized as a dichotomous outcome (1 = met/exceeded growth trajectory or 0 = did not meet/exceed growth trajectory).

Student Demographics. Information was collected on individual student demographic characteristics including grade level, gender, race/ethnicity, special education status, free or reduced-price lunch status, and years in the English-learner program.

Imagine Language & Literacy Usage. Program usage data were obtained to determine students' engagement and progress in Imagine Language & Literacy. These data included the total minutes students spent in the program and the number of lessons students passed.

ANALYTICAL SAMPLE

To ensure that the baseline characteristics of treatment and control students used in analyses were comparable, propensity score matching was used to create a statistically equivalent analytical sample.[1] Control students were matched to treatment students based on their 2022 ELPT reading, writing, listening, and speaking subdomain scores and all demographic information available: grade level, race/ethnicity, gender, special education status, free or reduced-price lunch status, and years in the English-learner program. Exact matching was used for grade level and the number of years in the English-learner program. Grade level was chosen as prior analyses on Imagine Language & Literacy have indicated this factor is likely to have a large impact on English language proficiency. Number of years in English-learner program was chosen as this value is considered when determining a student's growth expectation and likely also has a large impact on English language proficiency. The resulting analytical sample included 628 users of Imagine Language & Literacy and 628 non-users. **Table 1** below describes the characteristics of the sample. To ensure that the results are not sensitive to the final analytic sample chosen, a second analytic sample was made that required exact matches on all available demographic characteristics. Further details of this sample and the resulting analyses can be found in **Appendix A**.

ANALYTICAL APPROACH

In Louisiana, public school districts are rated on their students' performance based on growth trajectories assigned by the state. Students fall into one of four categories: "ELPT level is the same or lower than prior year," "ELPT level is at least one level higher than prior year," "ELPT level meets trajectory," and "ELPT level exceeds trajectory" (Louisiana Believes, 2022). The district was interested in whether use of the literacy intervention is associated with meeting or exceeding the growth trajectory. To answer this question, logistic regression was used to compute the odds that Grades 1–5 students met or exceeded their growth trajectory using a dichotomous outcome variable, 1=met/exceeded and 0 = did not meet/exceed. These odds were then compared between the Imagine Language & Literacy user students and the non-user students, controlling for 2022 ELPT scores and demographic variables. An indicator of whether a student was a control or treatment student was included in the regression as the primary predictor variable. Using logistic regression after propensity score matching ensured that any remaining differences in the underlying treatment and control samples were controlled for by the regression model, effectively isolating the impact of Imagine Language & Literacy.

[1]One-to-one nearest neighbor propensity score matching without replacement, with a caliper set to 0.009, was executed using the matchit function in R's MatchIt package.

Table 1: Baseline Equivalence.

	Control (n = 628)	Treatment (n = 628)	p-value	SMD
Sp. 22 Reading Score (mean/SD)	501.57 (62.33)	499.42 (62.86)	.544	.034
Sp. 22 Writing Score (mean/SD)	491.40 (67.81)	490.98 (68.14)	.913	.006
Sp. 22 Listening Score (mean/SD)	510.93 (70.79)	505.72 (70.78)	.193	.073
Sp. 22 Speaking Score (mean/SD)	511.00 (87.26)	507.30 (83.30)	.443	.043
Grade Level			1.000	<.001
Grade 1 (%)	178 (28.3)	178 (28.3)		
Grade 2 (%)	120 (19.1)	120 (19.1)		
Grade 3 (%)	112 (17.8)	112 (17.8)		
Grade 4 (%)	122 (19.4)	122 (19.4)		
Grade 5 (%)	96 (15.3)	96 (15.3)		
Gender			.309	.061
Female (%)	292 (46.5)	311 (49.5)		
Male (%)	336 (53.5)	317 (50.5)		
Ethnicity			.887	.060
Asian (%)	19 (3.0)	20 (3.2)		
Black (%)	15 (2.4)	15 (2.4)		
Hispanic (%)	577 (91.9)	575 (91.6)		
Other (%)	1 (.2)	0 (.0)		
White (%)	16 (2.5)	18 (2.9)		
SPED Classification			.766	.022
Not SPED (%)	570 (90.8)	574 (91.4)		
SPED (%)	58 (9.2)	54 (8.6)		
FRL Status			.367	.054
Free Lunch (%)	318 (50.6)	301 (47.9)		
Paid Lunch (%)	310 (49.4)	327 (52.1)		
Years in ELL program (mean/SD)	3.39 (1.39)	3.39 (1.39)	1.000	<.001

Results

IMAGINE LANGUAGE & LITERACY USAGE

Matched treatment students spent an average of 10.5 hours (with a median of 5.5 hours) in Imagine Language & Literacy and passed an average of 12.5 lessons (with a median of 6). See **Figures 1** and **2** for a distribution of hours and lessons passed.

Figure 1. Distribution of Hours Spent in Imagine Language & Literacy by Grade.

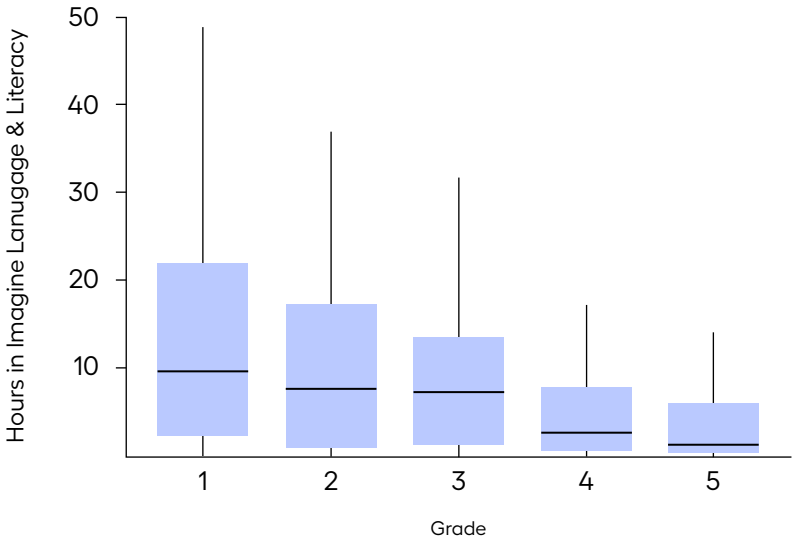
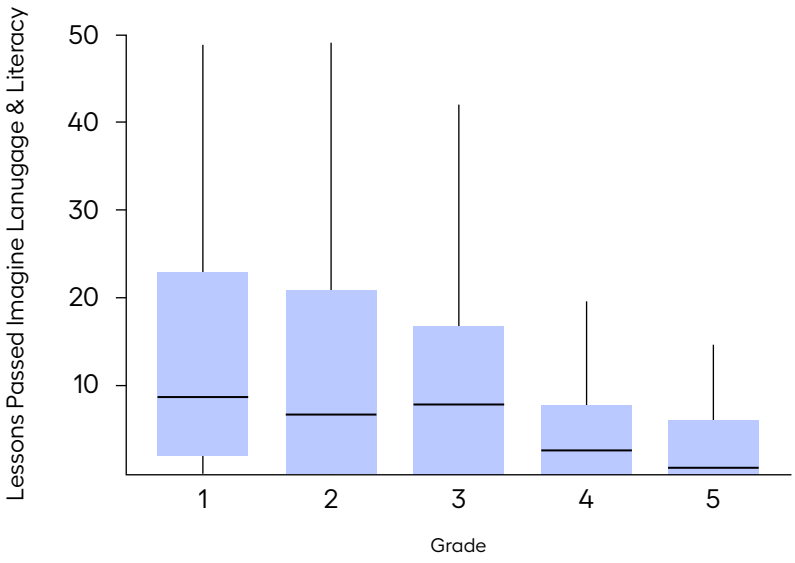


Figure 2. Distribution of Lessons Passed in Imagine Language & Literacy by Grade.



Note: Outliers that fall above 1.5 times the interquartile range are not included in this figure to ensure readability. The global maximum hours spent in Imagine Language & Literacy is 77.1 hours. The global maximum lessons passed in Imagine Language & Literacy is 116 lessons.

PROGRAM IMPACT ON STUDENT ACHIEVEMENT

In evaluating the final matched sample, 40.3% of non-users (*n* = 253) and 45.1% of users (*n* = 283) met growth expectations. A logistic regression found a positive and statistically significant relationship between use of Imagine Language & Literacy and meeting/exceeding the ELPT growth trajectory, *B* = .262, *SE* = .132, *Wald* = 3.9, *p* =.047. The estimated odds ratio favored an increase of 30% [*Exp (B)* = 1.300, 95% CI (1.003, 1.682)] for meeting/exceeding growth expectations among students who used Imagine Language & Literacy. The Cox index effect size of Imagine Language & Literacy is 0.16.[2] **Table 2** summarizes the results of the logistic regression.

Table 2: Overall Impact of Imagine Language & Literacy on ELPT.

Coefficients	Estimate	Std. Error	*p*-value
Intercept	-4.00	.782	<.001
Sp. 22 Reading Score	.005	.002	.033
Sp. 22 Writing Score	.011	.002	<.001
Sp. 22 Listening Score	.001	.002	.794
Sp. 22 Speaking Score	-.002	.001	.084
Grade 2	.492	.198	.013
Grade 3	.462	.253	.068
Grade 4	.110	.278	.693
Grade 5	.690	.325	.034
Black	-.769	.621	.216
Hispanic	-1.02	.413	.014
Other	10.75	324.74	.974
White	-.673	.566	.235
SPED Classification	-1.08	.301	<.001
FRL Status	.285	.144	.047
Years in ELL	-.846	.102	<.001
Treatment Variable	.262	.132	.047*

[2]The Cox index effect size is calculated by dividing the logistic regression coefficient by 1.65, which follows What Works Clearinghouse's Procedures and Standards Handbook, Version 5.0.

Conclusion

This study provides evidence of the efficacy of Imagine Language & Literacy on student English language achievement for English language learners in Grades 1–5 by comparing students who used Imagine Language & Literacy with those who did not during the 2022–2023 school year. Results show that the odds of meeting growth expectations were 1.30 times higher for Grades 1–5 Imagine Language & Literacy user students than for non-user students. This difference was statistically significant. Thus, this study provides evidence that the use of Imagine Language & Literacy supports English language learners' English language achievement.

References

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Appendix A

To ensure that observed results were not sensitive to the matching process used to select the analytical sample, a second analytical sample was created using a different procedure. Control students were matched to treatment students based on their 2022 ELPT reading, writing, listening, and speaking subdomain scores and all demographic information available: grade level, race/ethnicity, gender, special education status, free or reduced-price lunch status, and years in the English-learner program.[3] Exact matching was used for all demographic characteristics: grade level, race/ethnicity, gender, special education status, free or reduced-price lunch status, and years in the English-learner program. Exact matching on subdomain scores was not used because it did not result in a large enough sample size. The resulting analytical sample included 690 users of Imagine Language & Literacy and 690 non-users. **Table A1** below describes the characteristics of the sample.

[3]One-to-one nearest neighbor propensity score matching without replacement, with a caliper set to 0.110, was executed using the matchit function in R's MatchIt package. Caliper values are chosen to maximize sample size while ensuring adequate baseline equivalence; positive but insignificant results are found when a caliper below .110 is used.

Table A1: Baseline Equivalence.

	Control (n = 690)	Treatment (n = 690)	p-value	SMD
Sp. 22 Reading Score (mean/SD)	501.66 (61.46)	492.18 (61.62)	.004	.154
Sp. 22 Writing Score (mean/SD)	493.09 (67.28)	484.83 (69.96)	.026	.120
Sp. 22 Listening Score (mean/SD)	511.41 (70.03)	499.42 (72.60)	.002	.168
Sp. 22 Speaking Score (mean/SD)	512.67 (86.45)	501.43 (88.07)	.017	.129
Grade Level			1.000	<.001
Grade 1 (%)	171 (24.8)	171 (24.8)		
Grade 2 (%)	121 (17.5)	121 (17.5)		
Grade 3 (%)	123 (17.8)	123 (17.8)		
Grade 4 (%)	157 (22.8)	157 (22.8)		
Grade 5 (%)	118 (17.1)	118 (17.1)		
Gender			1.000	<.001
Female (%)	323 (46.8)	323 (46.8)		
Male (%)	367 (53.2)	367 (53.2)		
Ethnicity			1.000	<.001
Asian (%)	8 (1.2)	8 (1.2)		
Black (%)	4 (.6)	4 (.6)		
Hispanic (%)	660 (95.7)	660 (95.7)		
Other (%)	0 (.0)	0 (.0)		
White (%)	18 (2.6)	18 (2.6)		
SPED Classification			1.000	<.001
Not SPED (%)	649 (94.1)	649 (94.1)		
SPED (%)	41 (5.9)	41 (5.9)		
FRL Status			1.000	<.001
Free Lunch (%)	338 (49.0)	338 (49.0)		
Paid Lunch (%)	352 (51.0)	352 (51.0)		
Years in ELL program (mean/SD)	3.48 (1.39)	3.48 (1.39)	1.000	<.001

In evaluating the final matched sample, 40.7% of non-users (*n* = 281) and 44.1% of users (*n* = 304) met growth expectations. A logistic regression found a positive and statistically significant relationship between use of Imagine Language & Literacy and meeting/exceeding the ELPT growth trajectory, *B* = .339, *SE* = .127, *Wald* = 7.1, *p* =.008. The estimated odds ratio favored an increase of 40% [*Exp (B)* = 1.403, 95% CI (1.094, 1.800)] for meeting/exceeding growth expectations among students who used Imagine Language & Literacy. The Cox index effect size of Imagine Language & Literacy is 0.21.[4] **Table A2** summarizes the results of the logistic regression.

Table A2: Overall Impact of Imagine Language & Literacy on ELPT.

Coefficients	Estimate	Std. Error	*p*-value
Intercept	-6.17	.907	<.001
Sp. 22 Reading Score	.006	.002	.009
Sp. 22 Writing Score	.010	.002	<.001
Sp. 22 Listening Score	-.002	.002	.435
Sp. 22 Speaking Score	.001	.001	.343
Grade 2	.458	.201	.023
Grade 3	.654	.236	.006
Grade 4	.280	.264	.288
Grade 5	1.10	.300	<.001
Black	.778	1.12	.488
Hispanic	.298	.638	.641
White	.335	.738	.650
SPED Classification	-1.04	.342	.002
FRL Status	.388	.140	.006
Years in ELL	-.973	.097	<.001
Treatment Variable	.339	.127	.008*

[4]The Cox index effect size is calculated by dividing the logistic regression coefficient by 1.65, which follows What Works Clearinghouse's Procedures and Standards Handbook, Version 5.0.