



LXDRESEARCH
AT CHARLES RIVER MEDIA

ObjectiveEd BuddyBooks Efficacy Study Report

Performance on STAAR and i-Ready in Reading,
2024-2025



Authors:

Sofia Jimenez, Ph.D.

Juliette Berg, Ph.D.

Isabella Ilievski, M.Ed.

Anna Robinson, M.A.

Rachel Schechter, Ph.D.

JANUARY 2026



LXDRESEARCH
AT CHARLES RIVER MEDIA



PROMISING

LXD Research Recognition for ObjectiveEd



This product has been rigorously evaluated and is hereby acknowledged for meeting the educational impact criteria of the Every Student Succeeds Act (ESSA), warranting a **Level 3** for "**Promising**." This recognition is based on its proven effectiveness in enhancing grade-level learning outcomes.

REVIEWED BY THE LXD RESEARCH EXPERT REVIEW PANEL

Rachel Schechter, Ph.D.
Founder of LXD Research

January 2026

DATE

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

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

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

This product meets the requirements for Tier 3:

- ✓ In correlational design, scores or usage from the program are compared to scores on standardized achievement tests.
- ✓ At least one study with the proper design and implementation with at least two teachers and 30 students show statistically significant, positive findings.
- ✓ The study uses a program implementation that could be replicated.
- ★ A third-party research organization has reviewed the documentation for ESSA validation.



When product designers leverage learning sciences to design and evaluate their programs, educators can better target instruction, and students' skills soar. Through a correlational study design, a statistical evaluation shows that student growth is associated with student product performance. Edpuzzle meets the criteria for LXD Research's ESSA Tier 3 Evidence.

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



PROGRAM DESCRIPTION

BuddyBooks is an AI-powered literacy intervention platform designed for striving readers, including students with dyslexia. Students choose from a vast Bookshare library of interesting, level-matched titles and engage in interactive co-reading sessions with a computer "buddy." The platform combines visual and auditory learning to enhance comprehension and fluency, and offers timely, individualized feedback through Review Mode. The platform's dual use of visual and auditory text reduces decoding demands, supporting phonological processing for dyslexic readers. The Teacher Dashboard tracks students' reading analytics, enabling teachers to assign appropriate texts, monitor student progress, and dedicate more time to scaffolded instruction.

STUDY DETAILS

Sample Description

- Sample:
 - 107 students using BuddyBooks
 - 100% Dyslexia | 85% SPED
 - 16% Hispanic | 9% Black
- Location:
 - Public School District in East Texas

Time Frame

- 2024 - 2025 Academic Year
- 32 total weeks of BuddyBooks use; average of 12-13 weeks per student

Methodology

- Design:
 - Correlational usage study
- Assessment Measure:
 - i-Ready, STAAR Reading
- Statistical Controls:
 - Student baseline reading scores, demographics, and grade level

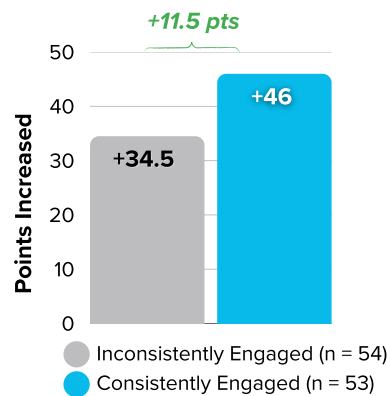
STUDY SUMMARY

LXD Research conducted a correlational study to evaluate the impact of ObjectiveEd's BuddyBooks on literacy outcomes for grade 2–5 students with dyslexia. The study, conducted during the 2024–2025 academic year, included 107 students across four public elementary schools in East Texas. Literacy growth was measured using fall-to-spring i-Ready assessment scores for all students and year-over-year STAAR scores for Grades 4–5 students. Results showed that students saw the greatest gains in literacy scores when using BuddyBooks at a minimum engagement-consistency threshold.

KEY FINDINGS

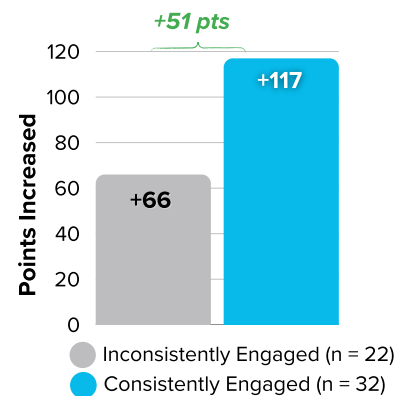
- Consistently Engaged students (≥ 10 minutes in $\geq 75\%$ of engaged weeks) in grades 2-5 ($n = 53$) demonstrated **significantly** stronger academic outcomes compared to inconsistently engaged students ($n = 54$), including **higher EOY i-Ready scores** ($M = 520.5$ vs. 509.0), **greater BOY-EOY growth**, and nearly **three times higher odds of meeting their annual growth targets**.
- Consistently Engaged students ($n = 32$) in grades 4-5 had **significantly** **higher 2025 STAAR scores** ($M = 1568.0$ vs. 1517.0). They showed **nearly double the year-over-year growth** compared to their Inconsistently Engaged peers ($n = 22$).

i-Ready BOY-EOY Growth



$F(1, 103) = 4.61, p < .05, \text{Cohen's } d = 0.42$

STAAR 2024-25 Growth



$F(1, 50) = 6.55, p < .05, \text{Cohen's } d = 0.73$



Of all implementation factors (overall reading time, weeks of use, etc.), reaching a consistent minimum weekly engagement level is most strongly linked with student growth.

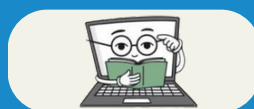
BUDDYBOOKS STUDY DESIGN



107 dyslexic
students, grades 2-5



October 2024
Assessments



BuddyBooks used
during School Year



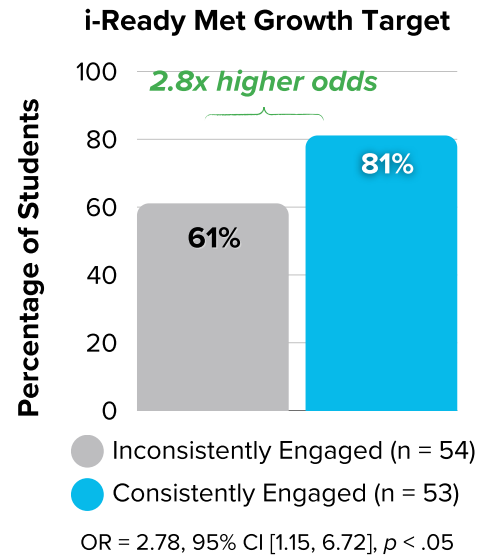
Spring 2025
Assessments



Analysis of
Results

ENGAGEMENT AND GROWTH TARGETS

i-Ready sets annual growth targets based on each student's grade level and starting performance. Students in grades 2-5 who consistently engaged with the BuddBooks (≥ 10 minutes in $\geq 75\%$ of engaged weeks) had **significantly** higher odds of meeting these growth goals, about three times higher than their less consistently engaged peers. Among students who were consistently engaged, 81% met their growth target compared to 61% of students who were less consistently engaged.



i-READY RELATIVE PLACEMENT LEVELS

The Consistently Engaged group experienced:

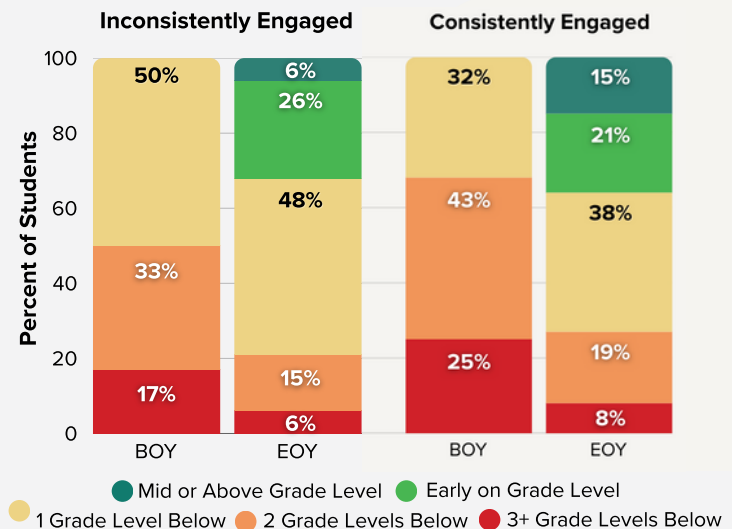
- A 41% *decline* in students performing two or more grade levels below (68% to 27%)
- 15% performing mid/above grade level
- A 17% *decline* in students performing three or more grade levels below

The Inconsistently Engaged group experienced:

- A 29% *decline* in students performing two or more grade levels below (50% to 21%)
- 6% performing mid/above grade level
- 11% *gain* in students performing three or more grade levels below

These findings were not statistically significant.

Grade 2-5 i-Ready Placement Progression by Engagement Level



STAAR PERFORMANCE LEVELS

The Consistently Engaged group experienced:

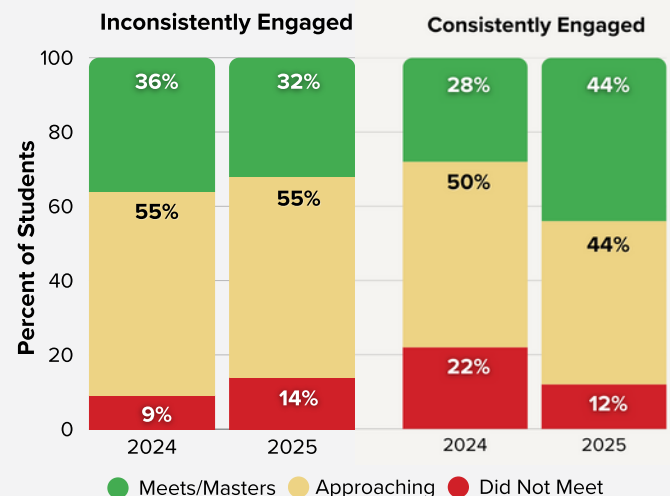
- A 16% *gain* in students meeting/mastering STAAR performance standards (28% to 44%).
- A 10% *decline* in students not meeting STAAR performance standards (22% to 12%).

The Inconsistently Engaged group experienced:

- A 4% *decline* in students meeting/mastering STAAR performance standards (36% to 32%).
- A 5% *gain* in students not meeting STAAR performance standards (9% to 14%).

These findings were not statistically significant.

Grade 4-5 STAAR Performance Progression by Engagement Level



BEST PRACTICES AND RECOMMENDATIONS FOR BUDDYBOOKS

TEACHER TRAININGS

- **Emphasize ease of use and quick integration.** Teachers adopt technology most successfully when it fits into existing routines. Training should focus on practical integration strategies, like using the tool during independent reading time or as homework.
- **Connect technology features to reading instruction principles.** Help teachers understand how the tool supports key literacy skills as an extension of effective instruction, not a separate add-on.
- **Train on dashboard interpretation and data-driven decisions.** Teachers need support in translating student performance data into actionable insights. Demonstrate how to track student progress and adjust instruction accordingly.

PROGRAM IMPLEMENTATION

- **Position BuddyBooks for consistent use.** Daily practice of at least 10 minutes over 12+ weeks produces the strongest outcomes for the Co-Reading model and Review Mode. Encourage short, frequent use over occasional longer sessions – reliable use is the biggest predictor of success. Encourage students to use the skipping feature infrequently.
- **BuddyBooks extends teacher capacity.** BuddyBooks provides the individualized oral reading practice and feedback that teachers can't give every student daily. While students practice with BuddyBooks, teachers can focus on small-group explicit instruction and targeted interventions for students with the greatest needs.
- **The Bookshare advantage.** Schools gain access to a collection of 1M+ age-appropriate, high-interest texts (not just decodable readers), allowing students to read with interest while improving skills.

SYSTEMATIC CONSIDERATIONS

- **BuddyBooks fills current gaps in technology.** BuddyBooks leverages active oral reading, provides practice in authentic, complete books, and offers delayed corrective feedback. This fills multiple needs that typically require several different tools.
- **BuddyBooks is a scalable solution.** The biggest barrier to effective dyslexia intervention is teacher capacity. BuddyBooks provides schools with a way for their students to practice independently after initial setup, requiring only periodic teacher facilitation.
- **Implementation is a long-term commitment with cumulative benefits.** Meaningful gains require a commitment to long-term, consistent implementation.



LXDRESEARCH
AT CHARLES RIVER MEDIA

ObjectiveEd BuddyBooks Efficacy Study Report

Performance on STAAR and i-Ready in Reading, 2024-2025

Conducted by Sofia Jimenez, Ph.D., Juliette Berg, Ph.D., Isabella Ilievski, M.Ed., Anna Robinson, M.A., and Rachel Schecter, Ph.D

[LXD Research](#) at Charles River Media Inc.

Abstract

This correlational study examined the relationship between consistent engagement with BuddyBooks, an AI-powered assistive reading platform, and literacy outcomes among 107 elementary students with dyslexia in grades 2–5 in an East Texas public school district during the 2024-2025 academic year. BuddyBooks uses Automatic Speech Recognition and a co-reading model to provide immediate, individualized feedback on oral reading fluency and accuracy. Students were classified as Consistently Engaged ($n = 53$) if they maintained at least 10 minutes of focused reading in 75% or more of their engaged weeks, or Inconsistently Engaged ($n = 54$) if they did not meet this threshold. Linear regression analyses controlling for baseline performance and minority status revealed significant associations between consistent engagement and improved reading outcomes. Consistently Engaged students demonstrated significantly higher i-Ready end-of-year scores (adjusted $M=520.5$ vs. 509.0 , $Cohen's d = 0.42$) and greater fall-to-spring growth (46 vs. 34.5 points, $p < .05$). They also had 2.8 times higher odds of meeting individualized i-Ready growth targets (81% vs. 61%, $p < .05$). For grades 4–5 students ($n = 54$), Consistently Engaged students showed significantly higher year-over-year STAAR growth (117 vs. 66 points, $Cohen's d = 0.73$, $p < .05$). Findings suggest that consistent, sustained engagement with AI-powered reading platforms, rather than total exposure time, is associated with meaningful literacy gains for students with dyslexia. Results have implications for implementing technology-enhanced literacy interventions in resource-constrained educational settings, though causal inferences are limited by the correlational design.

APA Cite: Jimenez, S., Berg, J., Ilievski, I., Robinson, A., & Schecter, R. (2025). *BuddyBooks ObjectiveEd Efficacy Study: Correlational Study of Performance on STAAR and i-Ready in Reading, 2024-2025*. LXD Research.



Table of Contents

Introduction	1
Background	1
Program Description	1
Method	3
Research Design	3
Implementation Description	4
Measures	4
Sample Description	6
Analysis Plan	7
Study Results	8
Student Outcomes	8
Discussion	12
Engagement Consistency Matters More Than Volume	12
i-Ready Outcomes: Growth and Proficiency Gains	13
STAAR Outcomes: State-Level Performance	13
Mechanisms of Impact	14
Implications for Practice	14
Limitations and Future Research	15
Conclusion	16
Acknowledgements	17
References	18
Appendix	19



Introduction

Background

The landscape of literacy education in the United States is troubling, with two-thirds of students unable to read at a proficient level (NAEP, 2023). Among striving readers, dyslexia affects 15%-20% of the population, representing one of the most persistent reading challenges for students (Paudel et al., 2024). A major factor driving the literacy gap is the difficulty of delivering individualized support and iterative feedback to striving readers in the classroom (Donegan et al., 2020; Sweller et al., 2019). Students with dyslexia require additional attention and multisensory instruction, for which resources and funding are often constrained (Dawson et al., 2019).

The rising use of digital tools in schools, however, offers promising new opportunities to engage students in personalized learning experiences that extend beyond traditional classroom boundaries. The landscape of educational technology for dyslexia intervention encompasses a number of rapidly developing mechanisms, including Text-to-Speech (TTS), phonics and decoding programs, and AI reading tutors (Bice & Tang, 2022; Paudel et al., 2024; Kostadinovska-Stojchevska & Shalevska, 2024). A growing body of evidence demonstrates that digital reading tools which support daily reading practice, student choice, and comprehensive assessments are effective in boosting reading scores and motivation, especially for at-risk learners (Wolf et al., 2019). The challenge is in understanding how these innovations translate to improved outcomes at scale for students with dyslexia.

BuddyBooks, an AI-powered assistive technology platform, was designed to address these challenges by supporting personalized literacy instruction for striving readers, including students with dyslexia (Shultz et al., 2024).

Program Description

By combining robust instructional strategies with cutting-edge AI tools, BuddyBooks delivers a scalable literacy platform tailored to striving readers, including those performing multiple grades below level. Unlike passive text-to-speech tools or interruptive feedback systems in existing technologies, BuddyBooks includes students as active members of their literacy journey through an interactive co-reading model. The program engages students in interactive reading-aloud sessions with a computer “buddy,” alternating reading turns, much like reading with an older student partner or adult. For example, the computer “buddy” will read one sentence, highlighting the words as they are read, and the student will read the next one aloud. While the student is reading BuddyBooks records their voice and tracks fluency and accuracy. Through this shared reading model and a vast library of fiction and nonfiction titles from Bookshare, every student can



select books that align with their interests as well as their current reading abilities and read them with a reduced cognitive load.

BuddyBooks employs a multi-sensory approach, combining visual and auditory learning experiences to enhance students' reading fluency, comprehension, and enjoyment. The platform's Review Mode provides targeted remediation by modeling fluent reading, enabling students to listen to their own prior attempts, and supporting their repeated rereading for mastery. Powered by Natural Language Processing (NLP), the platform analyzes students' oral reading in real time to deliver individualized feedback.

For educators, BuddyBooks fits seamlessly into established teaching routines. The Teacher Dashboard leverages AI to analyze the accuracy, fluency, and duration of student reading. These actionable analytics on students' progress and growth edges make it easier for teachers to assign books, monitor student outcomes, and dedicate more student-facing time to scaffolded instruction and support rather than conducting assessments.

How it Works

Using AI-based Speech Recognition and evidence-based practices, BuddyBooks helps students with Specific Learning Disability in Reading, such as dyslexia. Using the BuddyBooks teacher web-dashboard, a teacher chooses books from ObjectiveEd's library, or uses their BookShare account to assign any of Bookshare's books. The student reads the book with a computer partner using a web-browser. The student and computer alternate reading sentences or passages. BuddyBooks determines how much, and how well, the student is reading. Using the web-dashboard, the teacher reviews the student's improvement, and can listen to audio clips of the student's oral reading. BuddyBooks identifies the areas where the student is having difficulties, so the teacher can provide targeted assistance. BuddyBooks includes remediation methods to improve oral reading and fluency during a student's independent reading time (Shultz et al., 2024).

Theoretical Foundations

BuddyBooks provides a continuous assessment of oral reading fluency using Automatic Speech Recognition (ASR) and artificial intelligence to listen to children as they perform their daily reading assignments. Teachers can monitor the web-dashboard to see words per minute and words correct per minute. ASR is a technology that enables computers or machines to recognize spoken attributes of a human. ASR is used to track reading while the children are reading aloud and add for an interactive application using speech, which enables users to ask questions to the application. In addition, pronunciation accuracy is also provided for feedback (Chard, 2002).



By providing the immediate intervention as support, ASR technology has the potential to enhance reading ability for normal children and is a good tool for helping dyslexic children to read (Nix, 1998; Williams, 2000; Hagen, 2004). Furthermore, ASR is found to offer multi-sensory experience to dyslexic children as means of teaching (Raskind, 1999; Higgins, 2000). The multi-sensory experience is created as the child reads aloud a word and sees it being displayed on the computer screen. Automated speech recognition software has shown to be a promising digital technology to enhance students' reading proficiency (Mostow & Aist, 1999).

Method

Research Design

In an ongoing effort to evaluate the efficacy of BuddyBooks, ObjectiveEd partnered with Learning Experience Design (LXD) Research, a third-party edtech research firm, to examine the product's impact on reading outcomes for striving readers, primarily students with dyslexia. This report focuses on dyslexic students in grades 2–5 who used BuddyBooks during the 2024-2025 academic year. Usage and student outcome data was examined to better understand the effectiveness of BuddyBooks in supporting students with reading difficulties.

The study took place within a public school district in East Texas that serves a K–12 student population of approximately 4,800 students across nine schools (The Institute of Education Sciences, 2025). The district is committed to advancing literacy levels for all its learners, including those facing significant reading challenges like dyslexia, through innovative and challenging opportunities.

The study implements a correlational design, analyzing the relationship between students who consistently used BuddyBooks and their achievement measures on i-Ready and STAAR standardized assessments in comparison to students who did not use BuddyBooks consistently.

The evaluation aims to answer the following questions:

1. What BuddyBooks usage patterns are related to increased reading gains on the i-Ready assessment among students with dyslexia in grades 2–5?
 - a. What are the learning gains associated with the usage patterns?
2. What BuddyBooks usage patterns are related to increased reading gains on the STAAR standardized assessment among students with dyslexia in grades 4–5?
 - a. What are the learning gains associated with the usage patterns?



Implementation Description

The BuddyBooks platform was implemented during the 2024–2025 school year in grades 2–5 classrooms across 4 elementary schools, with a focus on supporting students one or two grade levels behind and students with dyslexia. Teachers participated in the study on a voluntary basis and selected which students used BuddyBooks. Students started using BuddyBooks mid to end of October 2024. Teachers were encouraged by ObjectiveEd to have their students with dyslexia use BuddyBooks at least 10-15 minutes per week.

Among the students with dyslexia in the analytic sample ($n = 107$), usage varied widely. Students recorded reading activity over an average of 12 to 13 weeks out of 32 possible weeks ($SD = 6.2$, range: 1-25) and averaged about 2 weeks ($SD = 2.92$) of high skip rates or inattentive reading. Weekly reading time averaged 14 minutes ($SD = 5.22$) and ranged from 5 to 37.5 minutes, amounting to 3 total hours of reading time on average ($SD = 1.83$, range: 0.8 - 6.87) across the school year. Participation tended to occur in short runs, with the longest streak of consecutive reading weeks averaging four to five weeks. Overall, program use was intermittent for many students rather than sustained week-to-week.

Measures

BuddyBooks Usage Metrics

This study leveraged analytics collected directly from the BuddyBooks platform. Metrics include frequency of reading within BuddyBooks, the number of sections and books completed, minutes read, and behavioral indicators such as skip rate. The platform also provides performance measures such as reading fluency and accuracy collected through a built-in Review Mode (ObjectiveEd, 2025; Shultz et al., 2024).

Engagement-Consistency Classification Description

While a range of available usage metrics were explored, this report centers on the combination of usage metrics that showed associations with literacy outcomes: number of weeks students read with BuddyBooks, how long they read, and their skip rate during reading sessions. Together, these metrics provided a practical picture of the amount and nature of student interactions with BuddyBooks, allowing us to examine how differences in usage patterns related to reading growth outcomes.

Students were classified as *Consistently Engaged* if they achieved at least 10 minutes of reading in 75% or more of their engaged weeks. A student's reading week was considered engaged if the student logged reading time and maintained a skip rate below 40%. The 40% threshold reflects the program's definition of excessive skipping, with skip rates above this threshold indicating the student is not meaningfully participating in the reading task. All engagement metrics were



therefore based only on weeks in which students demonstrated attentive reading behavior. Students were classified as *Inconsistently Engaged* if they did not meet both criteria, either reading less than 10 minutes during engaged weeks or reaching the 10-minute threshold in fewer than 75% of their engaged weeks. Notably, most students in the Inconsistently Engaged group still reached the 10-minute threshold in roughly half of their engaged weeks, indicating partial but less reliable participation.

No significant patterns of associations emerged between other combinations of usage metrics or each individual usage metric and literacy assessment scores. For example, neither average minutes per week, total time spent reading, nor reading above or below 10 minutes per week were significantly associated with literacy outcomes on their own. Therefore, this report focuses on the Consistently Engaged versus Inconsistently Engaged student groups.

The two groups had almost the same number of students ($n = 53$ for the Consistently Engaged group versus $n = 54$ for the Inconsistently Engaged group). They were also similar on other usage metrics including percentage of weeks engaged out of available weeks, longest consecutive weeks engaged, total weeks read, and total weeks engaged. The Consistently Engaged group averaged more minutes per engaged week than the Inconsistently Engaged group (17.7 vs. 11.5 minutes). This translated to a one-hour difference in engaged reading, where the Consistently Engaged group read for an average of three hours total and the Inconsistently Engaged group read for an average of two hours.

i-Ready Assessment

The primary outcome measure for this study was i-Ready, a norm-referenced screening tool used to evaluate students' reading proficiency. The assessment is computer-adaptive, with algorithms that dynamically adjust item difficulty and test length while evaluating six core literacy domains: Phonological Awareness, Phonics, High-Frequency Words, Vocabulary, Comprehension of Informational Text, and Comprehension of Literature (Curriculum Associates, 2023). The assessment generates multiple performance metrics—including scaled scores (100-800), placement level scores (Above Grade Level, On Grade Level with Early/Mid/Late distinctions, One Grade Level Below, or Two or More Grade Levels Below), and percentile ranks—enabling both cross-grade and within-grade comparisons.

State of Texas Assessments of Academic Readiness

The secondary outcome measure for this study was the State of Texas Assessments of Academic Readiness (STAAR), which is conducted annually to evaluate 3-12 grade students' mastery of the Texas Essential Knowledge and Skills (TEKS) curriculum (Texas Education Agency, 2024). The STAAR Reading Language Arts (RLA) assessment measures multiple facets of literacy development, including comprehension, vocabulary knowledge, literary and informational text



interpretation, author's purpose and craft analysis, and written expression (Texas Education Agency, 2024). Student performance is categorized into four achievement tiers: Does Not Meet Grade Level, Approaches Grade Level, Meets Grade Level, and Masters Grade Level.

Sample Description

Almost 80% of students (N = 158) were selected to use BuddyBooks. The analytic sample was made up of 107 students with dyslexia with valid test data in the 4 study schools (see Table 1). The majority of students were special education and White, and about half were female (see Table 2).

Table 1. Analytic Sample Description

Grade	N
2nd	24
3rd	25
4th	28
5th	30
Total	107

Table 2. Analytic Sample Demographics

Demographic Variable	Sample
% Dyslexic	100%
% Special Education	85%
% Female	48%
% Hispanic/Latino	16%
% White	79%
% Black	9%
% Two or More Races	9%
% Other	2%



Analysis Plan

Program implementation was examined using student-level weekly BuddyBooks usage records. ANCOVA models were used to analyze associations between usage and i-Ready and STAAR literacy assessment data. The outcomes included end-of-year (EOY) i-Ready scores and fall-to-spring i-Ready growth scores for grades 2–5, and Spring 2025 STAAR scores and year-over-year STAAR growth for grade 4–5 students. Due to the small number of schools and little between-school variance, student-level models were used rather than multilevel models. Grades were combined in all analyses, and grade dummies were used as covariates due to small grade-specific sample sizes. Minority status was also included as a covariate, as it was the demographic variable showing the largest difference between usage-defined groups. Other available demographic variables and baseline performance measures were highly similar across groups and therefore did not substantially influence model estimates.

In all models, the primary predictors were student-level BuddyBooks usage indicators. Models controlled for baseline achievement (fall 2024 i-Ready scores for i-Ready outcomes and spring 2024 STAAR scores for STAAR outcomes). In addition to continuous achievement outcomes, categorical performance outcomes (e.g., meeting annual growth targets or STAAR performance levels) were examined using logistic regression and chi-squared tests of independence to compare the distribution of students across performance categories by usage group and time.

Usage metrics were derived from BuddyBooks platform data to examine patterns of program implementation. These included:

- Weeks with program use (frequency of participation)
- Minutes read (total exposure to reading)
- Skip rate (behavioral indicator of engagement quality)
- Engaged weeks, defined as weeks with a skip rate below 40%
- Longest streak of engaged weeks (sustained consecutive use)
- Percent of available weeks with reading and percent of engaged weeks (regularity of participation)
- Proportion of weeks meeting minimum weekly reading thresholds (e.g., ≥ 10 minutes)

These metrics were designed to capture complementary dimensions of implementation: how often students used the program, how much time they spent reading, and whether that time reflected attentive engagement.



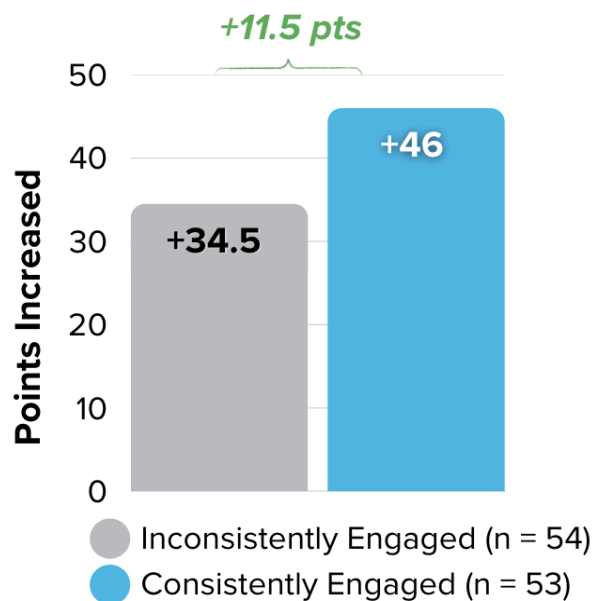
Study Results

Student Outcomes

Usage Patterns and i-Ready Scores and Growth

Results for i-Ready show that students who met the engagement-consistency criterion (≥ 10 minutes in $\geq 75\%$ of engaged weeks) had higher scores and growth by the end of the year than their less consistently engaged peers. An ANCOVA was conducted to compare EOY i-Ready scores between engagement groups, controlling for baseline performance and minority status. There was a significant main effect of engagement consistency, $F(1, 103) = 4.61, p < .05, \eta^2_p = .04$. Post hoc comparisons of adjusted means indicated that the Consistently Engaged group had higher end-of-year scores ($M = 520.5$) than the Inconsistently Engaged group ($M = 509$). The Consistently Engaged group gained an average of 46 points from beginning-of-year (BOY) to (EOY), while the Inconsistently Engaged group gained 34.5 points, reflecting an adjusted mean difference of 11.5 points and a moderate effect size (Cohen's $d = 0.42$), see Figure 1.

Figure 1. i-Ready BOY-EOY Growth with Adjusted Means



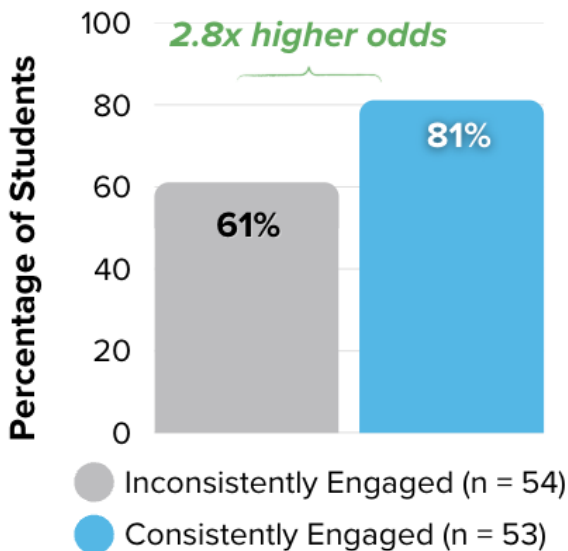
Usage Patterns and i-Ready Annual Growth Targets

i-Ready annual growth targets are individualized benchmarks provided by i-Ready based on students' grade level and starting achievement. In a logistic regression model predicting the likelihood of meeting these growth targets and accounting for baseline performance, students in the Consistently Engaged group had about 2.8 times higher odds of meeting their target than



students in the Inconsistently Engaged group, OR = 2.78, 95% CI [1.15, 6.72], $p < .05$). Consistent with the model results, 81% of students in the Consistently Engaged group met their growth target compared to 61% of students in the Inconsistently Engaged group (see *Figure 2*).

Figure 2. Proportion Met Expected Annual Growth on i-Ready



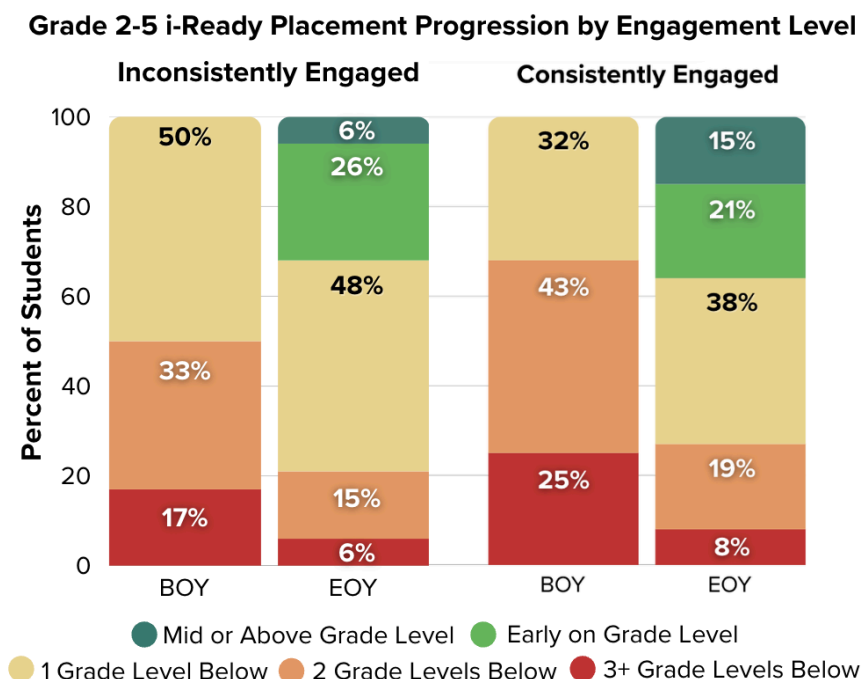
Usage Patterns and i-Ready Placement Levels

i-Ready reports student performance in relative placement levels that indicate how far above or below grade level students are performing. These levels provide a way to examine shifts in students' instructional positioning over time.

The Consistently Engaged group began the year with a larger share of students performing well below grade level (68% two or more grade levels below, compared to 50% in the Inconsistently Engaged group). Differences in placement distributions by engagement group from BOY to EOY were examined using chi-square tests based on counts of students in each placement level. Although the differences did not reach statistical significance, a greater proportion of students in the Consistently Engaged group reached mid/above grade level by year's end compared to the Inconsistently Engaged group (15% vs. 6%). These shifts suggest that more students in the Consistently Engaged group moved up in their placements than students in the Inconsistently Engaged group (see *Figure 3*).



Figure 3. *i-Ready Placement Progression Over Time by Engagement Level*



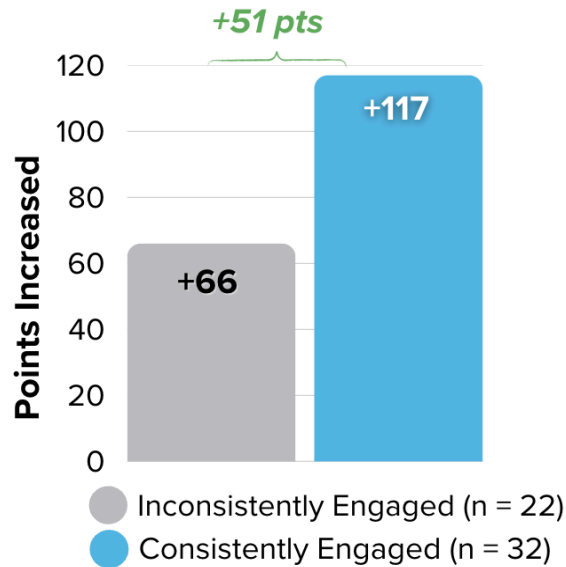
Usage Patterns and STAAR Scores and Growth

Although students begin taking STAAR in grade 3, the present analyses focus on students in grades 4–5 to allow for inclusion of the prior-year (2024) baseline score when looking at year-over-year performance. These analyses should be considered with caution given the small sample size in the Consistently Engaged group ($n = 32$) and in the Inconsistently Engaged group ($n = 22$). STAAR reading scale scores for Grades 4–5 generally range from approximately 820 to 2220, with “Meets Grade Level” benchmarks set at 1542 for Grade 4 and 1592 for Grade 5. Grade levels were combined in this analysis due to limited sample size.

An ANCOVA was performed to compare 2025 STAAR scale scores between engagement groups, controlling for 2024 baseline performance and minority status. There was a significant main effect of engagement group, $F(1, 50) = 6.55$, $p < .05$, $\eta^2_p = .12$. Post hoc comparisons of adjusted means indicated that students in the Consistently Engaged group had significantly higher 2025 STAAR scale scores ($M = 1568$) than those in the Inconsistently Engaged group ($M = 1517$). The Consistently Engaged group gained an average of 117 points, compared to 66 points in the Inconsistently Engaged group, reflecting an adjusted mean difference of 51 points and a moderate-to-large effect size (Cohen’s $d = 0.73$), see Figure 4.



Figure 4. STAAR Year-Over-Year Growth by Engagement Level



Usage Patterns and STAAR Performance Levels

STAAR performance is reported in four categories: Masters Grade Level, Meets Grade Level, Approaches Grade Level, and Did Not Meet Grade Level. For this paper, performance levels are split into three categories: students who met or mastered grade level standards, students approaching grade level standards, and students who did not meet grade level standards.

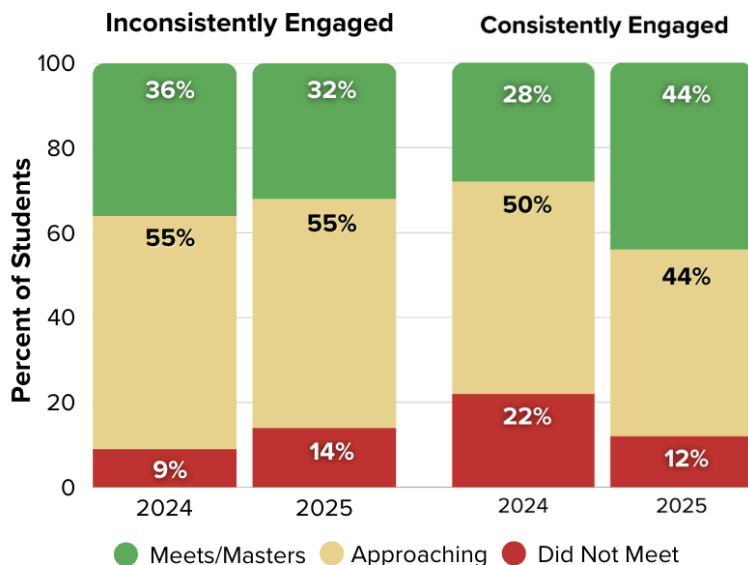
Differences in performance level distributions by engagement group and time were examined using chi-square tests based on counts of students in each placement level. These differences did not reach statistical significance, though the trends were consistently more positive for the Consistently Engaged group and contrasted with patterns observed in the Inconsistently Engaged group.

Although not statistically significant, differences were observed between the two groups in the proportion of students moving from one category to another. The Consistently Engaged group experienced a 16 percentage point gain in the proportion of students who met or mastered grade level standards, increasing from 28% in 2024 to 44% in 2025. By contrast, the proportion of students who met or mastered grade level standards declined in the Inconsistently Engaged group from 36% to 32%. The Consistently Engaged group also experienced a 10% decrease in the proportion of students who did not meet grade level standards (22% to 12%), compared to an 5% increase in the Inconsistently Engaged group (see Figure 5).



Figure 5. STAAR Performance Level Over Time by Engagement Level

Grade 4-5 STAAR Performance Progression by Engagement Level



Discussion

This correlational study examined the relationship between consistent engagement with BuddyBooks, an AI-powered assistive reading platform, and literacy outcomes among 107 elementary students with dyslexia in grades 2–5. The findings provide preliminary evidence that consistent, sustained engagement with BuddyBooks is associated with meaningful improvements in reading achievement as measured by both i-Ready and STAAR assessments.

Engagement Consistency Matters More Than Volume

A central finding of this study is that the *quality and consistency* of engagement, rather than simply the total amount of time or weeks spent reading, was the critical factor differentiating student outcomes. Students classified as Consistently Engaged (those who maintained at least 10 minutes of focused reading in 75% or more of their engaged weeks) demonstrated significantly stronger gains in literacy assessment outcomes than their Inconsistently Engaged peers. Importantly, these two groups were similar in terms of total weeks of participation, percentage of weeks with any engagement, and length of engaged streaks, suggesting that what distinguished them was the regularity and depth of their reading practice rather than overall exposure to the program.

This pattern aligns with cognitive load theory (Sweller et al., 2019) and research on reading fluency development, which emphasizes that meaningful skill acquisition requires sustained,



focused practice rather than sporadic or fragmented engagement. For striving readers, including those with dyslexia, consistent practice opportunities are essential for consolidating decoding skills, building automaticity, and developing reading stamina (Chard et al., 2002). The BuddyBooks platform's design—which provides immediate feedback, multisensory engagement through its co-reading model, and opportunities for repeated reading through Review Mode—appears particularly well-suited to supporting this type of deliberate practice.

i-Ready Outcomes: Growth and Proficiency Gains

Students in the Consistently Engaged group demonstrated an average growth of 46 points on i-Ready from fall to spring, compared to 34.5 points for the Inconsistently Engaged group, a difference of 11.5 points (*Cohen's d* = 0.42). This represents a small to moderate effect size that is educationally meaningful, particularly for students with dyslexia who often experience slower rates of reading progress than their typically developing peers. The Consistently Engaged group's adjusted end-of-year score of 520.5 also exceeded that of the comparison group by approximately 11 points.

Perhaps more striking was the difference in meeting individualized annual growth targets set by i-Ready. Students in the Consistently Engaged group had 2.8 times higher odds of meeting their personalized growth benchmarks, with 81% achieving their targets compared to only 61% of the Inconsistently Engaged group. Given that these targets are calibrated to each student's starting performance level and grade, this finding suggests that consistent BuddyBooks engagement helped students not just make progress, but make *accelerated* progress relative to typical expectations for their baseline achievement.

The i-Ready placement data, though not statistically significant, revealed encouraging trends. Despite starting the year with a higher proportion of students performing two or more grade levels below (68% vs. 50%), the Consistently Engaged group showed more substantial upward movement, with 15% reaching mid/on-grade level by year's end compared to just 6% in the comparison group. This suggests that BuddyBooks may be particularly beneficial for the most striving readers, potentially helping to close achievement gaps over time.

STAAR Outcomes: State-Level Performance

The STAAR findings, though based on a smaller sample (grades 4–5 only, *n* = 54), showed even stronger associations with consistent engagement. The Consistently Engaged group gained an average of 117 scale score points year-over-year, compared to 66 points for the Inconsistently Engaged group—a difference of 51 points (*Cohen's d* = 0.73). This represents a moderate-to-large effect size and suggests that the benefits of consistent BuddyBooks use extend beyond curriculum-aligned assessments (i-Ready) to high-stakes state accountability measures.



The performance level data revealed meaningful shifts in proficiency. The Consistently Engaged group increased the proportion of students meeting or mastering grade-level standards from 28% to 44% (a 16 percentage point gain), while the comparison group saw a slight decline from 36% to 32%. Additionally, the proportion of students in the Consistently Engaged group who did not meet grade-level standards decreased from 22% to 12%, whereas this proportion increased in the comparison group. Though these differences did not reach statistical significance—likely due to small sample sizes and the categorical nature of the outcome—the consistent direction of effects across multiple indicators strengthens confidence in the pattern of findings.

Mechanisms of Impact

Several features of BuddyBooks likely contributed to the observed associations with reading outcomes. First, the platform's use of ASR to provide real-time feedback on oral reading accuracy may help students develop phonological awareness and decoding skills—core deficits in dyslexia (Paudel et al., 2024). The immediate, non-judgmental feedback from the AI "buddy" may reduce the anxiety often experienced by striving readers during oral reading activities, creating a psychologically safer environment for practice.

Second, the co-reading model—in which students alternate reading passages with their computer partner—provides both modeling of fluent reading and opportunities for supported practice. This scaffolded approach mirrors effective peer-assisted learning strategies and may help students internalize prosody, pacing, and expression (Chard et al., 2002). The platform's Review Mode further reinforces this by allowing students to listen to their own reading, compare it to fluent models, and engage in targeted rereading for mastery.

Third, the platform's integration with the Bookshare library offers students access to a vast array of texts at varying difficulty levels and across diverse topics, enabling personalized book selection based on both interest and instructional level. Research indicates that student choice and interest-driven reading are powerful motivators, particularly for reluctant readers (Wolf et al., 2019). By allowing students with dyslexia to access grade-level content through assistive technology while practicing at their instructional reading level, BuddyBooks may support both skill development and engagement with age-appropriate material.

Finally, the Teacher Dashboard provides educators with actionable data on student progress, including metrics on accuracy, fluency, duration, and areas of difficulty. This may enable more targeted instructional support and timely interventions, enhancing the overall effectiveness of literacy instruction for students with dyslexia (Dawson et al., 2019).

Implications for Practice



These findings have several practical implications for educators and schools serving students with dyslexia. First, they underscore the importance of establishing routines that support *consistent* engagement with reading interventions, rather than focusing solely on total minutes of exposure. Teachers and interventionists should monitor not just whether students are using BuddyBooks, but whether they are engaging in focused, sustained reading sessions on a regular basis. The 10-minute threshold identified in this study provides a practical benchmark for educators to aim for during intervention blocks.

Second, the strong associations observed on both formative (i-Ready) and summative (STAAR) assessments suggest that BuddyBooks can serve as a valuable component of a comprehensive literacy intervention program for students with dyslexia. The platform appears to complement traditional teacher-led instruction by providing additional opportunities for individualized practice with immediate feedback—a critical component of effective dyslexia intervention that is often difficult to deliver at scale in resource-constrained educational settings.

Third, the platform's ability to generate detailed usage and performance analytics empowers teachers to adopt a more data-driven approach to literacy instruction. By regularly reviewing the Teacher Dashboard, educators can identify students who may need additional support to maintain consistent engagement, target specific skill deficits revealed through the platform's analysis of oral reading, and differentiate instruction based on individual student needs.

Limitations and Future Research

Several limitations should be considered when interpreting these findings. First and foremost, the correlational design precludes causal inferences. While significant associations were observed between consistent BuddyBooks engagement and improved literacy outcomes, these cannot be taken as a definitive conclusion that BuddyBooks *caused* these improvements. Unmeasured variables—such as student motivation, home literacy environment, quality of concurrent classroom instruction, or other interventions—may have influenced both engagement patterns and reading growth. Students who engaged more consistently with BuddyBooks may have differed from their peers in ways not captured by the available demographic and baseline achievement measures.

Second, the study was conducted in a single school district in East Texas, limiting the generalizability of findings to other contexts. The demographic composition of the sample (79% White, 16% Hispanic/Latino), district resources, and local implementation supports may differ from other settings. Replication across more diverse geographic, socioeconomic, and demographic contexts is needed to establish the robustness of these findings.



Third, teachers voluntarily selected which students would use BuddyBooks, introducing potential selection bias. Although baseline achievement was statistically controlled in all analyses and demographic characteristics were similar across engagement groups, it is possible that teachers' decisions reflected unmeasured factors related to student readiness, behavior, or other considerations that could confound the observed relationships.

Fourth, the relatively short implementation period (approximately 16–20 weeks from late October through spring testing) may limit our ability to detect longer-term effects or sustainability of gains. Longer-term follow-up studies would help determine whether the observed benefits persist over time and whether continued consistent engagement leads to cumulative advantages.

Fifth, the small sample size for STAAR analyses limits statistical power to detect differences in categorical outcomes and increases the risk of Type II error. While the effect sizes and directional trends were encouraging, larger samples would provide more stable and precise estimates.

Finally, the study lacked implementation fidelity data beyond usage metrics. Detailed information was not collected about the specific contexts in which BuddyBooks was used (e.g., whole-class vs. small-group vs. independent use), the level of teacher involvement or support during sessions, or how BuddyBooks was integrated with other literacy interventions. These factors may moderate the effectiveness of the platform and warrant investigation in future studies.

Conclusion

BuddyBooks shows promise as a low-cost, AI-powered assistive technology platform for supporting literacy development among elementary students with dyslexia. In a context where two-thirds of U.S. students cannot read at a proficient level, where 15-20% of students are affected by dyslexia, and where resource constraints limit schools' capacity to provide individualized support to striving readers, these findings suggest that technology-enhanced interventions can address critical needs when implemented with attention to engagement quality and consistency. The associations between consistent BuddyBooks engagement and improved reading outcomes underscore that what distinguishes stronger outcomes is not just access to technology or total time spent, but rather the consistency and depth of engagement: maintaining regular, focused reading practice over time. As the field continues to grapple with persistent literacy achievement gaps and the particular challenges of supporting students with specific learning disabilities in reading, AI-powered assistive technologies like BuddyBooks deserve continued attention as potentially valuable complements to traditional teacher-led dyslexia intervention, particularly in resource-constrained educational settings where individualized support and immediate feedback are difficult to deliver at scale.



Acknowledgements

The authors of this study would like to express their deepest gratitude to the participating district for partnering with LXD Research to complete this study. The authors also want to express their sincere thanks to Becca Lev, Jason Stewart, and Luke Voelk for contributing to this work.



References

- Bice, H., & Tang, H. (2022). Teachers' beliefs and practices of technology integration at a school for students with dyslexia: A mixed methods study. *Education and Information Technologies*, 27(7), 10179-10205.
- Chard, D. J., Vaughn, S., & Tyler, B. J. (2002). A synthesis of research on effective interventions for building reading fluency with elementary students with learning disabilities. *Journal of Learning Disabilities*, 35(5), 386-406.
- Curriculum Associates. (2023). i-Ready Diagnostic National Norms Tables for Reading and Mathematics for Grades K-8 2023-2024.
- Dawson, K., Antonenko, P., Lane, H., & Zhu, J. (2019). Assistive technologies to support students with dyslexia. *Teaching exceptional children*, 51(3), 226-239.
- Donegan, R. E., Wanzek, J., & Al Otaiba, S. (2020). Effects of a reading intervention implemented at differing intensities for upper elementary students. *Learning Disabilities Research & Practice*, 35(2), 62-71.
- Kostadinovska-Stojchevska, B., & Shalevska, E. (2024). The Role of AI in Supporting Dyslexic Students in the Language Classroom. *Pedagoška obzorja*, 39(3-4), 93-102.
- National Center for Education Statistics. (2022). *NAEP Report Card: Reading*. U.S. Department of Education, Institute of Education Sciences.
- Paudel, S., Acharya, S., Kirupaharan, P., KC, B., & Thapa, B. (2024). A comprehensive review of assistive technologies for children with dyslexia. arXiv preprint arXiv:2412.13241.
- Shultz, M., Jimenez, S., & Schechter, R. (2024). *BuddyBooks Research Foundation & Logic Model*. LXD Research.
https://ee59258a-a4de-4a48-85ae-bc48fc2252eb.usrfiles.com/ugd/ee5925_8ce503b52efb41beaff7d77c18c3c14a.pdf
- Sweller, J., Van Merriënboer, J. J., & Paas, F. (2019). Cognitive architecture and instructional design: 20 years later. *Educational psychology review*, 31(2), 261-292.
- Texas Education Agency. (2024). *STAAR reading language arts constructed-response scoring guides*. <https://tea.texas.gov/student-assessment/staar/>
- Wolf, M. C., Muijselaar, M. M., Boonstra, A. M., & de Bree, E. H. (2019). The relationship between reading and listening comprehension: shared and modality-specific components. *Reading and Writing*, 32(7), 1747-1767.



Appendix

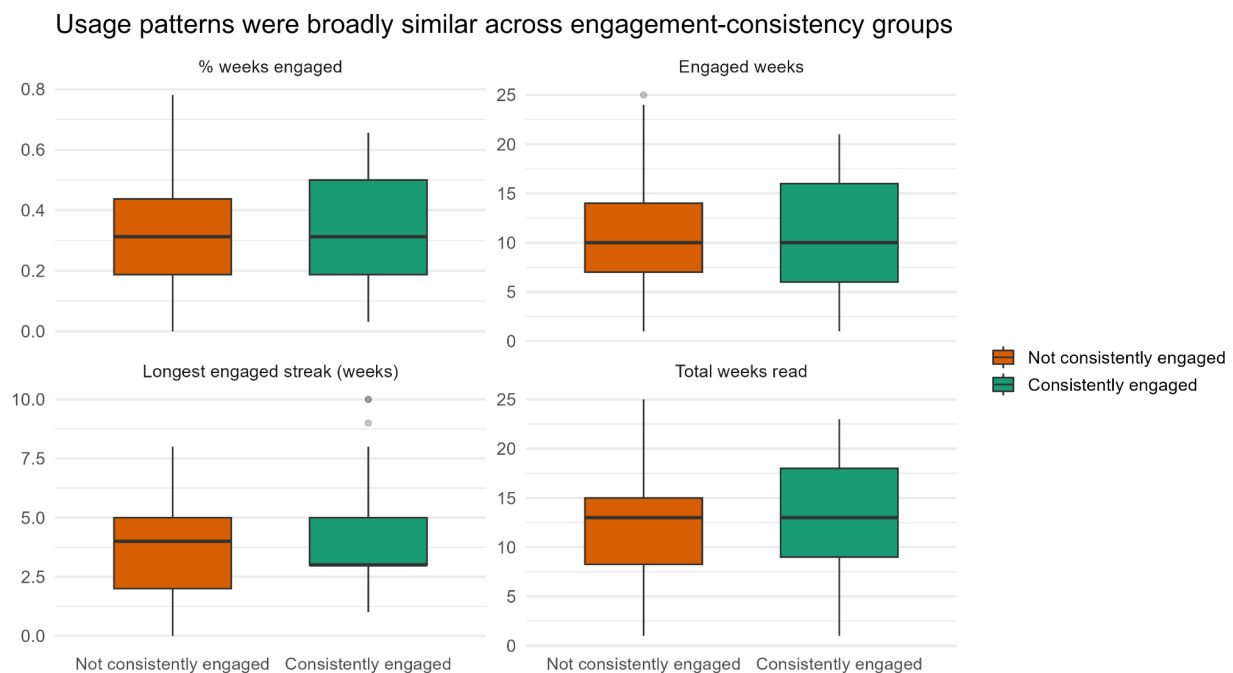
List of Tables & Figures

Table 1. Analytic Sample Description	4
Table 2. Analytic Sample Demographics	4
Figure 1. i-Ready BOY-EOY Growth with Adjusted Means	8
Figure 2. Proportion Met Expected Annual Growth on i-Ready	9
Figure 3. I-Ready Placement Progression Over Time by Engagement Level	10
Figure 4. STAAR Year-Over-Year Growth by Engagement Level	11
Figure 5. STAAR Performance Level Over Time by Engagement Level	12



Supplementary Materials

Figure A1. Usage Patterns by Engagement-consistency Group





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

Learn more at www.lxdresearch.com



For additional information about **ObjectiveEd** visit:

www.objectiveed.com/