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MindPlay Reading Studio Efficacy Study Report

Grades 2-5: Fall 2024 - Winter 2025



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Abstract

This study investigates the impact of MindPlay Reading Studio on elementary students' reading achievement in a Connecticut urban school district during the first half of the 2024-2025 academic year. A randomized control trial was conducted with four schools that included 847 students in grades two through five, comparing MindPlay implementation to standard district instructional practices. Student outcomes were measured using the DIBELS assessment at the beginning and middle of the school year. Statistical analyses indicated that students using MindPlay demonstrated significant improvements in targeted reading skills, most notably in decoding (grades 2-3) and reading accuracy (grade 5). The study found a strong correlation between usage time and outcomes, with students using MindPlay for 60+ minutes per week showing significantly greater progression in reading level than students with less usage. Students initially categorized as Approaching grade-level standards showed the most substantial gains. Students in the Critical category who were one grade level behind in reading and used the program consistently demonstrated a greater likelihood of category improvement. These findings support MindPlay's effectiveness as a comprehensive literacy intervention for elementary students, particularly when implemented with fidelity.

Keywords: Reading Achievement, Elementary, Usage, Effectiveness

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Introduction

Quality instruction for early reading development is crucial, particularly considering the recent drop in fourth-grade reading scores nationwide. The National Assessment of Educational Progress (NAEP) reported 2022 scores that fell below assessments dating back to 2005, aligning closely with scores from 1992 (NAEP, 2022), underscoring the urgent necessity for effective reading instruction. The increase in digital tool availability in schools since COVID (GovTech, 2022) means more devices and opportunities for ed-tech use. However, there is a shortage of interventionists to support teachers, especially for students already identified as needing special education services.

Research on early literacy has highlighted three key principles widely accepted: the recognition that reading involves strategic processes demanding diverse comprehension strategies (Juel & Minden-Cupp, 2000), the need for differentiated instruction tailored to individual student needs (Spiro, 2001), and the overarching goal of reading comprehension through contextual understanding and prior knowledge (Filderman et al., 2022).

MindPlay Reading Studio is a reading intervention aligned with the core principles of the Science of Reading (The Reading League, 2022). It encompasses key elements such as vocabulary, phonics, comprehension, phonemic awareness, and fluency, representing an evidence-based, explicit, direct, and systematic Orton-Gillingham approach.

Numerous research studies have highlighted the positive impact of exposure to MindPlay Reading on reading abilities (e.g., Bauer-Kealey & Mather, 2019; Chambers, Mather, & Stoll, 2013; Kloos, Sliemers, Cartwright, Mano, & Stage, 2019; Schneider et al., 2016; Vaughan, Crews, Sisk, & Garcia, 2004). For instance, second-grade students who engaged with MindPlay Reading for an average of 44 hours showed greater reading fluency enhancements than those not involved in the program (Schneider et al., 2016). Additionally, students exposed to MindPlay Reading over nine weeks in second and fourth grades exhibited improved reading fluency compared to those using an alternative reading technology (Kloos et al., 2019).

With nearly two decades of aiding schools and districts across the United States in achieving substantial advancements in reading, MindPlay Reading stands as an endorsed reading intervention program in numerous states. The latest iteration of MindPlay Reading, known as MindPlay Reading Studio, comprises three distinct components: diagnostic assessment, adaptive instruction with immediate feedback, and targeted fluency practice. In collaboration with LXD Research, MindPlay initiated a third-party assessment of MindPlay Reading Studio's implementation in a Connecticut urban school district during the 2024-2025 academic year.

Product Description

MindPlay Reading Studio is a comprehensive digital literacy program that integrates a universal screener, a virtual reading coach, and an online library to assess and support the development of students' reading skills. Designed to promote reading fluency within a personalized learning environment, the program aligns with the principles of the science of reading. It provides systematic instruction across key domains, including phonemic awareness, phonics, vocabulary, fluency, and reading comprehension. Instruction is guided by a structured sequence that determines the progression of lessons and practice activities based on each student's performance. The program continuously adapts to students' evolving abilities, offering targeted instruction and practice that respond to individual learning needs.

MindPlay's mastery-based approach offers individualized educational paths, addressing the challenge of wheel-spinning—an unproductive learning pattern that occurs when educational platforms lack diverse instructional strategies (Park, 2023). By providing up to 15 unique instructional approaches for key concepts, the program breaks traditional assessment cycles that can trap students in repetitive learning methods, preventing them from simply gaming the system or becoming stuck in monotonous instruction and assessment sequences. The program fosters the development of automaticity and fluency while addressing potential gaps in foundational reading skills. All students receive targeted support and instructional scaffolding to ensure mastery of essential components of reading.

While traditional Orton-Gillingham approaches have faced significant scrutiny in recent research, with Stevens et al. (2022) finding limited statistical significance in foundational reading skill improvements, MindPlay Reading Studio represents an evolved approach to structured literacy instruction. Unlike traditional methods that rely on instructors with varying levels of training, MindPlay delivers lessons through video instruction by certified speech language pathologists, ensuring consistent, expert-level delivery. By integrating a comprehensive online library component, the platform addresses a critical gap identified by Al Otaiba et al. (2022), who emphasized the importance of interventions focusing on both code and meaning dimensions of reading. Adding meaning-based practice through the digital library, combined with standardized video-based instruction created by speech and reading instruction experts, aligns with current recommendations for more holistic literacy interventions, moving beyond the purely systematic, code-focused methods of traditional OG approaches.

While MindPlay Reading is most appropriate for striving readers in Tiers 2 and 3, the program has been used in various settings to support all students, whether in the classroom, a small group, or one-on-one. The depth, nature, and intensity of skill reinforcement available in MindPlay Reading are unique in edtech and provide the resources needed to differentiate instruction.



Study Description

As part of their ongoing efforts to demonstrate the efficacy of MindPlay Reading Studio, MindPlay contracted with Learning Experience Design (LXD) Research, a third-party edtech research company, to examine the relationship between MindPlay Reading implementation and student outcomes in a multi-site, randomized control trial. This report examines DIBELS reading assessment outcomes for students in grades two through five from Fall 2024 to Winter 2025, comparing students' performance using MindPlay Reading Studio with those receiving business-as-usual reading instruction in control schools.

Research Questions

The research questions centered around how assignment to MindPlay Reading Studio predicted student literacy outcomes compared to students in control group schools:

1. How did the assignment to MindPlay Reading Studio predict students' mid-year literacy achievement after controlling for students' prior literacy achievement, compared to the control group?
2. How did the level of MindPlay usage impact students' mid-year literacy achievement?
3. Did the use of MindPlay predict outcomes differently based on students' starting reading level?
4. What was the critical threshold for minimum weekly usage for significant reading improvements

Method

This section briefly describes the setting, participants, measures, and analysis methods used in the current study.

Setting

The study was conducted in an urban Connecticut school district with an analytic sample of students in grades two through five across four schools. Two schools were randomly assigned to implement MindPlay Reading Studio as a whole-class instructional program during the literacy block, serving as a Tier 1 intervention within a Multi-Tiered System of Supports (MTSS) framework. The remaining two schools, which comprised the control group, continued their regular business-as-usual reading instruction.

Participants

The analytic sample included 847 students in grades two through five. The district serves a predominantly Hispanic and Black student population, with a high percentage of students eligible for free/reduced lunch and English Language Learners. According to demographic data provided by the district, 67% of student participants were Hispanic, and 20% were Black/African-American. About 85% of students qualified for free/reduced lunch, and 41% were classified as Multilingual Learners. Most of the MLL (84%) were using Lexia English, a program specifically designed to support emergent bilingual students by developing speaking and listening skills aligned with the WIDA English Language Development Standards.

Measures

This study utilized multiple literacy assessments to evaluate the implementation of MindPlay Reading Studio and generate evidence regarding its impact on student reading outcomes.

MindPlay Reading Assessment

Within MindPlay Reading, embedded assessments adapt instructional content to each student's skill level and provide educators with ongoing data to track and support individual progress. MindPlay categorizes student performance as ("Critical", "Approaching", "Meeting", or "Exceeding") based on their Reading Level Score, which combines text difficulty and comprehension percentage. Students are assessed relative to grade-level expectations, with the goal of ensuring readiness for the academic demands of the following school year. For example, the Approaching category identifies students who can read texts at their current grade level but demonstrate partial comprehension, indicating they are on track toward meeting grade level goals but require continued monitoring to ensure progress. Students in the Critical category are reading texts below grade-level expectations. The district shared beginning and middle-of-year MindPlay reading scores with the research team.

DIBELS Assessment

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is a validated set of short (one-minute) fluency measures used to regularly monitor the development of early literacy and early reading skills (see Riedel, 2007; Roehrig et al., 2008). DIBELS was administered at the beginning of the year (BOY) and the middle of the year (MOY). The assessment includes subscores measuring specific reading skills, including:

- **Nonsense Word Fluency - Words Read Correctly (NWF-WRC):** Measures basic letter-sound correspondence and the ability to blend letters into words (decoding).

- **Oral Reading Fluency - Words Correct (ORF-WC):** Measures advanced phonics and word attack skills, accurate and fluent reading of connected text, and reading comprehension.
- **Oral Reading Fluency - Accuracy**: The percentage of words read correctly during the ORF assessment.
- **DIBELS Composite Score**: An overall reading ability score that combines multiple DIBELS measures.

Lexia English Usage

Students in both treatment and control groups had access to Lexia English, and students using MindPlay were required to use some of their device time for Lexia English. Lexia English use was accounted for in the analysis to help account for the impact of that time.

Analysis Plan

Researchers used a variety of quantitative analytic approaches. First, researchers conducted descriptive statistics (e.g., histograms, bar plots, proportion tables, etc.) to visualize and describe the distribution of student characteristics and implementation patterns. Researchers then conducted t-tests and chi-square tests to examine differences between MindPlay and control students on DIBELS outcomes.

Multiple regression analyses were used to examine how MindPlay Reading implementation predicted student literacy outcomes from Fall 2024 to Winter 2025, controlling for baseline scores and Lexia English usage. In addition, researchers calculated standardized effect sizes (e.g., Cohen's d, Cramer's V) to determine the magnitude of differences between conditions and the impact of various usage thresholds. Analyses of variance (ANOVA) and covariance (ANCOVA) were conducted to examine outcome differences based on starting reading levels and usage patterns.

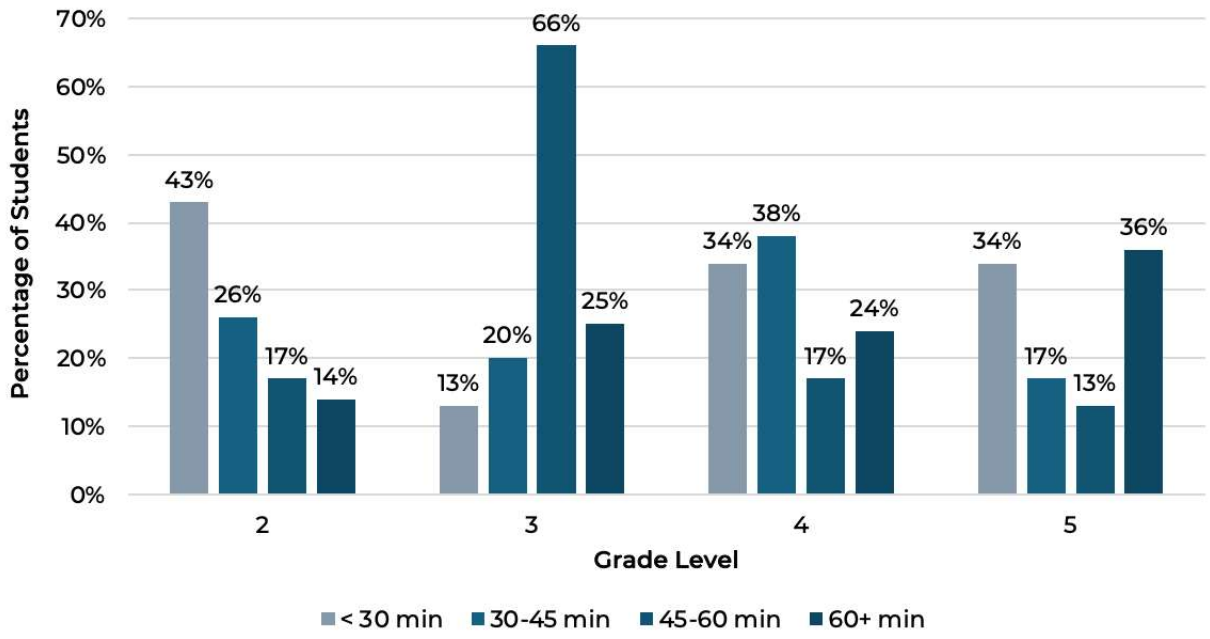
Table 1. Sample Description

Grade	MindPlay	Control	**Total**
2	86	122	***208***
3	99	127	***226***
4	86	120	***206***
5	77	130	***207***
Total	***348***	***499***	***847***

MindPlay Implementation Description

The implementation fidelity varied considerably across grades, with Grade three showing the highest percentage of students (66%) using the program between 45-60 minutes per week, while Grade five had the highest percentage of students (36%) meeting the recommended 60+ minutes per week. Grade two had the lowest implementation fidelity, with only 14% of students using the program for 60+ minutes per week and 43% using it for less than 30 minutes per week.

Figure 1. Average Weekly MindPlay Usage Minutes by Grade



This variation is typical for the first half of the year, as teachers are adjusting to integrating new technology and orchestrating schedules to meet the needs of a new group of students. As research on educational technology adoption demonstrates, implementing new learning platforms is a complex process with multiple influencing factors (Granić, 2022). Technological adoption in educational settings often requires time for teachers to develop comfort, adjust instructional approaches, and effectively integrate new tools into their existing pedagogical practices. To support this implementation, MindPlay is providing ongoing school-level coaching and targeted support to help educators optimize platform usage and address implementation challenges. Research indicates that targeted coaching and ongoing professional support can significantly improve technology integration and instructional effectiveness (McBride, 2022), suggesting strong potential for increased usage and improved implementation in the spring semester.

Results

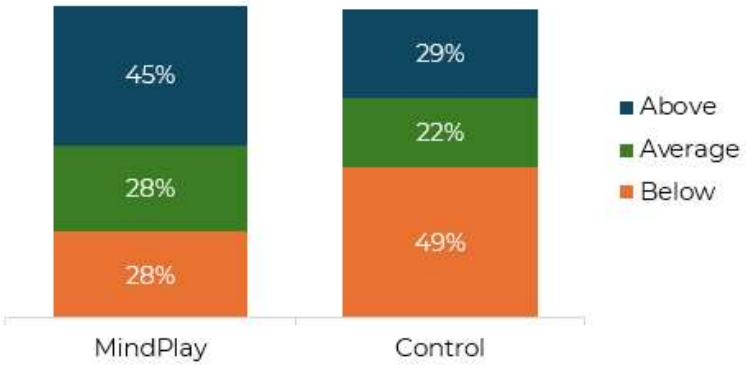
Impact on DIBELS Scores

DIBELS Decoding (Nonsense Word Fluency - Words Read Correctly): Grades 2-3

MindPlay usage significantly predicted decoding skills for students in grades two and three. When comparing MindPlay users to control group students using "business as usual" methods, several clear differences emerged.

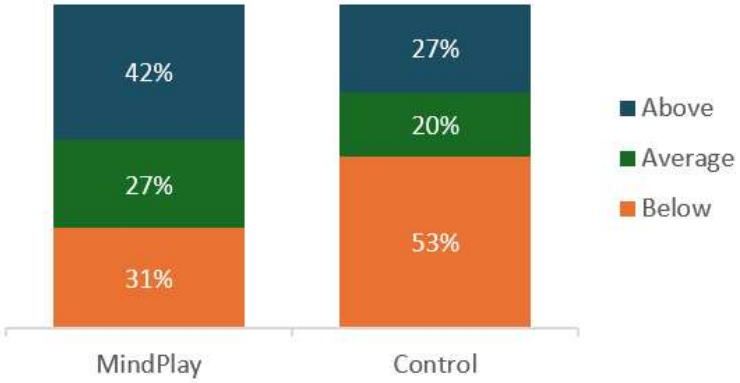
More MindPlay students exceeded normed average BOY-MOY growth expectations on the DIBELS Nonsense Word Fluency (Words Read Correctly) measure, while significantly fewer experienced below-average growth compared to control students ($\chi^2(2, N=400) = 20.0$, $p < .001$, Cramer's $V = .22$). Therefore, a higher proportion of MindPlay students showed above-average growth ($\chi^2(1, N=400) = 9.76$, $p < .01$, Cramer's $V = .16$) and a lower proportion of MindPlay students showed below-average growth compared to control students ($\chi^2(1, N=400) = 18.6$, $p < .001$, Cramer's $V = .22$; see Figure 2, below, for full details).

Figure 2. DIBELS Decoding: NWF BOY-MOY Growth Expectations (Grades 2 and 3 Combined)



A similar trend was also observed among students who began the year below grade level on this measure. Within this subgroup, a greater proportion of MindPlay students exceeded the normed BOY–MOY growth expectations on the decoding measure, while a smaller proportion fell into the below-average growth category, compared to control students. Specifically, MindPlay students showed higher rates of above-average growth ($\chi^2(1, 295) = 6.2$, $p < .05$, Cramer's $V = .15$) and lower rates of below-average growth ($\chi^2(1, 295) = 13.0$, $p < .001$, Cramer's $V = .21$; See Figure 3, below, for full details).

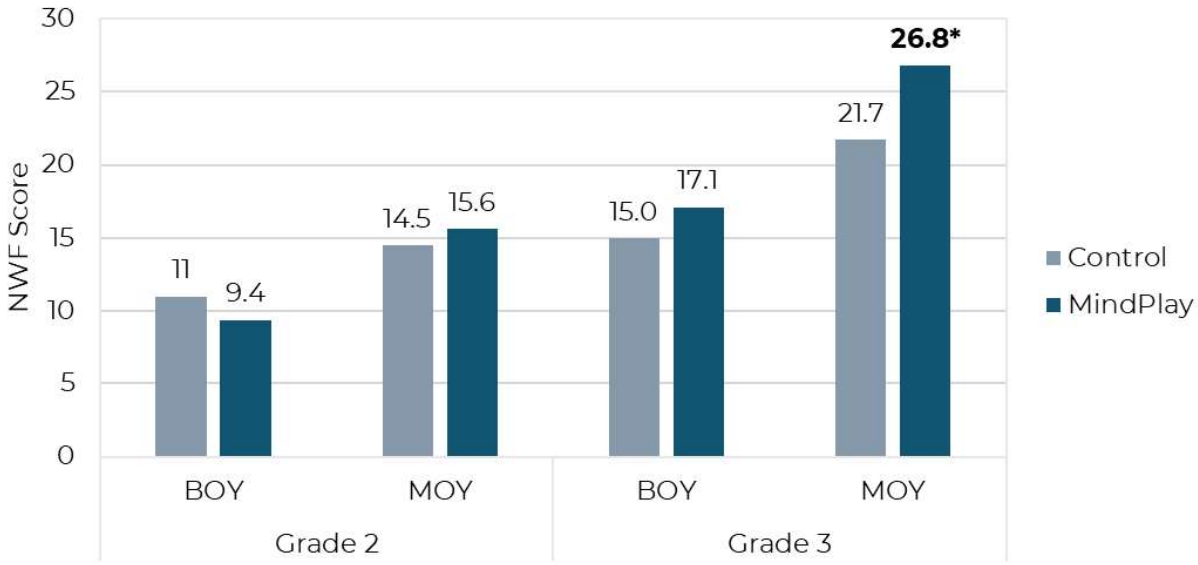
Figure 3. DIBELS Decoding: NWF BOY-MOY Growth Expectations - Students Below Grade Level



DIBELS outcomes were also analyzed with regard to mid-year decoding overall scores. Grade three MindPlay students achieved significantly higher mid-year scores than control students ($t(202) = 2.69$, $p < .01$, Cohen's $d = .37$). Their scores improved from a BOY mean of 17.1 to a MOY score of 26.8, while control students' scores rose from 15.0 to 21.7. Although Grade two students using MindPlay also showed greater improvement in decoding scores relative to the control group, these differences were not statistically significant (see Figure 4).

Additional analyses of Grade 3 students who began the year below grade level showed a similar, significant advantage for the MindPlay group. This subgroup analysis found that mid-year decoding scores were significantly higher for MindPlay users compared to control students, controlling for baseline performance ($F(1, 201) = 8.0$, $p < .01$, partial $\eta^2 = .05$). Post hoc comparisons confirmed a significant mean difference of 3.79 points ($SE = 1.34$, $t = 2.83$, $p < .01$), with MindPlay students averaging a score of 20.08 and control students 16.29 at MOY.

Figure 4. DIBELS Decoding: NWF BOY-MOY Scores



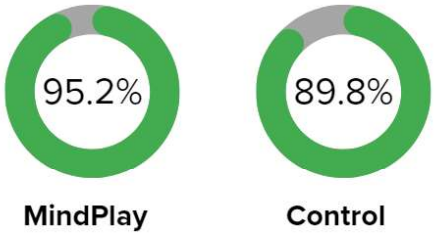
Note: An asterisk indicates a statistically significant difference between MindPlay and the control group at mid-year.

The above findings suggest a general positive effect of MindPlay assignment for Grade 2 and 3 students, with improved decoding outcomes observed both overall and among students who began the year below grade level. In addition, analyses conducted within the MindPlay group showed that increased usage predicted greater BOY–MOY gains. Total hours of MindPlay usage was a significant positive predictor of improvement in decoding scores ($\beta = 0.19$, SE = 0.07, $p < .01$). This usage effect was evident both for the full Grades 2–3 sample and for students who began the year below grade level, indicating that more time spent in the program was associated with greater gains in decoding skills.

DIBELS Oral Reading Accuracy: Grade 5

Grade five students in both conditions exhibited no statistically significant difference in reading accuracy at baseline. However, by mid-year, MindPlay students demonstrated significantly higher reading accuracy scores than control group students ($t(191) = 2.7$, $p < .01$, Cohen's $d = .35$; See Figure 5 below).

Figure 5. MOY Oral Reading Accuracy (Percent of Words Read Correctly)



Additional analyses revealed a significant, positive interaction effect between program condition and assignment to Lexia English ($F(1, 202) = 5.5$, $p < .05$, partial $\eta^2 = .03$). Among students using Lexia English (a subset of students with high ELL support needs), those assigned to MindPlay achieved substantially higher mid-year accuracy scores ($M = 96.1$) than control students also using Lexia English ($M = 87.1$). This difference was statistically significant, $t(202) = 3.2$, $p < .01$, mean difference = 9.0), and implied that students with greater ELL support needs had especially strong impacts of Mindplay.

DIBELS Composite Scores

Despite the above findings indicating that students showed significant improvements in reading skills, there were no statistically significant differences in overall DIBELS composite scores between MindPlay and control students at mid-year. Students who are significantly behind in reading typically need to master foundational skills individually before demonstrating improvements in overall reading comprehension. Targeted skill improvements in decoding and accuracy are essential precursors to broader reading proficiency, suggesting that meaningful progress in foundational skills is a necessary first step toward comprehensive reading achievement.

Additionally, regression analyses revealed a significant, positive relationship between MindPlay usage time and composite scores, suggesting that if participating schools use MindPlay with fidelity in the second semester, overall composite score differences may emerge by the end of the year. This possibility will be explored in future reports.

Impact of Starting Reading Level & Usage Level

Students were categorized based on their initial reading level score, which combines passage grade level and comprehension accuracy. MindPlay defines performance bands as Critical (one or more grade levels below the end-of-year goal), Approaching (less than one grade level below), Meeting (at grade level goal), and Exceeding (above goal). For analysis purposes, the Critical category was further divided into two groups: students reading texts at a difficulty one grade

level below and those reading two or more grades below. The impact of MindPlay Reading Studio was examined in relation to students' initial reading levels to determine whether effectiveness varied based on baseline performance.

Critical Students (2+ Grade Levels Behind)

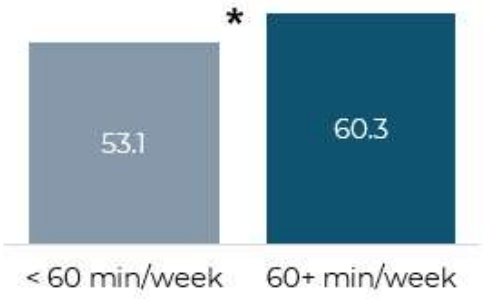
Students performing well below grade-level expectations (i.e., 2+ grade levels below) demonstrated substantial reading gains on the MindPlay Universal Screener across usage levels. Although no significant relationship was found between the 60 min/week usage threshold and reading improvement, they still demonstrated accelerated growth equivalent to one full grade level of improvement in the first half of the school year:

- 79% improved their reading level score
- 47% advanced to higher grade-level passages
- Average reading growth of 1.0 grade levels

Critical Students (1 Grade Level Behind)

Students at the high end of the critical category (i.e. reading just one grade level below expectations) with 60 mins/week of MindPlay use had significantly higher DIBELS composite BOY-MOY gains than similar students using MindPlay less than 60 minutes per week: ($F(1, 110) = 7.12$, $p < .01$, partial $\eta^2 = .06$, Cohen's $d = .50$; Figure 6).

Figure 6. BOY-MOY DIBELS Composite Gains by Weekly Minutes

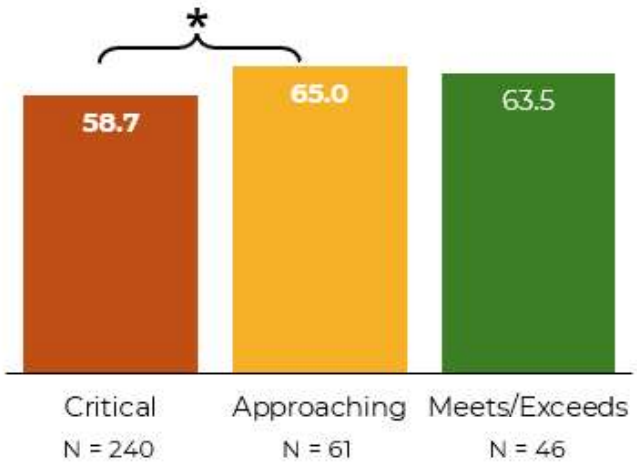


Students reading one grade level behind and using MindPlay 60+ minutes were also significantly more likely to improve to the Approaching category on the MindPlay Screener than peers with less usage - 3.41 times more likely to improve their reading level category (OR = 3.41, 95% CI [1.34, 9.15], $p < 0.05$).

Approaching Students (Within 1 Grade Level)

Although students in all MindPlay categories showed meaningful gains from BOY-MOY, students in MindPlay's Approaching category (i.e., nearing their grade-level goal; N = 61) showed significantly higher BOY-MOY gains on DIBELS Composite scores than students in the Critical category, with a mean difference of 6.3 points: $t(343) = 2.67$, $p < .05$, Cohen's $d = .39$. This finding suggests that MindPlay elementary school students approaching grade level had the greatest benefit from MindPlay use (Figure 7).

Figure 7. DIBELS BOY-MOY Composite Gains by Initial Reading Level

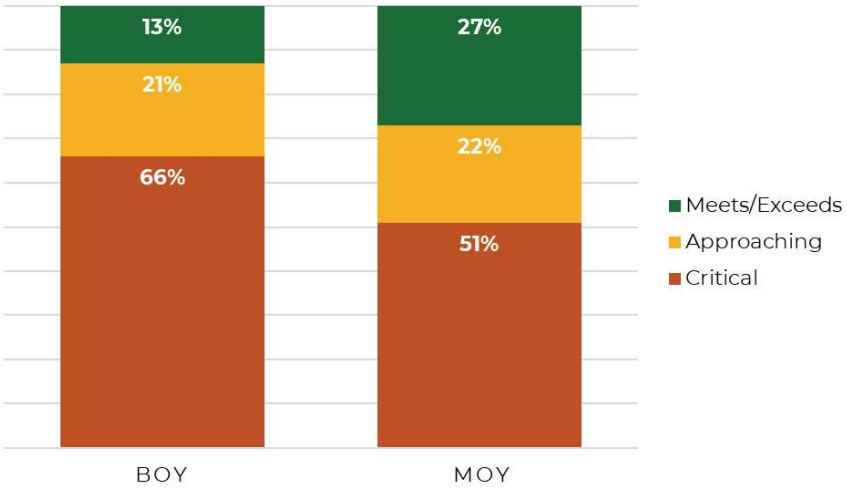


Effect of Usage on Outcomes

Critical Usage Threshold

Averaging 60+ minutes per week emerged as a significant threshold for improved outcomes. All MindPlay usage groups showed reductions in students classified as Critical by mid-year, but only the students using the program an average of 60+ minutes weekly demonstrated statistically significant category improvement, reducing Critical students from 66% to 51% while increasing "Meets/Exceeds" from 13% to 27% (Figure 8).

Figure 8. Reading Category Change: 60+ Minutes per Week

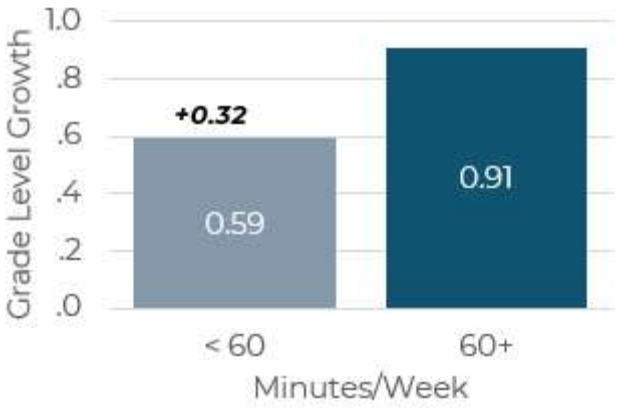


Note: Critical category reduction: $\chi^2(1) = 6.57$, $p < .05$, Cramér's V = 0.15; Meets/Exceeds category increase: $\chi^2(1) = 8.55$, $p < .05$, Cramer's V = .17

Reading Grade Level Growth

Grade 2-5 students with 60+ minutes per week showed significantly higher reading level growth (0.91 grade levels) compared to students with less than 60 minutes per week (0.59 grade levels) after accounting for Lexia English usage: $F(1, 344) = 12.29$, $p < .001$, partial $\eta^2 = .034$, Cohen's d effect size = 38 (see Figure 9).

Figure 9. Reading Grade Level Growth by Minutes per Week



Relationship Between Usage Time and Outcomes

Students who used MindPlay more showed better reading performance on DIBELS than students with fewer hours of MindPlay. After accounting for baseline scores and Lexia English use, each additional hour of MindPlay was associated with improvements in both mid-year composite scores and BOY-to-MOY composite gains.

The strongest effects were observed in Grade four reading composite gains (β=0.79) and Grade 5 mid-year reading composite scores (β=0.51), with Grades 2-5 each showing statistically significant positive relationships for at least one outcome measure. For full details, see Figures 10 and 11.

Figure 10. MOY DIBELS Composite Score by MindPlay Hours and Grade

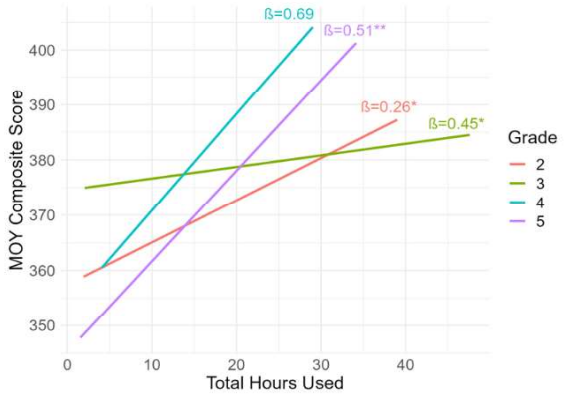
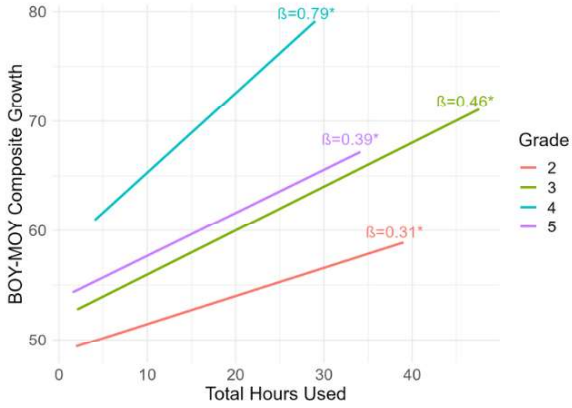


Figure 11. BOY-MOY DIBELS Composite Growth by MindPlay Hours and Grade



Note: Trend lines represent predicted scores based on usage time, with steeper slopes indicating stronger effects. Standardized coefficients (β) indicate the strength of each relationship, while asterisks show statistical significance (*p<.05, **p<.01). For example, in Grade 4, each hour of usage is associated with a 0.79-point increase in score gains.

Conclusions and Recommendations

The findings of this mid-year analysis demonstrate MindPlay Reading Studio's effectiveness in improving specific reading skills among elementary students, particularly in the areas of decoding (Grades 2 and 3) and reading accuracy (Grade 5). Benefits were observed not only across the full grade-level groups but also among students who began the year below grade level and among students with high ELL support needs. Furthermore, the study provides strong evidence that consistent usage of at least 60 minutes per week is critical for achieving significant reading improvements.

The most substantial gains were observed among students initially categorized as Approaching grade-level standards, suggesting that MindPlay is particularly effective for students who have mastered basic reading skills but require additional support to achieve grade-level proficiency. Students in the Critical category who were at least two grade levels behind also showed significant benefits from the program when used consistently.

These results align with previous research on MindPlay's efficacy (Schneider et al., 2016; Kloos et al., 2019) and contribute to the growing body of evidence supporting technology-enhanced, personalized reading interventions based on the Science of Reading. Specific attention will be given to Grade two, where implementation fidelity was lowest, with additional support and coaching for teachers to improve consistent usage. The study will extend data collection through the end of the 2024-2025 school year to determine if the mid-year skill improvements translate to significant gains in overall reading proficiency, including analyzing state test results for grades three to five A qualitative investigation will complement the quantitative data, involving interviews with administrators and surveys with teachers to better understand implementation challenges and successes.

Overall, the study findings provide evidence of MindPlay Reading Studio's efficacy as a comprehensive literacy intervention for elementary students, particularly when implemented with fidelity, as defined by 60+ minutes of program use per week. The positive relationships between MindPlay use and multiple measures of reading outcomes (i.e., the MindPlay Universal Screener and DIBELS formative assessment data) help to triangulate the findings and provide added confidence in our conclusions. MindPlay's adaptive, personalized approach to reading instruction shows promise for helping students at various reading levels improve their skills and progress toward grade-level proficiency.

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