

Reading Park Logic Model

Study Type: ESSA Evidence Level IV

Prepared for:
DreamBox Learning by Discovery Education

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EXECUTIVE SUMMARY

DreamBox Learning by Discovery Education engaged LearnPlatform by Instructure, a third-party edtech research company, to develop a logic model for Reading Park. LearnPlatform designed the logic model to satisfy Level IV requirements (*Demonstrates a Rationale*) according to the Every Student Succeeds Act (ESSA).¹

Logic Model

A logic model provides a program roadmap, detailing program inputs, participants reached, program activities, outputs, and outcomes. LearnPlatform collaborated with DreamBox to develop and revise the logic model.

Study Design for Reading Park Evaluation

Informed by the logic model, the next phase will focus on planning for an ESSA Level III study to examine the extent to which Reading Park impacts reading achievement.

Conclusions

This study satisfies ESSA evidence requirements for Level IV (*Demonstrates a Rationale*). Specifically, this study met the following criteria for Level IV:

- ✓ Detailed logic model informed by previous, high-quality research
- ✓ Study planning and design is currently underway for an ESSA Level I, II or III study

¹ Level IV indicates that an intervention should include a “well-specified logic model that is informed by research or an evaluation that suggests how the intervention is likely to improve relevant outcomes; and an effort to study the effects of the intervention, that will happen as part of the intervention or is underway elsewhere...” (p. 9, U.S. Department of Education, 2016).

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Introduction

DreamBox Learning by Discovery Education engaged LearnPlatform by Instructure, a third-party edtech research company, to develop a logic model for Reading Park. LearnPlatform designed the logic model to satisfy Level IV requirements (*Demonstrates a Rationale*) according to the Every Student Succeeds Act (ESSA).

The ability to read is the gateway to all learning; however, national tests show that a large majority of students are underperforming and below grade-level in reading. Third grade reading readiness is a known indicator of students' futures which means that it is critical for younger learners to acquire foundational reading skills by the end of second grade. Reading Park provides explicit instruction of the foundational reading skills that is essential to K–2 proficiency. The goal of Reading Park is to provide students with intensive practice – a key component of explicit instruction – for phonological awareness, phonemic awareness, phonics, high-frequency words, fluency, and comprehension.

The study had the following objectives:

1. Define the Reading Park logic model and foundational research base.
2. Draft an ESSA Level III study design.

Previous Research. The design of this logic model was guided by previous research examining reading pedagogy, the use of formative assessment for individualized learning, and instructional design. For children to learn to read, they must have phonological awareness (International Literacy Association, 2020). Phonological awareness is an umbrella term that encapsulates the ability to notice sound structures in language, which is foundational to learning to read. Students do not necessarily develop phonological awareness on their own, therefore they must be taught how to notice the individual sounds in words (i.e., phonemic awareness) and how they are related to letters in the alphabet (i.e., phonics; Ehri et al., 2001; Ehri, 2020). In other words, students learn how phonemes (letter sounds) are related to graphemes (letters that represent distinct sounds), which enables them to decode (sound out) words.

As students' skills further develop, emerging readers can identify larger sound units of words (i.e., morphemes). Therefore, phonological awareness is a building block of morphological awareness, which leads to increased automaticity and reading fluency (Vaknin-Nusbaum et al., 2016). Since morphological awareness allows students to develop word reading skills, it underpins reading comprehension (Deacon et al., 2014; National Reading Panel, 2000). However, learning to read requires more than just understanding the sounds that makeup words, it also entails knowing what the words mean (i.e., vocabulary development; Wagner et al., 2007). Both decoding and word-meaning efficiency are requisite to reading comprehension (Ouellette, 2006). Providing students with opportunities to learn the meaning of new words within meaningful and interesting contexts that incorporate repeated encounters with target words fosters vocabulary development (Beck & McKeown, 2007). Recognizing the need for a comprehensive approach to reading instruction, Reading Park provides a structured lesson sequence that supports students'

development of foundational literacy skills that includes explicit skill instruction and extended practice in phonemic awareness, phonics, fluency, vocabulary, and reading comprehension.

Reading Park provides a comprehensive literacy program that incorporates the interdependent components necessary for skilled reading. Specifically, Reading Park is aligned with the aspects of Scarborough's Reading Rope (Scarborough et al., 2009) as it uses explicit instruction to help students develop word recognition skills (via increased phonological awareness, decoding, and sight recognition) and language comprehension (by building background knowledge, vocabulary, understanding of language structures, verbal reasoning skills, and literacy knowledge). By helping students develop both "world and word knowledge", Reading Park is expected to positively influence students' reading comprehension skills (Kearns et al., 2021). Furthermore, it uses explicit skill instruction and engages students in extended supported practice where they have continuous opportunities to use newly acquired skills; both instructional strategies are shown to increase literacy achievement (Block et al., 2009; Connor et al., 2004; Rupley et al., 2009).

Effective reading instruction aligns with students' skill levels (Foorman & Torgesen, 2001; Morrison et al., 2005). Therefore, it is recommended that teachers regularly assess students' fundamental literacy skills to identify targeted instructional priorities to increase reading abilities (Vernon-Feagans et al., 2010). Reading Park uses embedded formative assessments to regularly gauge students' level of mastery and tailor instruction to meet their skill level, thereby fostering instructional differentiation, which is critical for helping students become more competent readers (Tomlinson, 1995). Additionally, providing this type of adaptive scaffolding, which facilitates reteaching content that students have not mastered with and gradually increasing difficulty, positively impacts student engagement and achievement (Clark & Graves, 2005; Lutz et al., 2006; Vadasy & Sanders, 2010). Specifically, scaffolding boosts students' sense of self-efficacy, which is associated with engagement, and in turn, reading achievement (Guthrie et al., 2004; Guthrie & Wigfield, 1999).

Another way to support students' motivation, is to make reading instruction playful to promote enjoyment and engagement (Malanchini et al., 2017), by using strategies such as digital storytelling and ensuring the digital environment is aesthetically pleasing (Robin, 2016; Ondřej et al., 2019). Reading Park uses these best practices to guide students through different learning activities as part of a story that includes visuals. It also promotes students' extrinsic motivation by providing the opportunity for them to earn rewards as they complete different tasks (Bear et al., 2017).

Reading Park can be used by young students with minimal guidance from others because the user interface includes onscreen manipulatives, which are developmentally appropriate (Liu, 2018a,b). Due to the accessibility of the design for young learners, teachers do not need additional training to implement the program. As schools are increasingly faced with staffing constraints following the COVID-19 pandemic (Schmitt & deCourcy, 2022), having programs that can be implemented without additional time spent training is important.

Logic Model

A logic model is a program or product roadmap. It identifies how a program aims to impact learners, translating inputs into measurable activities that lead to expected results. A logic model has five core components: inputs, participants, activities, outputs, and outcomes (see Table 1).

Table 1. Logic model core components

Component	Description	More information
Inputs	What the provider invests	What resources are invested and/or required for the learning solution to function effectively in real schools?
Participants	Who the provider reaches	Who receives the learning solution or intervention? Who are the key users?
Activities	What participants do	What do participants do with the resources identified in Inputs? What are the core/essential components of the learning solution? What is being delivered to help students/teachers achieve the program outcomes identified?
Outputs	Products of activities	What are numeric indicators of activities? (e.g., key performance indicators; allows for examining program implementation)
Outcomes	Short-term, intermediate, long-term	Short-term outcomes are changes in awareness, knowledge, skills, attitudes, and aspirations. Intermediate outcomes are changes in behaviors or actions. Long-term outcomes are ultimate impacts or changes in social, economic, civil or environmental conditions.

LearnPlatform reviewed DreamBox resources, artifacts, and program materials to develop a draft logic model. DreamBox reviewed the draft and provided revisions during virtual meetings. The final logic model depicted below (Figure 1) reflects these conversations and revision.



DreamBox Reading Park Logic Model

Problem Statement: The ability to read is the gateway to all learning; however, national tests show that a large majority of students are underperforming and below grade-level in reading. Third grade reading readiness is a known indicator of students' futures which means that it is critical for younger learners to acquire foundational reading skills by the end of second grade. Reading Park provides explicit instruction of the foundational reading skills that is essential to K-2 proficiency. The goal of Reading Park is to provide students with intensive practice- a key component of explicit instruction- for phonological awareness, phonemic awareness, phonics, high-frequency words, fluency, and comprehension.

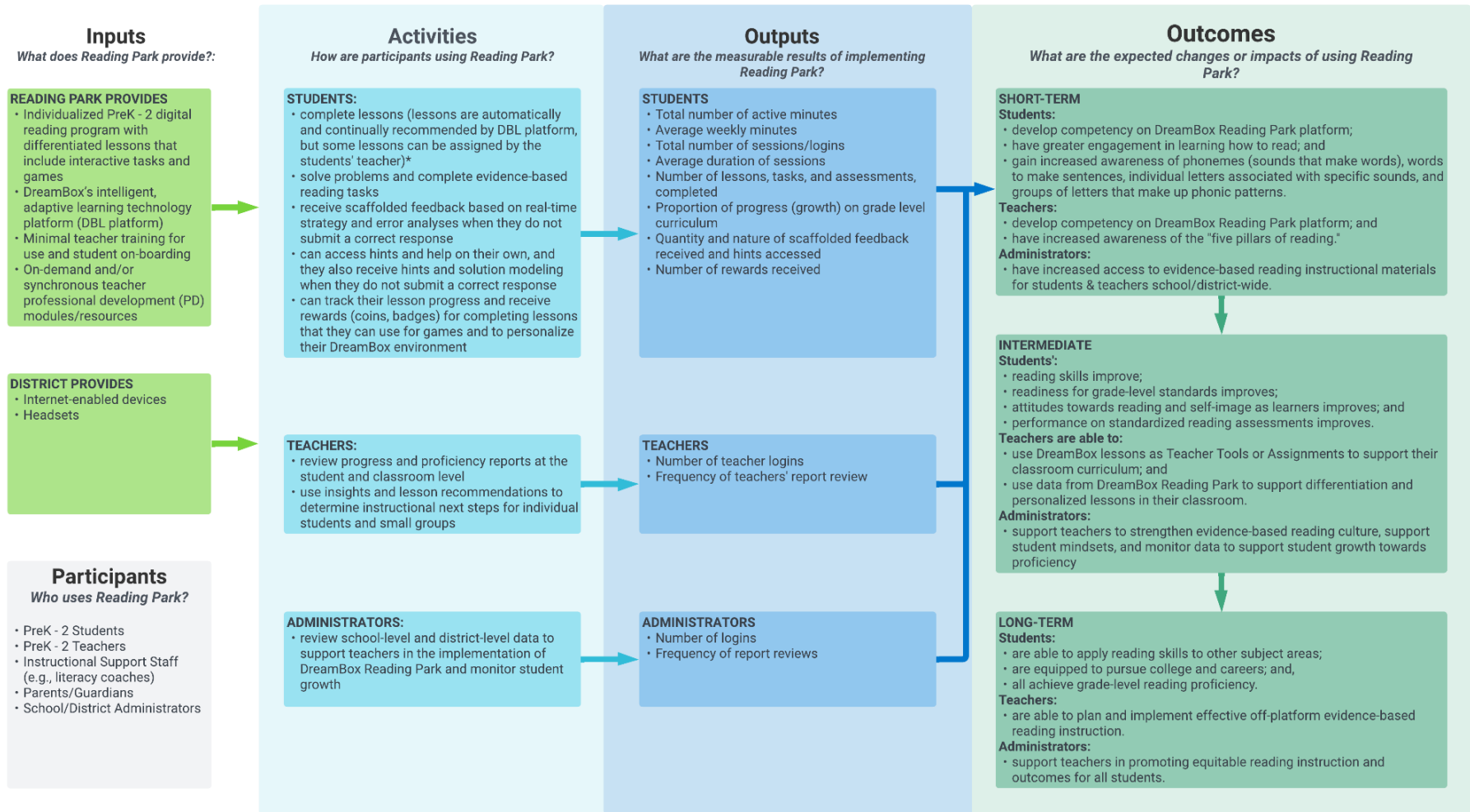


Figure 1. Reading Park logic model

Reading Park Logic Model Components. DreamBox invests several resources into their program, including an individualized PreK - 2 digital reading program with differentiated lessons that include interactive tasks, and games; DreamBox's intelligent, adaptive learning technology platform (DBL platform); minimal teacher training for use and student on-boarding; on-demand and/or synchronous teacher professional development (PD) modules/resources. School districts invest in internet-enabled devices and headsets. Ultimately, the DreamBox program aims to reach PreK - 2 Students, PreK - 2 Teachers, instructional support staff (e.g., literacy coaches), parents and/or guardians, and school/district administrators.

Using these program resources, participants can engage with the DreamBox platform in the following activities:

- Students:
 - complete lessons (lessons are automatically and continually recommended by DBL platform, but some lessons can be assigned by the students' teacher)²;
 - solve problems and complete evidence-based reading tasks;
 - receive scaffolded feedback based on real-time strategy and error analyses when they do not submit a correct response;
 - can access hints and help on their own, and they also receive hints and solution modeling when they do not submit a correct response; and
 - can track their lesson progress and receive rewards (coins, badges) for completing lessons that they can use for games and to personalize their DreamBox environment.
- Teachers:
 - review progress and proficiency reports at the student and classroom level; and
 - use insights and lesson recommendations to determine instructional next steps for individual students and small groups.
- Administrators review school-level and district-level data to support teachers in the implementation of DreamBox Reading Park and monitor student growth.

DreamBox can examine the extent to which core activities were delivered and participants were reached by examining the following quantifiable outputs for each participant group:

- Students
 - total number of active minutes
 - average weekly minutes
 - total number of sessions/logins
 - average duration of sessions
 - number of lessons, tasks, and assessments completed
 - proportion of progress (growth) on grade level curriculum
 - quantity and nature of scaffolded feedback received and hints accessed

² DreamBox recommends that students spend 30 minutes on Reading Park lessons each week. The 30 minutes should be split among 2-3 days of the week to avoid within-session fatigue. Additionally, students should be limited to a maximum of 10-12 lessons per week, regardless of time spent on platform, in order to allow for the use of the program over the course of the entire school year.

- number of rewards received
- Teachers
 - number of teacher logins
 - frequency of teachers' report review
- Administrators
 - number of logins
 - frequency of report reviews

If implementation of Reading Park is successful, based on a review of program outputs, DreamBox can expect the following outcomes. In the short term, students develop competency on the DreamBox Reading Park platform; have greater engagement in learning how to read; and gain increased awareness of phonemes (sounds that make words), words to make sentences, individual letters associated with specific sounds, and groups of letters that make up phonic patterns. Likewise, teachers develop competency on DreamBox Reading Park platform and have increased awareness of the "five pillars of reading." Meanwhile, administrators have increased access to evidence-based reading instructional materials for students and teachers across the school or district.

In the intermediate term, students': reading skills improve; readiness for grade-level standards improves; attitudes towards reading and self-image as learners improves; and performance on standardized reading assessments improves. At the same time, teachers are able to use DreamBox lessons as teacher tools or assignments to support their classroom curriculum and use data reports to support differentiation and personalized lessons in their classroom. Furthermore, administrators are able to support teachers to strengthen evidence-based reading culture, support student mindsets, and monitor data to support student growth towards proficiency.

Ultimately, students are able to apply reading skills to other subject areas and therefore are equipped to pursue college and careers. All students are able to achieve grade-level reading proficiency in the longer term. Teachers are able to plan and implement effective off-platform evidence-based reading instruction and administrators are able to support teachers in promoting equitable reading instruction and outcomes for all students.

Study Design for Reading Park Evaluation

To continue building evidence of effectiveness and to examine the proposed relationships in the logic model, DreamBox has plans to conduct an evaluation to determine the extent to which its program produces the desired outcomes. Specifically, DreamBox has plans to begin an ESSA Level III study to answer the following research questions:

Implementation Questions

1. How many Reading Park lessons were completed by PreK-2 students during the school year?
2. Among Reading Park users, what were the usage patterns?

Outcome Question

3. How were Reading Park usage patterns related to PreK-2 students' end-of-year reading achievement controlling for prior achievement and significant demographic covariates?
 - a. Which usage patterns of Reading Park had the greatest impact on PreK-2 students' end-of-year 2024 reading achievement?

Conclusions

This study satisfies ESSA evidence requirements for Level IV (*Demonstrates a Rationale*).

Specifically, this study met the following criteria for Level IV:

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