Edsoma Logic Model

Study Type: ESSA Evidence Level IV

Prepared for:
Edsoma

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December 21, 2023

EXECUTIVE SUMMARY

Edsoma engaged LearnPlatform by Instructure, a third-party edtech research company, to develop a logic model for its program. 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 Edsoma to develop and revise the logic model.

Study Design for Edsoma 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 Edsoma impacts on student reading outcomes.

Conclusions

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

TABLE OF CONTENTS

Introduction

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

Edsoma is a reading assistant app using artificial intelligence (AI) technology that helps students develop their literacy skills in real-time while providing insights to educators and families about their students' progress. Its app guides students at their optimal learning pace and curates their reading preferences with an extensive library of resources in order to improve student reading outcomes, foster a love of reading, and help them become lifelong readers.

The study had the following objectives:

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

Previous Research. The design of this logic model was informed by previous research in the area of student early literacy. This research points to the Science of Reading as the most effective approach for reading instruction and is grounded in instructional best practices and cognitive reading development. The National Reading Panel (2000) completed a systematic review of four decades of literature on reading instruction. The findings identified five essential foundations of early literacy including phonemic awareness, phonics, fluency, vocabulary, and comprehension. The science of reading has come to be known as a systematic, step-by-step approach to reading instruction that incorporates these elements.

Phonemic awareness. The process of breaking down words into their respective phonemes (the smallest units of language) is described as phonemic awareness (National Reading Panel, 2000). Instruction in phonemic awareness is effective at improving both reading and spelling outcomes (Blevins, 1998; Castle et al., 1994).

Phonics. The process of identifying specific letter sounds and how those letter sounds are used in both reading and writing is described as phonics (Mesmer & Griffith, 2005; National Reading Panel, 2000). Phonics instruction, specifically systematic phonics instruction, improves student reading outcomes (Bowers, 2020). Students who receive phonics instruction early in their reading journey areassociated with improved reading comprehension throughout their schooling and beyond (Connelly et al., 2001).

Fluency. This relates to a student's ability to read with speed, accuracy, and proper word expression, and is a critical component of developing reading skills (National Reading Panel, 2000). Repeated reading is the most effective reading intervention for improving student literacy outcomes (Stevens et al., 2017; Therrien, 2004).

Vocabulary. This refers to the toolbox of words at a student's disposal to identify and understand words in the reading process. It's recommended that students benefit from both explicit and indirect vocabulary instruction (National Reading Panel, 2000). Vocabulary skills provide a foundation for future language skills and are an important predictor of future reading comprehension (Hemphill & Tivnan, 2008).

Comprehension. Reading comprehension refers to the understanding and retention of text and shifts the student from the foundation of reading to learning through reading (National Reading Panel, 2000). The early literacy foundations of phonemic awareness, phonics, fluency, and vocabulary support students' reading comprehension development (Suggate, 2016).

Technology can also play a key role in supporting students' early literacy as well as improving reading outcomes (Billington, 2016). Technologies, such as e-readers, provide students with a wider range of reading options than what may be afforded to them with print books (Jones & Brown, 2011). This increased access to reading resources can improve student reading outcomes (Neuman, 1999). Studies show that when children are provided with digital text and a dictionary of terms and activities, they can increase their phonological awareness and vocabulary (Korat, 2010). Research also shows that text read-aloud and text highlighting can improve students' word recognition and vocabulary (Bus et al., 2014). Through an e-reading platform, teachers gain an effective tool to assess student reading progress in real-time and at a minimal time cost (Biancarosa & Griffiths, 2012).

Edsoma provides students with the benefits of one-on-one, personalized reading support without their teacher and tailors their reading instruction to their unique reading level. This ability to adjust reading instruction to a student's unique ability level can increase the effectiveness of reading instruction (Morrison et al., 2005).

In sum, using technology, personalization, and strategies grounded in the Science of Reading, Edsoma has the potential to improve reading outcomes for all students.

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

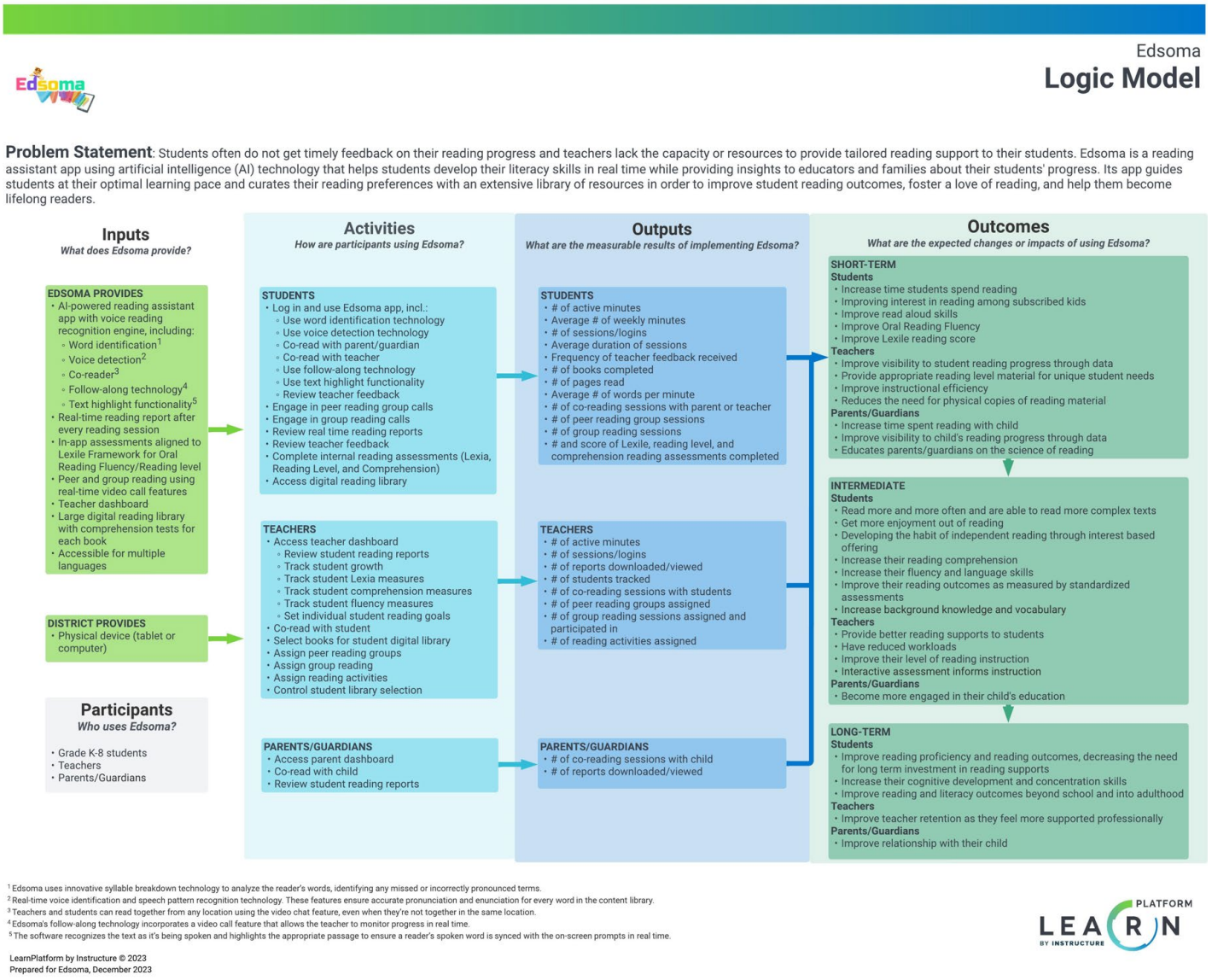

Figure 1. Edsoma logic model

Edsoma Logic Model Components. Edsoma invests several resources into its program, including:

- An AI-powered reading assistant app with voice reading recognition engine, including:
    - Word identification,[2]
    - Voice detection,[3]
    - Co-reader,[4]
    - Follow-along technology,[5] and
    - Text highlight functionality;[6]
- A real-time reading report after every reading session;
- In-app assessments aligned to the Lexile Framework for Oral Reading Fluency/Reading levels;
- Peer and group reading using real-time video call features;
- A teacher dashboard;
- A large digital reading library with comprehension tests for each book; and
- Accessibility for multiple languages.
- Participating districts provide physical devices for students and teachers.

Ultimately, Edsoma aims to reach students in kindergarten through 8th grade, teachers, and parents/guardians.

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

Students:

- Log in and use the Edsoma app:
    - Use word identification technology,
    - Use voice detection technology,
    - Co-read with a parent/guardian,
    - Co-read with a teacher,
    - Use follow-along technology,
    - Use text highlight functionality, and
    - Review teacher feedback;
- Engage in peer reading group calls;
- Engage in group reading calls;
- Review real-time reading reports;

[2] Edsoma uses innovative syllable breakdown technology to analyze the reader's words, identifying any missed or incorrectly pronounced terms.
[3] Real-time voice identification and speech pattern recognition technology. These features ensure accurate pronunciation and enunciation for every word in the content library.
[4] Teachers and students can read together from any location using the video chat feature, even when they're not together in the same location.
[5] Edsoma's follow-along technology incorporates a video call feature that allows the teacher to monitor progress in real time.
[6] The software recognizes the text as it's being spoken and highlights the appropriate passage to ensure a reader's spoken word is synced with the on-screen prompts in real time.

- Review teacher feedback;
- Complete internal reading assessments (i.e., Lexia, Reading Level, and Comprehension); and
- Access their digital reading library.

Teachers:

- Access the teacher dashboard:
    - Review student reading reports,
    - Track student growth,
    - Track student Lexia measures,
    - Track student comprehension measures,
    - Track student fluency measures, and
    - Set individual student reading goals;
- Co-read with students;
- Select books for the student digital library;
- Assign peer reading groups;
- Assign group reading;
- Assign reading activities; and
- Control student library selection.

Parents/Guardians:

- Access the parent dashboard;
- Co-read with their child; and
- Review student reading reports.

Edsoma can examine the extent to which core activities were delivered and participants were reached by examining the following quantifiable outputs:

Students

- Number of active minutes
- Average number of weekly minutes
- Number of sessions/logins
- Average duration of sessions
- Frequency of teacher feedback received
- Number of books completed
- Number of pages read
- Average number of words per minute
- Number of co-reading sessions with parent or teacher
- Number of peer reading group sessions
- Number of group reading sessions
- Number and score of Lexia, reading level, and comprehension reading assessments completed

Teachers

- Number of active minutes
- Number of sessions/logins
- Number of reports downloaded/viewed
- Number of students tracked
- Number of co-reading sessions with students
- Number of peer reading groups assigned
- Number of group reading sessions assigned and participated in
- Number of reading activities assigned

Parent/Guardians

- Number of co-reading sessions with child
- Number of reports downloaded/viewed

If implementation is successful, based on a review of program outputs, Edsoma can expect the following outcomes:

In the short-term, students will increase their time spent and interest in reading while improving their read-aloud skills, oral reading fluency, and Lexile score. Teachers will gain improved visibility to student reading progress and will be able to assign appropriate reading-level material to students. This will improve teacher instructional efficiency and reduce the need for physical books. Parents and guardians will increase the amount of time they spend reading with their child, improving the visibility of their child's reading progress, while increasing their own knowledge about the Science of Reading.

In the intermediate term, students will read more complex text more often, and enjoy reading more, while developing the habits of independent reading. Students will see increases in their reading comprehension, fluency, and language skills, while increasing their background knowledge and vocabulary. They will also improve their reading outcomes as measured by standardized assessments. Teachers will be able to provide better reading support for students, and reduce their workload, while improving their own reading instruction. Finally, parents and guardians will become more engaged with their child's reading education.

Long-term, students will improve their reading proficiency and outcomes, decreasing the need for long-term investment in reading supports. They will also increase their cognitive development and concentration skills, thus improving their literacy outcomes beyond school and into adulthood. Teacher retention will improve and they will feel more supported professionally. Finally, parents and guardians will improve their relationship with their children.

Study Design for Edsoma Evaluation

To continue building evidence of effectiveness and to examine the proposed relationships in the logic model, Edsoma has plans to evaluate to determine the extent to which its program produces the desired outcomes. Specifically, Edsoma has plans to begin an ESSA Level III study in the spring of the 2023–24 school year to answer the following research questions:

Implementation

1. To what extent did students and teachers use Edsoma during the 2023–24 school year?

Outcomes

2. How did students' use of Edsoma relate to early literacy outcomes? What was the magnitude of this relationship?
    a. To what extent did this relationship differ by student demographics?
3. How did teachers' use of Edsoma relate to teaching efficiency? What was the magnitude of this relationship?
    a. To what extent did this relationship differ by grade level?

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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