Microsoft Immersive Reader Logic Model

Study Type: ESSA Evidence Level IV

Prepared for:
Microsoft

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EXECUTIVE SUMMARY

Microsoft engaged LearnPlatform, a third-party edtech research company, to develop a logic model for Immersive Reader 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 Microsoft to develop and revise the logic model.

Study Design for Immersive Reader 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 Immersive Reader impacts student literacy skills and achievement across content areas.

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 III study

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[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

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

Teachers struggle to manage multiple students reading at various levels in their classes. Immersive Reader provides a minimally distracting reading environment with supportive decoding solutions and text-to-speech. Immersive Reader improves accessibility and comprehension and helps learners of all ages and abilities become more independent and confident readers at no additional cost.

The study had the following objectives:
1. Define the Microsoft logic model and foundational research base.
2. Draft an ESSA Level III study design.

Previous Research. Since all students develop reading skills at their own pace, teachers often struggle to foster equitable environments that meet the needs of all learners. The availability and use of assistive technology to scaffold gaps in students' reading and writing skills has increased in recent years (Matre & Cameron, 2023). Additional research states that the use of assistive technology takes advantage of cross-modal capabilities of the brain, increasing student reading efficiency (Schmitt, McCallum, Hawkins, Stephenson, & Vicencio, 2019). Immersive Reader is one tool that uses technology to promote accessibility and comprehension for learners of all ages and abilities.

Research categorizes assistive technology used within the realm of education into two categories. Category one remediates isolated, general education skills while category two targets specific deficits (Schmitt et al., 2019). Immersive Reader supports both of these student support pathways, creating nonstigmatizing opportunities for students to privately seek and receive support across all reading levels and abilities.

Word recognition plays a prominent role in student reading comprehension. Errors in word recognition prevent students from receiving complete information, which results in comprehension gaps (Jacobs, Parke, Ziegler, Headland, & De Angeli, 2023). Immersive Reader allows students to customize their reading experience with text-to-speech, reading aloud, and adjusting how text appears to prevent gaps in comprehension and build foundational literacy skills. Table 1 below outlines key evidence-based features embedded in Immersive Reader.

Table 1. Research base for Immersive Reader support features

Support Strategy	Description & Research Basis	References
Text-to-speech	Students with learning differences benefit from read aloud accommodations and from the ability to read with simultaneous highlighting and voicing text. Text-to-speech tools increase reading comprehension and help students develop grade-level literacy skills.	Andreou, Athanasiadou, & Tzivinikou, 2019; Schmitt et al., 2019; Silver-Pacuilla, 2007; Wood, Moxley, Tighe, & Wagner, 2018
Syllabification and grammar support	The process of breaking words into syllables is known as syllabification. One of the first steps to reading is developing the ability to build associations between letters and syllables. Breaking words into syllables supports reading comprehension for readers of all ages.	Doignon-Camus & Zagar, 2014; Tai et al., nd.
Page color	Changing the background color of a page helps reduce visual barriers to reading. Research has found that some readers who read text on a white background read slower, experience symptoms of visual discomfort, and tire more easily than students who used colored overlays	Tyrrell, Holland, Dennis, & Wilkins, 1995
Font choice & spacing	Using accessible fonts and allowing for personalization of font spacing is related to improved oral reading fluency. One study found students with dyslexia read 10% faster and had 50% fewer reading errors when reading text with an optimized font spacing layout.	Joo, White, Strodtman, & Yeatman, 2018; Larson & Carter, 2016; Zorzi et al., 2012
Line length	Struggling readers often find it difficult to read longer line lengths that require them to stop and find their place on the page. Decreasing the number of words on each line helps students read more fluently. One study found that, on average, students who used shorter line lengths increased their reading speed by 27%.	Schneps et al., 2013

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 2).

Table 2. 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 Microsoft resources, artifacts, and program materials to develop a draft logic model. Microsoft reviewed the draft and provided revisions during virtual meetings. The final logic model depicted below (Figure 1) reflects these conversations and revisions.

Problem Statement:

Teachers struggle to manage multiple students reading at various levels in their classes. Immersive Reader provides a minimally distracting reading environment with supportive decoding solutions and text-to-speech. Immersive Reader improves accessibility and comprehension and helps learners of all ages and abilities become more independent and confident readers at no additional cost.
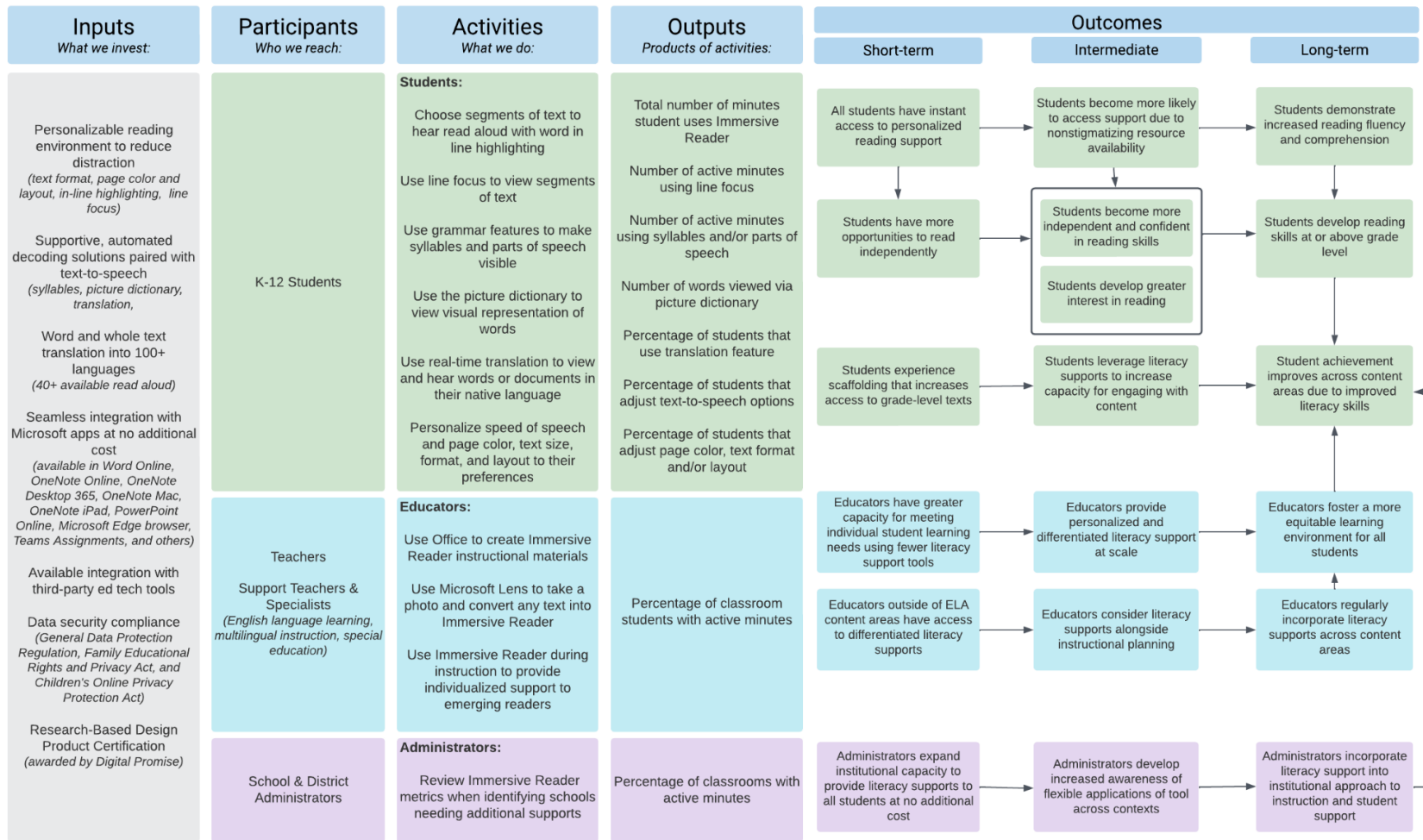
Inputs *What we invest:*	Participants *Who we reach:*	Activities *What we do:*	Outputs *Products of activities:*	Outcomes		
				Short-term	Intermediate	Long-term
Personalizable reading environment to reduce distraction *(text format, page color and layout, in-line highlighting, line focus)* Supportive, automated decoding solutions paired with text-to-speech *(syllables, picture dictionary, translation,* Word and whole text translation into 100+ languages *(40+ available read aloud)* Seamless integration with Microsoft apps at no additional cost *(available in Word Online, OneNote Online, OneNote Desktop 365, OneNote Mac, OneNote iPad, PowerPoint Online, Microsoft Edge browser, Teams Assignments, and others)* Available integration with third-party ed tech tools Data security compliance *(General Data Protection Regulation, Family Educational Rights and Privacy Act, and Children's Online Privacy Protection Act)* Research-Based Design Product Certification *(awarded by Digital Promise)*	K-12 Students	**Students:** Choose segments of text to hear read aloud with word in line highlighting Use line focus to view segments of text Use grammar features to make syllables and parts of speech visible Use the picture dictionary to view visual representation of words Use real-time translation to view and hear words or documents in their native language Personalize speed of speech and page color, text size, format, and layout to their preferences	Total number of minutes student uses Immersive Reader Number of active minutes using line focus Number of active minutes using syllables and/or parts of speech Number of words viewed via picture dictionary Percentage of students that use translation feature Percentage of students that adjust text-to-speech options Percentage of students that adjust page color, text format and/or layout	All students have instant access to personalized reading support Students have more opportunities to read independently Students experience scaffolding that increases access to grade-level texts	Students become more likely to access support due to nonstigmatizing resource availability Students become more independent and confident in reading skills Students develop greater interest in reading Students leverage literacy supports to increase capacity for engaging with content	Students demonstrate increased reading fluency and comprehension Students develop reading skills at or above grade level Student achievement improves across content areas due to improved literacy skills
	Teachers Support Teachers & Specialists *(English language learning, multilingual instruction, special education)*	**Educators:** Use Office to create Immersive Reader instructional materials Use Microsoft Lens to take a photo and convert any text into Immersive Reader Use Immersive Reader during instruction to provide individualized support to emerging readers	Percentage of classroom students with active minutes	Educators have greater capacity for meeting individual student learning needs using fewer literacy support tools Educators outside of ELA content areas have access to differentiated literacy supports	Educators provide personalized and differentiated literacy support at scale Educators consider literacy supports alongside instructional planning	Educators foster a more equitable learning environment for all students Educators regularly incorporate literacy supports across content areas
	School & District Administrators	**Administrators:** Review Immersive Reader metrics when identifying schools needing additional supports	Percentage of classrooms with active minutes	Administrators expand institutional capacity to provide literacy supports to all students at no additional cost	Administrators develop increased awareness of flexible applications of tool across contexts	Administrators incorporate literacy support into institutional approach to instruction and student support

Figure 1. Immersive Reader logic model

Immersive Reader Logic Model Components. Microsoft invests substantial resources into the Immersive Reader tool, including: a personalizable reading environment that reduces distraction, supportive, personalizable decoding solutions paired with text-to-speech, word and whole text translation into 100+ languages, seamless integration with Microsoft apps and other third-party edtech tools,, data security compliance, and research-based design product certification from Digital Promise. Ultimately, the Microsoft program aims to reach K-12 students and teachers, support teachers and specialists, and school and district administrators.

Using these program resources, users can engage with Immersive Reader platform through the following activities:
- Students choose segments of text to hear read aloud with word in line highlighting
- Students use line focus to view segments of text
- Students use grammar features to make syllables and parts of speech visible
- Students use the picture dictionary to view visual representation of words
- Students use real-time translation to view and hear words or documents in their native language
- Students personalize speed of speech and page color, text size, format, and layout to their preferences
- Teachers use Office to create Immersive Reader instructional materials
- Teachers can use Microsoft Lens to take a photo and convert any text into Immersive Reader
- Teachers use Immersive Reader during instruction to provide individualized support to emerging readers
- Administrators consider Immersive Reader when identifying schools needing additional supports

Microsoft can examine the extent to which core activities were delivered and participants were reached by examining the following quantifiable outputs:
- Total number of minutes student uses Immersive Reader
- Number of active minutes using line focus
- Number of active minutes using syllables and/or parts of speech
- Number of words viewed via picture dictionary
- Percentage of students that use translation feature
- Percentage of students that adjust text-to-speech options
- Percentage of students that adjust page color, text format and/or layout
- Percentage of classroom students with active minutes
- Percentage of classrooms with active minutes

If implementation is successful, based on a review of program outputs, Microsoft can expect the following short-term outcomes. In the short term, students will have instant access to personalized reading support, experience scaffolding that increases to grade-level texts, and have

more opportunities to read independently.   Teachers will have a greater capacity for meeting individual student learning needs while using fewer literacy support tools. Furthermore, educators and specialists outside of ELA content areas will have increased access to differentiated literacy supports. Districts and administrators will expand their capacity for providing literacy support to *all* students at no additional cost.

Intermediate outcomes will see students becoming more likely to access support due to the nonstigmatizing resource availability. This will lead to students becoming more independent and confident, and developing a greater interest in reading. Teachers will increasingly provide differentiated literacy support at scale. Additionally, educators and specialists outside of ELA will begin considering literacy supports alongside their instructional planning. Finally, monitoring usage will help school and administrators develop increased awareness of flexible applications of Immersive Reader across contexts.

The possible outcomes for long-term implementation center around an increase in student reading fluency and comprehension, which will allow students to reach or surpass grade-level reading standards. Students will also demonstrate improved achievement across content areas due to their improved literacy skills. Over time, teachers will foster a more equitable learning environment for all students, with educators and specialists outside of ELA regularly incorporating literacy support with their instruction. Finally, school and district administrators will incorporate literacy support into the instructional goals and approach to student support.

Study Design for Immersive Reader Evaluation

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

1) How many active minutes did students use on Immersive Reader?
2) How frequently did students use Immersive Reader features, including:
    a) Syllables and parts of speech?
    b) Picture dictionary?
    c) Translation?
    d) Line focus
3) Was use of Immersive Reader associated with improved student literacy outcomes?

Microsoft plans to begin this study in 2023.

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
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