

EdTech Lab

Rapid Evaluation Review

PLANETREAD

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About IDinsight

IDinsight uses data and evidence to help leaders combat poverty worldwide. Our collaborations deploy a large analytical toolkit to help clients design better policies, rigorously test what works, and use evidence to implement effectively at scale. We place special emphasis on using the right tool for the right question, and tailor our rigorous methods to the real-world constraints of decision-makers.

IDinsight works with governments, foundations, NGOs, multilaterals and businesses across Africa and Asia. We work in all major sectors including health, education, agriculture, governance, digital ID, financial access, and sanitation.

We have offices in Bengaluru, Dakar, Johannesburg, Lusaka, Manila, Nairobi, New Delhi, San Francisco, and Washington, DC. Visit www.IDinsight.org and follow on Twitter @IDinsight to learn more.

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EXECUTIVE SUMMARY

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► Introduction to the evaluation

The Ed-Tech Lab initiative by Central Square Foundation identified a range of promising education technology products in India. As part of this initiative, IDinsight, an independent research organisation, has conducted rapid evaluations of 12 products of interest.

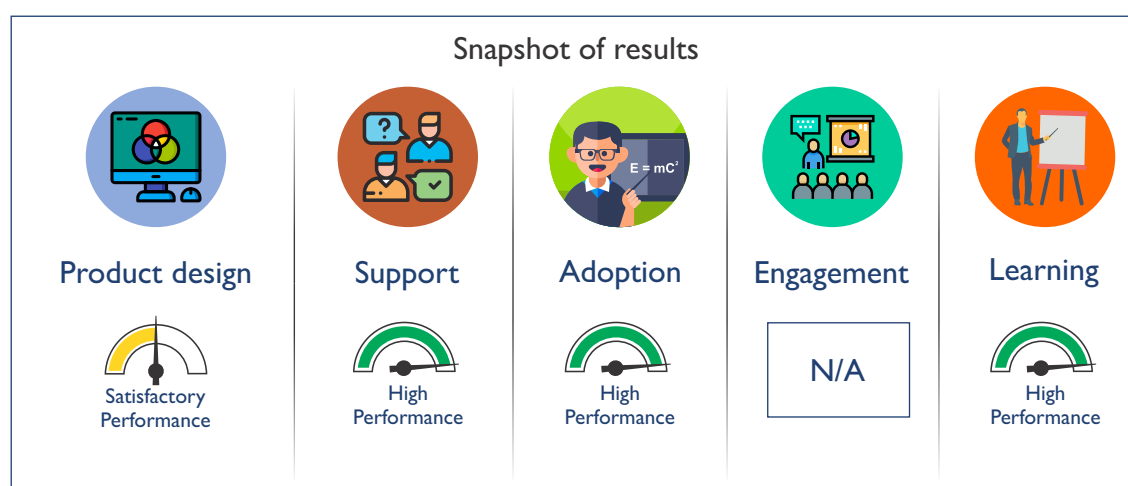
This report provides an overview of **AniBooks**, a collection of animated stories that seek to help children from Grades 1-4 learn to read through the use of Same Language Subtitling (SLS). Video content is designed to appeal to children and every word in the subtitles is highlighted in exact timing with the audio narration. AniBooks are produced by the non-profit organization PlanetRead and are available in a variety of languages.

AniBooks are videos that can be shown on a television through a flash drive or through pre-loaded set-top boxes. They can also be accessed online on YouTube. AniBooks are not mapped to any curriculum as videos are designed to be appealing and useful to students across a wide range of learning levels.

There are multiple ways AniBooks can be used (These are described in the Implementation Models section of the report). This evaluation focused on the case in which AniBooks videos are shown to students in classrooms on a television under the supervision of a teacher. Under this model, teachers show a class an AniBook 2-4 times a week. After viewing the AniBook, teachers conduct learning activities with the students. Some of these activities are designed by PlanetRead, while others are designed by the teachers themselves. Activities prescribed by PlanetRead include matching words to images, creating words with letters, fill in the blanks, poetry recitation, and role-playing exercises.

This evaluation utilized stakeholder interviews, reviews by an expert panel and a literature review to answer the following questions:

- How are AniBooks functioning in their existing market?
- What adjustments would facilitate AniBooks scale-up in a low-resource government school market?



► Results

I Product design



Does the product design incorporate practices that support student learning and appeal to students?

Content/pedagogy

- AniBooks content covers a **wide range of topics and themes** for stories and poems targeted at young (Grade 1-4) learners in over **40 global languages**.
- Experts believed the **pedagogy**, based on students watching videos with same-language-subtitles, would lead to **improved student reading**.

Instructional design

- Experts said the product **does not** to adhere to **typical instructional design** principles. However, AniBooks were not designed to be a full-service eLearning platform.
- The product **does not map to any curriculum** which would be a barrier to use in schools.
- Experts said **in-class activities** designed to supplement the use of AniBooks in classrooms would **improve reading ability and vocabulary** but missed opportunities to build other skills such as speaking and writing skills.
- **Voice-overs** were almost always **high quality**, used **good tone** and had **natural delivery**. In a few places, the narration sounded unnatural or could be too fast or too slow.
- **Visuals** were relevant and **well-made**, though they used **basic animation**.
- Experts and teachers (four out of four) felt that AniBooks' Hindi narration and choice of topics would make students find the **content relatable** and **comprehensible**.

User interface / user experience

- Experts said content would be **engaging** and attract student attention.
- Experts said the product would be **simple to navigate** for government teachers and those with low digital literacy. All teachers (four out of four) agreed it was **simple to use**.

Technology

- AniBooks as delivered by the YouTube platform are **technologically sound** and would be **easily scalable** and **useable** with a range of hardware.

The quality of the core product (SLS videos) is high and the delivery mode is based on a research-tested strategy. **Satisfactory rating** is due to issues with the wider in-classroom product, especially supplemental materials (activities) and lack of curriculum mapping.

2 Support



Does the product maker provide adequate support and training?

- PlanetRead **trainings** for AniBooks enabled teachers to **use the product independently**.
- PlanetRead provided teachers a daily schedule of what AniBooks and activities to deliver in classes. Most teachers (three out of four) said this schedule was helpful. They did not provide lesson plans.
- **Trainings** could be **improved** by providing written materials on topics covered during in-person training. PlanetRead provided some sample worksheets for teachers to use, as well as some guidelines on how to create additional worksheets based on the AniBook that had been viewed. However, most teachers (three out of four) and the program coordinator said that more prepared worksheets would make their jobs easier.
- All teachers (four out of four) said they **didn't face any technical problems** when using AniBooks other than power outages.

3 Adoption



Do schools accept and encourage use? Does it help teachers?
Would it be useable in a low-resource environment?

- All the teachers (four out of four) said AniBooks **reduced teacher workload** and made their jobs easier compared to their previous teaching experiences. They said AniBooks helped keep students engaged in class.
- Experts noted that AniBooks seem to be **easy for government school teachers** to use. All the teachers (four out of four) said that AniBooks were easy to operate.
- **Access to regular electricity is a barrier to use**. However, during power outages teachers said they would conduct supplementary activities with the students based on the videos.

4 Engagement



Do students use and actively engage with the product?

N/A

- AniBooks' Hindi **YouTube channel** (BookBox Hindi) has over **100 thousand subscribers** on YouTube and close to **20 million cumulative unique views**. Both these figures are growing rapidly, suggesting AniBooks are **popular** among viewers.
- All teachers (four out of four) reported that **students** were **highly engaged** during AniBooks sessions. They said students were more engaged during lessons with AniBooks than regular lessons.
- Experts noted that AniBooks have **attractive visuals** that are likely to keep students engaged throughout a lesson.

The available data from teachers and Youtube analytics suggests that AniBooks would be engaging for students. However, the category is grey because no data was available on students' use in the in-school model. Additionally, no students could be interviewed.

5 Learning



High
Performance

Does the product appear to increase learning or give indirect benefits that would lead to learning through direct use?

- AniBooks rely on a technology that has shown its effectiveness in promoting learning gains in a variety of different contexts. When implemented properly, AniBooks are **likely to improve students' reading ability**.
- Experts and teachers (four out of four) said AniBooks **increase students' interest and confidence in reading**.
- AniBooks' own evaluation data provides suggestive evidence that they lead to improved reading ability.
- Teachers (four out of four) said AniBooks lead to **improved performance in other subjects** as students were able to read and understand lessons better. They noted teachers of other subjects reported this to them.

Key recommendations

General recommendations

- **Map content to school curriculum:** Classify content based on topic, learner grade and difficulty level. AniBooks should be designed to be easily integrable into schools' syllabus. This will make AniBooks much easier to integrate into regular school syllabi and timings. However, it will also require a huge product re-design and high costs.
- **Improve activity quality and incorporation of instructional design:** Clarify and calibrate instructions for each activity to match the language level of students. Leverage activities to teach a variety of skills including speaking and writing. Integrate activities and videos to strengthen learning.
- **Offer a larger library of activities that teachers can conduct with students to leverage AniBooks content.** Additional pre-prepared activities could give teachers more flexibility and reduce prep-time as well as provide an opportunity for teachers to bring more high-quality pre-made materials into classrooms.
- **Provide written training material:** The current training is comprehensive and effective, but teachers expressed a preference for receiving written training materials. Written training materials would likely to be especially useful for government school teachers who aren't comfortable with basic technology.
- **Offer AniBooks in school with a larger and functioning battery for the TV:** An inconsistent power supply would be less problematic with a functioning backup battery and long battery life.

Contextualization recommendations

- **Load AniBooks onto a high-quality blended product:** One of the experts noted AniBooks was likely the best out of all the Hindi products evaluated. The core product would require little alteration if shown at scale. The product could be paired as content with a variety of blended and personalised products.

In conclusion, AniBooks is a simple, high-quality Hindi (and other language) product that experts and users felt would lead to improvements in student literacy if used well. Additionally, the technology on which AniBooks is based, same-language-subtitles have demonstrated direct effects on language comprehension in other contexts. It's likely AniBooks could produce the same learning gains in the Indian Hindi-language context though rigorous research has not demonstrated this. Beyond the core AniBooks product, PlanetRead has clear opportunities to improve its overall value by improving the quality of the supplemental activities. Additionally, if scaled up in schools, it would need better integration with school needs such as mapping to curriculum.

INTRODUCTION

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Introduction to the EdTech Lab¹

In 2017, the Central Square Foundation (CSF) launched the 'Ed-Tech Lab' initiative with the aim of catalysing education technology (Ed-Tech) to improve learning outcomes in Indian government schools. While there has been steady growth in the availability of Ed-Tech products in India, their reach has been largely limited to the high-income segment. Also, there is limited evidence on quality, usability and efficacy of EdTech products, which becomes an impediment for decision-makers including state governments to procure these solutions.

CSF Ed-Tech Lab aims to create a pathway for Ed-Tech products to be taken up into the government school system by generating evidence to catalyse demand for effective solutions among policymakers.

As part of this initiative, CSF, through a rigorous selection process, identified 12 high-quality EdTech products in K-8 segment from over 300 products. IDinsight is conducting evaluations of 12 shortlisted Ed-Tech products to identify promising products that currently work well in their market of implementation and have scope for contextualisation to a low-resource market. In 2019-20, CSF will support these two-three promising products to contextualise and embed them in government schools to improve learning outcomes of children at scale.

This report focuses on one of the Ed-Tech products involved in the Ed-Tech Lab – **AniBooks** by **PlanetRead**.

Purpose of the evaluation

IDinsight is conducting Rapid Evaluations of the 12 shortlisted products (selected from the universe of nearly 4000 products). These Rapid Evaluations of shortlisted products in their 'home grounds' (i.e. the market segment they are designed for) act as a 'proof of concept' of the effectiveness of the products.

The results of these evaluations will be used to:

- Inform which products will be contextualised and targeted for government scale-up.
- Contribute to CSF's collection of promising products for use when working with governments.

Introduction to the product: AniBooks

Description

AniBooks are a collection of animated stories that seek to help children from Grades 1-4 learn to read through the use of Same Language Subtitling (SLS). SLS consists of providing on-screen subtitles that are synchronised with the audio narration, thus strengthening reading skills automatically and subconsciously. Each AniBook is a single video, usually lasting close

¹For more information on the Ed-Tech Lab, please refer to the Rapid Evaluation Design Document

to five minutes, that is designed to appeal to children. AniBooks can be viewed on a TV, a projector, a smartphone, or a tablet. AniBooks can be preloaded onto the device they are being viewed on, accessed online via YouTube, or loaded onto a flash drive that is later connected to a TV or a projector.

PlanetRead has produced close to 100 AniBooks in different languages (15 Indian and 45 worldwide). Hindi is the most common language AniBooks are available in (90 titles). Cumulatively, AniBooks have been viewed over 85 million times on YouTube. Hindi AniBooks have been viewed close to 12 million times. PlanetRead has also produced SLS subtitles for more than 18,000 unique songs from different movies in 10 languages.

The target population

AniBooks are produced by PlanetRead and are available to any interested learners on their YouTube channels. However, the target population is likely to be primary school students.

Theory of change

A theory of change workshop was conducted with the PlanetRead team to understand their product and models of implementation. This Theory of Change focused on the model of AniBooks that is school-based. Based on this session, a Theory of Change for AniBooks to lead to improvement in student reading ability was drafted (**Figure 1**).

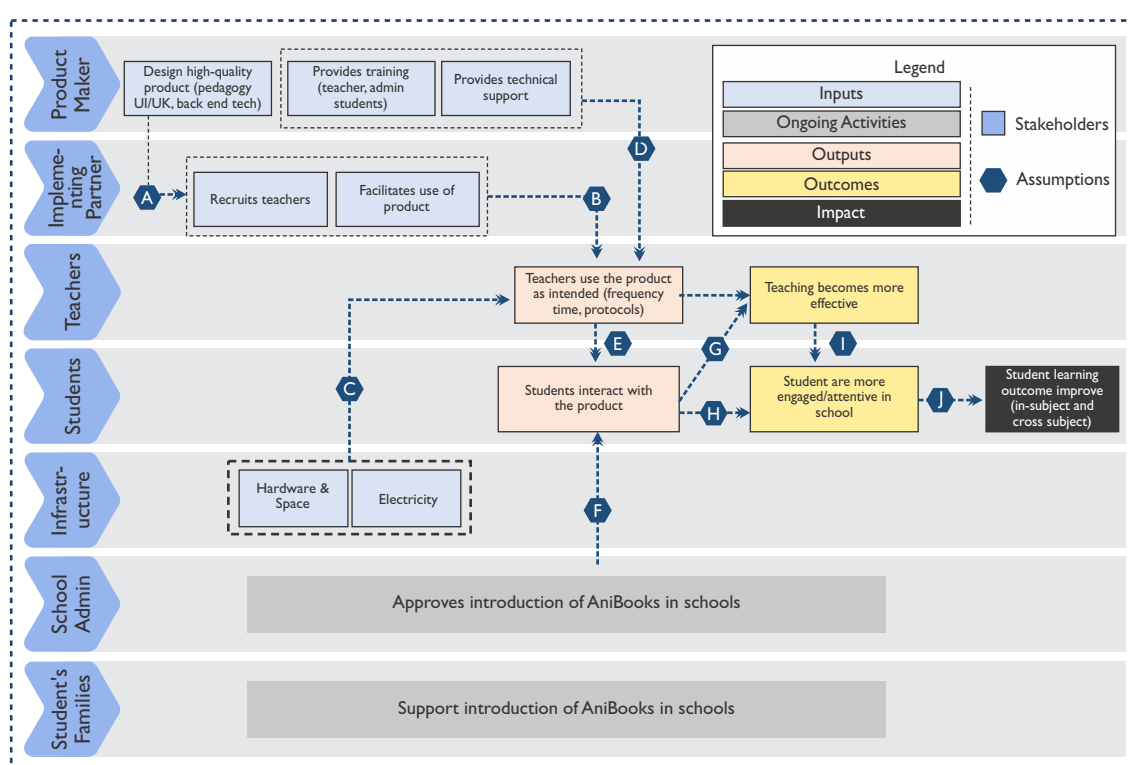


Figure 1: Theory of change

According to the theory of change for AniBooks, at the school level, administrators must enable the use of AniBooks in the classroom and basic infrastructure (classroom space, electricity, television) must be present to use the product. Usage of AniBooks requires

teacher training and instructions. If teachers use the product as intended, AniBooks is expected to increase students' ability to read through:

- Increasing student attentiveness and engagement and
- Presenting lessons in an easier, more intuitive and memorable manner. If not directly adopted by schools, AniBooks require an implementing partner that is responsible for recruiting teachers and facilitating use of the AniBooks. PlanetRead does not provide staff who directly use or coordinate the use of AniBooks in schools.

Implementation models

AniBooks have 3 main implementation models. The first model is YouTube distribution, where AniBooks are uploaded to PlanetRead's YouTube channels for YouTube users to watch. The second channel is set top boxes that are preloaded with AniBooks and distributed to underserved populations through partner organisations. The third model is delivering AniBooks in schools with the help of an implementing partner.

YouTube distribution: PlanetRead makes its AniBooks publicly available on its multiple YouTube channels. For the purpose of this evaluation, only the Hindi AniBooks channel ('BookBox Hindi') was reviewed.

The following figure details the watch time of Hindi AniBooks on the official channel over time. On average, the watch time has been increasing over time. Close to 90% of these views are coming from India.

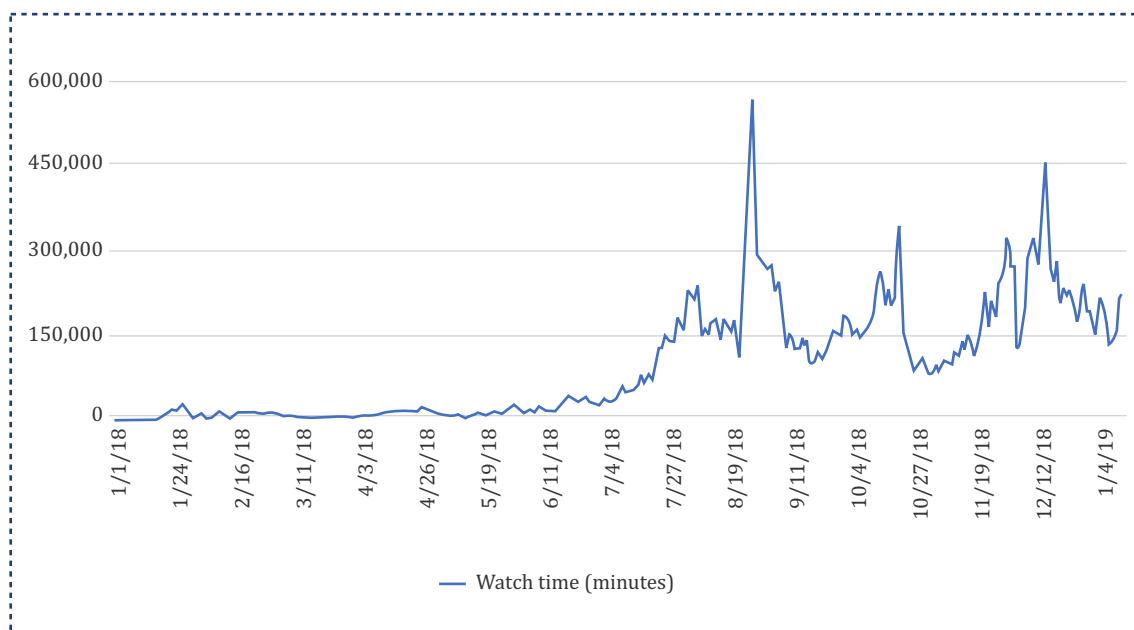


Figure 2: Watch time (mins) over time

The next figure details the subscribers to the BookBox Hindi channel over time. Currently they have around 116,000 subscribers and are adding around 20,000 subscribers monthly. More than 90% of current and new subscribers are from India.

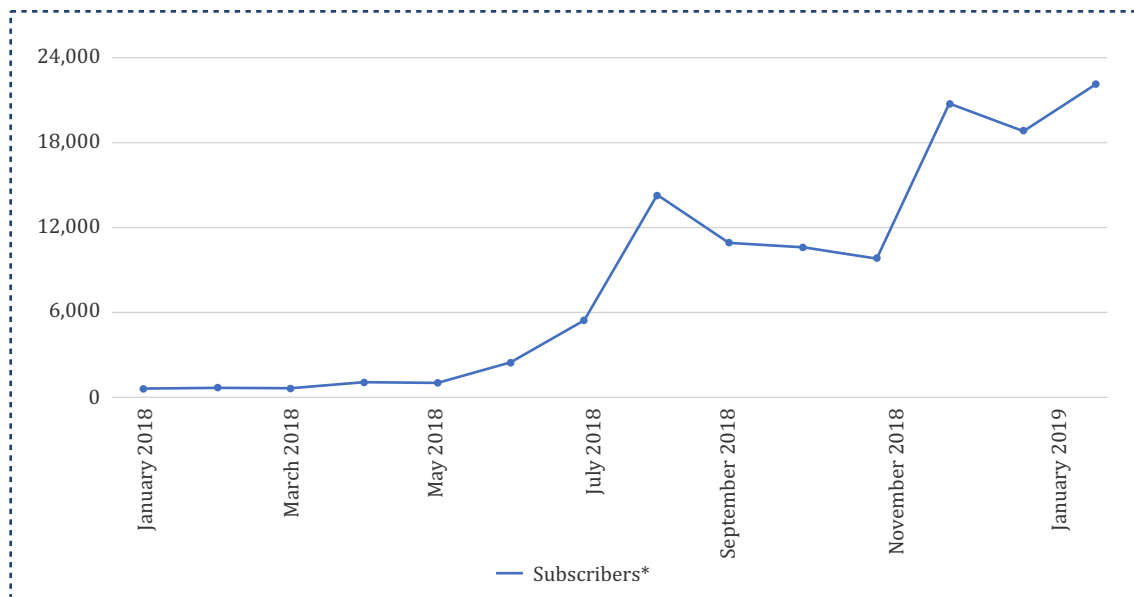


Figure 3: Subscribers over time

On average, engagement with PlanetRead’s Hindi AniBooks has been increasing over time, indicating their rising popularity with content consumers.

Figure 4 disaggregates total views of videos uploaded by the Hindi BookBox channel by device type. The vast majority of AniBooks on YouTube are watched on mobile phones, with less than 1% of views coming from large screens (TV and Game consoles). Figures 5, 6 and 7 compare the total number of subscribers, views and videos for different Indian language BookBox channel. Adding the Hindi channel to these graphs distorts the scale and makes it difficult to identify differences between non-Hindi Indian language BookBox channels. The Hindi channel has therefore been excluded from these graphs.

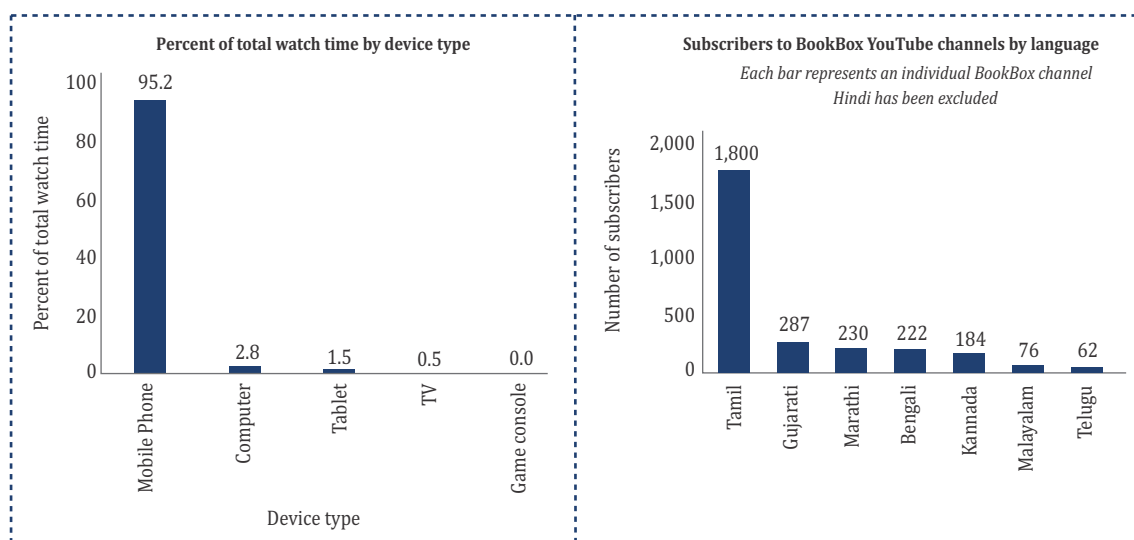


Figure 4: Watch time by device type

Figure 5: Subscribers by language

Most of the other Indian language BookBox channel have reached a much smaller audience than the Hindi channel. They also contain fewer videos compared to the Hindi channel.

Project DRUV: Project DRUV, a Tata Trusts initiative, provided set top boxes that convert television screens into Smartscreens. These set top boxes were distributed to underserved rural populations in Rajasthan that did not have access to computers or smart devices. The goal of the project was to enable these populations to access information and communicate with government and non-governmental organisations. AniBooks were preloaded onto these set-top boxes (close to 20,000 boxes) before they were distributed to the beneficiaries. It is not possible to track usage of AniBooks on these set-top boxes.

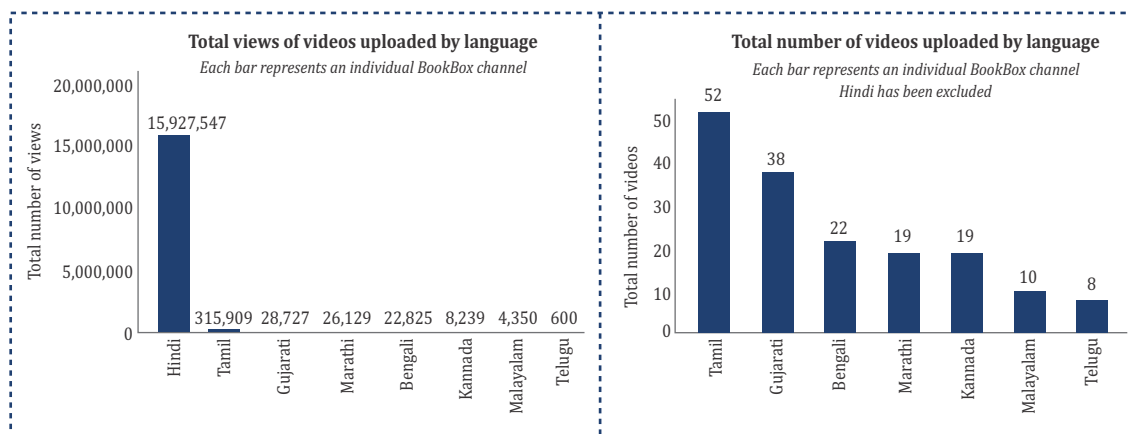


Figure 6: Views per language

Figure 7: Videos per language

Direct implementation: Under this model, PlanetRead collaborates with an implementing partner to deliver AniBooks in schools. This model was tried during the ‘AniBooks for Early Grade Reading’ project. In this project, PlanetRead attempted to integrate AniBooks into the schools and lives of children from very low-income backgrounds in Grades 1-4 to support the development of reading skills.

Under this model, PlanetRead collaborated with a local NGO, the Society for All Round Development (SARD) to deliver AniBooks in 5 schools that worked with SARD. SARD provided teachers to deliver AniBooks in the school, and to conduct learning activities with the students after they had watched the videos. PlanetRead trained the SARD teachers on how to use AniBooks and provided some activities that teachers could use with the students. SARD provided a program coordinator whose role was to liaise between the teachers and PlanetRead. AniBooks were implemented in these schools over a period of 7 months. SARD was responsible for the implementation of the AniBooks program, while PlanetRead provided the AniBooks themselves.

This is the model that PlanetRead is interested in scaling up, and the model that has been evaluated in this report.

Partner Org	User Population	Usage	Type of school	Year of implementation
Society for All Round Development	Grades 1-4	One AniBook shown 2-4 times. Supplementary activities conducted after each viewing.	Government	2017-2018

Table 1: Basic information on implementation models

EVALUATION DESIGN

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Objectives

This evaluation has two research objectives: 1) to understand how PlanetRead is functioning in its existing market and 2) to understand how appropriate it would be for scale-up in a government school market. The objectives will be answered through the following research questions.

Research questions

- **Product Design:** Does product design incorporate practices that support student learning and appeal to students? Would the content and interface be appropriate for students in government schools with low student digital literacy and with low teacher digital literacy (*if needed for product-use by student*)?
- **Support:** Does the product maker provide adequate customer service and training? How would support functions need to change to accommodate a roll-out with less on-site support per school?
- **Adoption:** Do schools accept and encourage use? Does the product appear to improve teaching practices or affect teacher burden? Does product use (before and after the device is in the students' hands and turned on) require teacher help to a classroom? (e.g. setting up internet, classroom management, etc.)? Would the *hardware* be useable in a low-resource school with unreliable electricity and internet?
- **Engagement:** Do students use and actively engage with the product?
- **Learning:** Does the product appear to increase student learning or give indirect benefits that would lead to learning. Does the product increase student motivation, attendance, or otherwise lead to learning?

Methodology and sample²

The 'Rapid Evaluation' approach is closest to a traditional 'Process Evaluation' with a few additional components. The Rapid Evaluation approach combines insights from three key sources of information:

Semi – structured stakeholder interviews

The sample for this component consisted of four SARD teachers that worked in four different government schools during the 'AniBooks for Early Grade Reading' project. It also included a SARD coordinator who liaised between the teachers and PlanetRead. These teachers taught in low-income schools on the outskirts of West Delhi district of NCR, New Delhi.

²Please refer to the Rapid Evaluation Design Document for detailed information on the evaluation methodology

The AniBooks for Early Grade Reading project was conducted between July 2017 and March 2018. Students from schools that screened AniBooks were not interviewed because of the gap between the implementation of the AniBooks program and the rapid evaluation.

Qualitative review by expert panel

A panel of Ed-Tech experts was selected to review AniBooks on a predefined rubric and generate insights on the UI/UX, pedagogy, subjects, and backend technology.

Data collection

Table 2 summarizes the primary data collection activities conducted by the IDinsight team from February 4, 2019 to February 18, 2019.

Data Collection Activity	Total number of observations
Teacher interview	4
Administrator interview	1

Table 2: Data collection activities

Limitations

- **Small sample of stakeholder interviews:** The AniBooks program was implemented for a short amount of time in a small number of schools. The total number of teachers and administrators involved in the program was correspondingly small. This may have limited our ability to observe how different types of teachers would interact with AniBooks.
- **Gap between program implementation and data collection:** The AniBooks program concluded in March 2018, while data collection occurred in February 2019. This may have impacted stakeholders' ability to recall their experience with AniBooks.

In order to mitigate these limitations, additional research on Same Language Subtitling was conducted to review the effectiveness of the underlying technology behind AniBooks.

RESULTS

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Data from different sources (see Methodology section) was analysed to assess AniBooks' performance along each research question of interest. Results were grouped into three categories:

- **High performance** 
- **Satisfactory performance** 
- **Poor performance** 

The remainder of this section discusses each research question in detail.

Note on interpreting qualitative results: While insights from semi-structured interviews are numerically presented (For example: 6 out of 10 teachers reported a change in student practice), these numbers should be interpreted as suggestive and the focus should be on the key theme that has emerged. Due to the free-flowing nature of these interviews, not all stakeholders were asked every question and certain topics came up in certain interviews and not in others. Hence, if presented evidence states that 6 out of 10 teachers reported a change in student practice, this should not be interpreted as four teachers did not notice a change.

Product design

Does product design incorporate practices that support student learning and appeal to students?

Would the content and interface be appropriate for students in government schools with low student digital literacy and with low teacher digital literacy (if needed for product-use by student)?



High-quality product design is a critical input into the theory of change for a successful Ed-Tech product. The overall quality of AniBooks' product design was assessed through expert panel reviews of content, instructional design, interface, and technology of the product and qualitative insights from teachers.

Content/pedagogy

Experts said the product covers a wide range of topics and themes for stories and poems: They noted that content is available in over 40 different language, with Hindi and English having the highest number of videos. Content is additionally available in many Indian languages including Tamil, Gujarati, Marathi, Bengali, Kannada, Malayalam, and Telegu. Videos are classified into beginner, intermediary and advanced. Experts noted that these classifications did not map to class or age though they did target young learners in Classes 1-4.

AniBooks content has not been mapped to any curriculum. This would make it hard to integrate with a conventional school environment. Stories could be mapped to grades and topics. Additionally, they could be separated into stories that are built to develop reading and stories that are intended to develop listening skills.

AniBooks, described by experts, are based on the principle that a semi-literate person will learn to read by watching videos that also have same language subtitles on the screen that are highlighted as the words are spoken or sung. Activities, guides for in-class activities to accompany the videos, are additionally deployed during in-school use of AniBooks. Experts said the product is focused on improving literacy for learners and would achieve this goal. Experts said AniBooks follow the principle of practicing to promote learning and give learners an opportunity to improve reading and literacy skills. They also said AniBooks create an entertaining learning environment. AniBooks enable learners to make sense of the world and encourage the development of empathy.

Experts were divided on whether the pedagogy was holistic. One felt the immersion with animations, films, and songs was a holistic approach to learning. However, another felt PlanetRead should go beyond its existing approach and noted that the AniBooks pedagogy missed opportunities to develop reading, writing, listening, and speaking capabilities.

- **Listening:** Experts agreed that the product gives viewers ample opportunity to develop listening skills. One expert thought that activities should include exercises that improve listening skills.
- **Reading:** Experts said the pedagogy would develop reading skills in learners. However, one noted that early grade learners may have trouble listening to the audio and reading the text simultaneously. The pace seemed too fast to achieve this. Contrary to this, credible research shows that this approach increases comprehension.^{3,4,5}
- **Speaking:** Experts commented that the product had no inbuilt feature to improve speaking, though teachers or parents could plan meaningful conversations based on the stories. Activities didn't sufficiently build speaking activities around the stories. Activities could include asking students to narrate incidents, think through their reaction if they were a character in the story, or start a new story based on the story they watched. They said no activities were designed to work as a group or encourage speaking.
- **Writing:** Experts said Activities do not provide opportunities for learners to write reactions to the story, create their own poems, or express their own views. They noted no scope for learners' own expression. They felt product pedagogy would be greatly improved if it included writing tasks based on the stories. Experts said activities are too narrowly based on copying text, matching objects, or writing words with given letters.
- **Vocabulary:** Experts said the vocabulary pedagogy is well thought-out. They thought the product would enhance vocabulary through listening and reciting stories and poems. The product introduces unfamiliar words appropriately and adequately to automatically enhance the vocabulary of the learner.

³Holobow, N., W. E. Lambert & L. Sayegh (1984). Pairing script and dialogue: Combinations that show promise for second or foreign language acquisition. *Language Learning* 34.4, 59–74.

⁴Lambert, W. E. & N. E. Holobow (1984). Combinations of printed script and spoken dialogues that show promise for beginning students of a foreign language. *Canadian Journal of Behavioural Science* 16.1, 1–11

⁵Paivio, A. (1986). *Mental representation: A dual-coding approach*. New York: Oxford University Press.

- **Grammar:** Experts said the product has interesting grammar examples. However, one expert thought the teaching was too prescriptive and that it should not test for grammar as it does. The expert felt the children should be free to experience stories and should move away from a single right answer during discussions.

Experts said the content was appropriate for early learners and well contextualised for rural students. Many stories are based on traditional Indian stories. All the teachers (four out of four) noted that the characters and environments depicted in AniBooks were relatable to students and increased their interest in the story. Additionally, PlanetRead content beyond AniBooks with SLS on Indian movies and film songs would also appeal to a wide rural and urban audiences, though that content was not included in this review.

Instructional design

The product is not designed with instructional design principles in mind. It does not identify learning objectives, though, a single learning objective of improving literacy is understood. It does not use lesson plans. It does not have ongoing assessments.

Experts said design of activities was poor and lower quality than the content. Activities had many errors in content. They sometimes displayed incorrect references to other videos, misspelled words, and incorrect grammar. Instructions were sometimes confusing, at times poorly written, and at other times missing. The language was not always appropriate for the ability of the student.

Experts said activities provide some scaffolding, but don't sufficiently leverage opportunities to build from the stories. They said that while activities would reinforce learning, they have lots of room for improvement. They miss opportunities for new learning paths such as having students create a new story or continue an existing story in their own way, or asking questions based on stories and developing writing skills. They lack opportunities to develop a broad set of language skills (such as speaking and writing). They do not provide opportunities for the learner to recall content from stories or apply it in new ways.

Teachers said the activities provided by PlanetRead are not comprehensive. Teachers reported that they sometimes designed activities themselves and that this added to their workload.

Experts said the audio delivery was high quality in most places. They said the audio was well-spoken and the tone of reading is high quality. Narration was clear and simple. The voice-over was usually high quality, though in some places it sounded unnatural. One expert additionally noted in some stories it wasn't clear if the reader is narrating stories or just reading them. The tone was good for the most part. Experts noted some places they thought it was too slow and some they thought it was too fast.

Experts said the visuals and animations were relevant and well-made though they used basic technology. Experts described the animation as bright, colourful, attractive, and relevant. A few teachers also said the bright colours and voices in the videos helped students stay engaged. However, experts also described the animation as basic and not the latest or most innovative style. Experts said visuals would be interesting for students. They thought the visuals were appropriate for the audience. One expert worried they would distract learners in Grades 3 and 4.

Experts said on screen text mapped exactly to spoken audio. Words were highlighted in perfect timing. One expert suggested that videos could use different ways to represent and place the highlighted words. Another suggested that learning might be improved if videos are first shown without on-screen text and then shown again with on-screen text.

User experience

Experts said the product would be simple to navigate for government teachers and those with low digital literacy. All teachers (four out of four) agreed it was simple to use: The interface on the Planet Read website is simple, though not sophisticated. The experts had some criticisms of the Planet Read website describing it as basic, dated, and unattractive. They also mentioned filters for class and topic are slow.

Experts said content would be engaging for students with interesting stories and appealing visuals: Stories attract children's attention. Content is engaging. In some cases, the learner can derive meaning, participate, respond to characters and connect them with their own lives. The product would likely trigger repeat use. Experts said that the use of same-language-subtitles was not an innovative approach but the application of SLS to children's literacy is.

Technology

As AniBooks are built on a YouTube platform, the technology is sound and would be easily scalable and contextualisable. The technology is user-centred. Familiarization time would be low. Usage metrics would be easily accessed on YouTube but telemetry data would not be possible. AniBooks could also be locally saved on a storage device and accessed offline on a television.

Potential product improvements

General recommendations

- **Check pace of content:** Experts noted that some videos seemed too fast and others too slow. Make sure pace of audio aligns well with the capabilities of the learners.
- **Offer a larger library of activities teachers can conduct with students that leverage AniBooks content.** Additional pre-prepared activities could give teachers more flexibility and reduce prep-time as well as provide an opportunity for teachers to bring more high-quality pre-made materials into classrooms.

Contextualisation recommendations

- **Follow instructional design principles to improve the activities planned around AniBooks:** Clarify and calibrate instructions for each activity to match the language level of students. Design activities to teach a variety of skills including speaking and writing. Integrate activities and videos to strengthen learning.
- **Map content to school curriculum:** Classify content based on topic, learner grade and difficulty level. Design AniBooks to be easily integrable into schools' syllabus.

Support

2

Does the product maker provide adequate support and training?

How would support functions need to change to accommodate a roll-out with less on-site support per school?



The theory of change stipulates that training is an important input that drives usage as intended amongst teachers. To evaluate this, we assessed the quality of product training with teachers and the program coordinator.

Training offered: PlanetRead provided two days of initial training for teachers. Teachers were trained on the purpose and objectives of AniBooks and the mechanics of use including how to load AniBooks, how often to show an AniBook, and what words to emphasize.

School Coordinators: During the AniBooks for Early Grade Reading program, a program coordinator was employed to liaise between PlanetRead and the schools. This coordinator helped teachers use AniBooks. The coordinator had a strong background in teaching and would give the school teachers advice on product use and classroom management.

▶ Key takeaways

Trainings

PlanetRead trainings were sufficient for the teachers to use the product independently: All the teachers and the coordinator said that the training PlanetRead gave them was helpful, satisfactory and comprehensive. They said they were able to independently use the product after this initial training. They reported receiving a daily schedule of what videos and activities to deliver. They said this schedule was helpful in planning out the day's activities.

PlanetRead's training could be improved by providing written materials on topics covered during training: The SARD coordinator said that this would increase teacher confidence in how to use the product as they would be able to consult the materials whenever they had questions. The coordinator also said that this would reduce the burden on administrators to resolve teacher questions.

▶ Potential product improvements

Contextualisation recommendations

- **Provide written training material:** The current training is comprehensive and effective, but teachers expressed a preference for receiving written training materials. Written training materials would likely be especially useful for government school teachers who aren't comfortable with basic technology.

Adoption

Do schools accept and encourage use?

3

Does the product appear to improve teaching practices or affect teacher burden? Does product use (before and after the device is in the students' hands and turned on) in the class room require teacher help (e.g. setting up internet, classroom management, etc.)? Would the product be useable in a low-resource school with inexpensive hardware and unreliable electricity and internet?



According to AniBooks' Theory of Change, smooth product rollout and adoption relies on school administrator's approval and encouragement of their use. It also relies on AniBooks making teachers more effective. This research question was explored by assessing teachers views on whether they received support from the school administrators and whether they thought AniBooks made their jobs easier.

► Key takeaways

Teacher comfort

Teachers with prior exposure to technology are more comfortable using AniBooks. However, prior technology exposure is not a prerequisite for use. Most teachers (three out of four) and the coordinator said that experience using a smartphone or TV helped them operate AniBooks. However, all the teachers (four out of four) said no major technological knowledge was required to operate AniBooks. Experts, as noted in RQ1, supported this.

Teacher burden

Experts thought AniBooks could be easily integrated into classroom. Teachers stated that AniBooks reduced the effort required to make classes engaging and made their jobs easier as compared to previous teaching experiences. Experts said that using AniBooks in the classroom would be intuitive and quick. The teachers for the AniBook program were hired to only deliver AniBooks to students. However, they noted that based on their prior teaching experience, AniBooks made classrooms easier to manage. Two of the teachers interviewed said that AniBooks helped with classroom discipline. They said they could use AniBooks time as a reward for good behaviour.

Experts noted that AniBooks could be a burden if schools did not provide infrastructure facilities to view, download, and print materials. Some activities require worksheets and other printed exercises. The need to accompany the digital medium with printed activities could be difficult for teachers who don't have easy or free access to printing.

The evaluation could not assess how using AniBooks affected teachers' ability to complete the curriculum. The teachers interviewed did not manage standard classrooms. As experts highlighted in RQ1, the lack of curriculum mapping could be an obstacle to curriculum completion.

Hardware needs

Electricity and internet are barriers to use. A few teachers mentioned issues with intermittent electricity access. Teachers said they would conduct activities related to AniBooks stories when the electricity failed. An important caveat while contextualizing AniBooks implementation for scale in government schools would be to couple with a TV or smartboard with battery-backup. In the case of a TV, AniBooks could be stored on a pen drive, while in the case of a smartboard, AniBooks could be saved locally on the computer.

Teachers felt classroom-level hardware such as TVs or projectors would be better for AniBooks than individual platforms such as tablets or computers. They said (three out of four) that students learned and gained confidence by viewing AniBooks together.

► Potential product improvements

Contextualisation recommendations

- **Pair AniBooks with hardware that allows for offline content storage and battery backup:** While AniBooks have little hardware demands, these innovations would help teachers use them consistently and reliably in classrooms. Hardware that allows for classroom-level use instead of individual-level use would be best suited to the content style.

4	Use and engagement Do students use and actively engage with the product?	N/A
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Student usage and engagement are important outcomes in the theory of change for AniBooks. Students could not be interviewed to ask them about their experience with AniBooks due to the large time gap between when they were a part of the AniBooks program and when the rapid evaluation was conducted (and the associated effects this would have had on their ability to recall what they thought at the time). This research question was answered by asking teachers about their perception on how students engaged with AniBooks.

► Key takeaways

Student engagement

All the teachers reported that students were highly engaged during AniBook screenings. All the teachers (four out of four) said that students were more engaged during lessons with AniBooks than regular lessons. Half the teachers (two out of two) said students appeared to be actively thinking about what they were learning and not merely passively watching a video. Teachers mentioned that students in classrooms that weren't shown AniBooks asked if they could watch them also.

77% of traffic on YouTube comes from suggested videos and not browse features. This suggests students are engaged enough to sequentially watch multiple AniBooks in a row. It could also be that AniBooks viewers are clicking on videos because they show up on the home page. 10% of YouTube views come from the browse function.

Video retention

Viewers tend to complete about 40% of an AniBooks video. Shorter videos see higher completion percentages. Figures 8.1. and 8.2. show the relationship between the length of an AniBook and how long a YouTube user watches that AniBook. In general, shorter videos tend to get watched closer to completion.

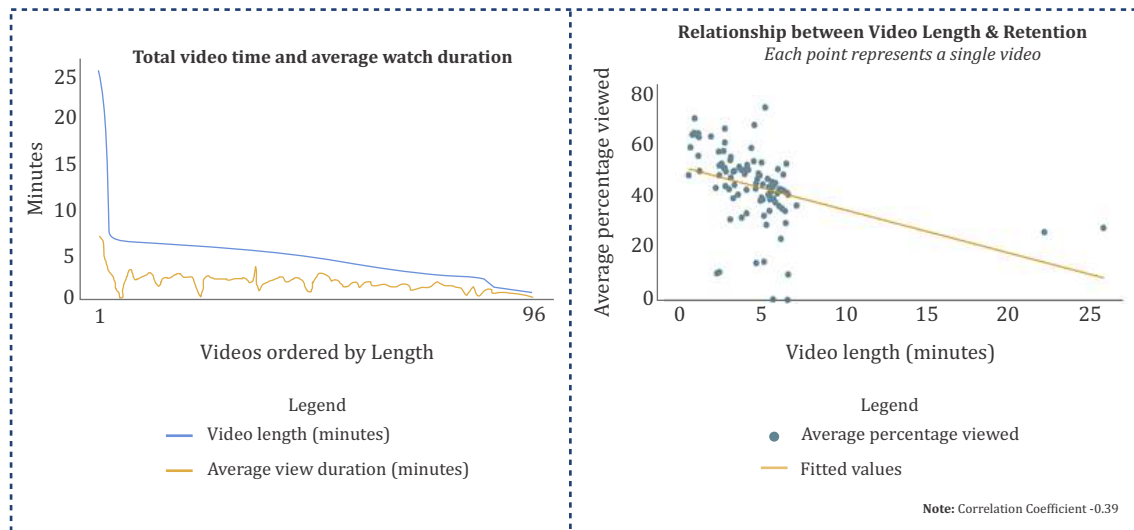


Figure 8.1: Total video length and average watch duration

Figure 8.2: Video length and retention

Learning

5

Does the product appear to increase student learning or provide indirect benefits that would lead to learning?

Does the product increase student motivation, attendance, or otherwise lead to learning?



High
Performance

Although this evaluation is unable to make causal statements about changes in student learning, a review of PlanetRead's own evaluation of AniBooks, a review of the literature on SLS effectiveness and interviews with teachers on their perception of improvements in student learning provided indicative evidence on perceived changes in student learning. AniBooks are unlike other products that are a part of the Edtech lab in that they rely on a basic technology that has been applied in many different situations. SLS has been studied in a variety of different contexts and some of these conclusions can generalize to AniBooks.

Key takeaways

Evaluations of same-language-subtitling and AniBooks effectiveness

Many rigorous studies of SLS show that it can improve learning and comprehension in a variety of different contexts, however, the evidence of SLS on improving child literacy is more limited. A review of more than 100 studies on SLS found that there is substantial evidence that SLS is effective in increasing comprehension of, attention to, and memory of a video. The review found that SLS is particularly beneficial for persons watching videos in their non-native language and for persons who are deaf or hard of hearing. It also noted benefits for adults or children learning to read.⁶ Evidence of the impact of SLS on *child literacy* is weaker and more limited. A separate review of SLS evidence found that of the few studies looking at the effect of SLS on child literacy, the majority were of low quality, and further rigorous research was required.⁷

Two rigorous studies in the US show that an SLS intervention for children can improve child literacy levels. AniBooks relies on this same underlying theory but operates in a different context. There have been two rigorous experimental studies of the impact of SLS on child literacy in the US.^{8,9} Both studies found that children randomly assigned to view content with SLS demonstrated better reading comprehension than those who hadn't viewed SLS content. AniBooks rely on the same fundamental technology and underlying theory as other SLS interventions. However, they have some differences in context and implementation such as language (Hindi instead of English) and geography (India instead of the US). It's possible that AniBooks are similarly contributing to learning, but not certain. Additionally, it would be difficult to estimate the size of these effects.

Studies on AniBooks' effectiveness provide suggestive evidence of positive impact but are not highly rigorous. AniBooks' evaluation data on their Early Grade Reading program suggests that viewing AniBooks improves students' learning ability.¹⁰ However, the evidence does not rely on rigorous experimental methods that could reliably attribute changes in reading levels to exposure to AniBooks.^{11,12} Additionally, the research was not conducted independently. Therefore, other factors in addition to AniBooks could be driving the improvements in reported literacy rates. To rigorously identify the effects of AniBooks on student literacy, PlanetRead could commission a rigorous and independently run randomized control trial.

⁶Gernsbacher, M. A. (2015). *Video Captions Benefit Everyone. Policy Insights from the Behavioral and Brain Sciences*, 2(1), 195–202.

⁷Vanderplank, R. (2013). "Effects of" and "effects with" captions: How exactly does watching a TV programme with same-language subtitles make a difference to language learners? *Language Teaching*, 49(02), 235–250.

⁸Linebarger, D., Piotrowski, J. T., & Greenwood, C. R. (2010). *On-screen print: the role of captions as a supplemental literacy tool. Journal of Research in Reading*, 33(2), 148–167.

⁹McCall, W. G., & Craig, C. (2009). *Same-Language-Subtitling (SLS): Using subtitled music video for reading growth*. In G. Siemens & C. Fulford (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2009* (pp. 3983–3992).

¹⁰This impact was still statistically significant after appropriately taking into account the clustering of students in schools when estimating standard errors.

¹¹Kothari, B. (1999). *Same language subtitling: Integrating post literacy development and popular culture on television*. *Media and Technology for Human Resource Development* 11.3, 111–117.

¹²Kothari, B., A. Pandey & A. Chudgar (2004). *Reading out of the 'idiot box': Same-language subtitling on television in India*. *Information Technologies and International Development* 1.3, 23–44.

PlanetRead's evaluation data suggests students of all levels learned through the intervention. AniBooks evaluation data showed improvements for students of all levels, including students who scored zero on the baseline reading assessment. On average, students that viewed AniBooks scored 15.5 points more than those who didn't on a 65-point reading assessment. The students with the highest baseline ability seemed to benefit the most.

Teachers' perception of student learning

All teachers (four out of four) felt AniBooks improved students' reading ability. All (four out of four) teachers said all students, including weaker students, improved in learning.

Indirect effects

Teachers felt AniBooks may increase students' interest in Hindi as a subject. Half the teachers (two out of four) interviewed said that students' interest in Hindi had increased after using AniBooks in the classroom. They noted that students had also started asking more questions in class.

Teachers noted that increased literacy through AniBooks may lead to greater comprehension of other subjects. All the teachers (four out of four) said that improvements in students' reading ability led to an increase in students' comprehension of other subjects. They said teachers of other subjects had reported this difference to them.

Half of the teachers (two out of four) said that they liked that most AniBooks included a moral. They appreciated that PlanetRead tried to socialize students into being better people.

