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Summary Report

Mahsi'choo for the Info!

Molly of Denali Teaches Children About Informational Text

Ready To Learn **Research**

April 2021

The Importance of Informational Text

Informational text—oral, written, or visual text designed to inform—is essential to navigating daily life, and includes things like reading a map, critically engaging with websites, and asking an expert.

The knowledge, skills, and disposition needed to use informational text are a fundamental part of literacy; comprehending informational materials such as books and magazines paves the way for future learning, particularly in social studies and the sciences.

That’s why it’s important for young children to learn how to use and create informational text. However, young children typically have much less exposure to many forms of informational text as compared to narrative stories.

Digital media can help fill this gap by introducing the key functions and features of informational text. Intentionally designed videos and games—where appealing characters model when and how to use informational text to solve real-world problems and help the community, while also having fun exploring their environment—engage children and promote learning.

Mahsi’choo



Mahsi’choo (Mah-see-cho). ‘Thank You’ in Gwich’in.

About

The Promise of *Molly of Denali*

The goal of the new PBS KIDS series, *Molly of Denali*, is to prepare children to interact with informational text in school and beyond. The series is produced by GBH Kids and was developed as part of the Public Broadcasting Service (PBS) and the Corporation for Public Broadcasting (CPB) Ready To Learn Initiative with funding from the U.S. Department of Education.

Molly of Denali is the first nationally distributed children's series in the U.S. to feature an Alaska Native lead character. Molly models the use and creation of informational text in her everyday life, from following a recipe for homemade mosquito repellent to sharing her vlog with kids everywhere.

In this report, EDC and SRI present our research into the impact of *Molly of Denali* on children's ability to use informational text to answer real-world questions.



Ready To Learn **Research**



Researching the Impact

To understand whether the *Molly of Denali* resources impacted children’s informational text skills and dispositions, the research team conducted two studies with a combined total of 263 first-grade children.

In both studies, we examined whether providing low-income families across the U.S. with access to *Molly of Denali* resources, including videos, digital games, and hands-on activities, supported children’s ability to use informational text.

	Design	Participants	Sites	Pre-test	Intervention	Post-test
 Study 1	Randomized controlled trial	127	Alabama and Arizona	In-person	Tablet-based, 9 weeks	Remote
 Replication Study		136	National	Remote		

The figures and data in this report reflect the full, combined sample of 263 children, except where specified otherwise.



→ Why two studies?

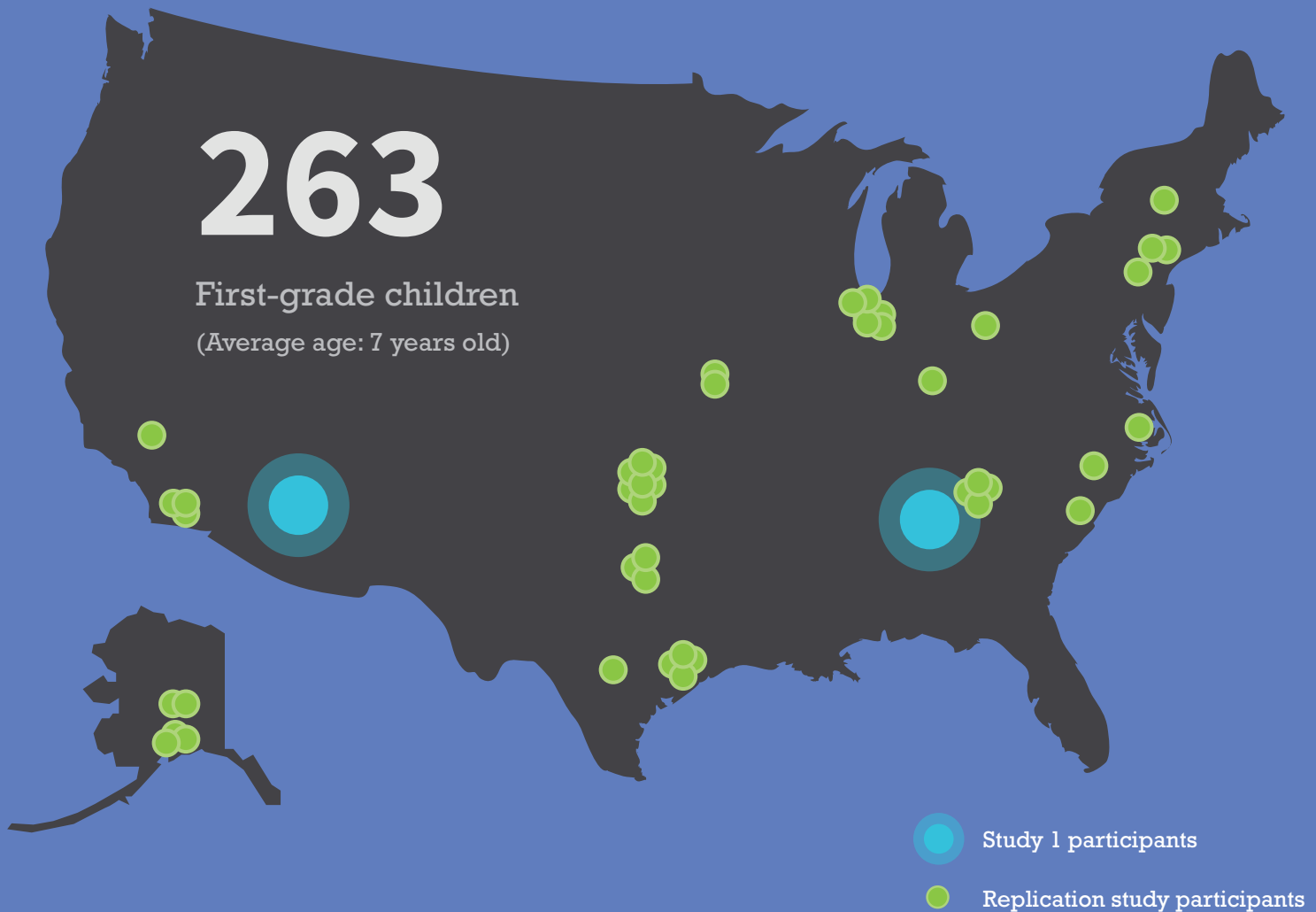
We originally designed a single study with 500 families, but the spread of COVID-19 changed our plans. After beginning with in-person data collection with 127 families in Study 1, we shifted to remote data collection, finishing Study 1 data collection via video conferencing.

We then conducted a fully remote **replication study** with a separate, national sample.

Replication is a critical part of the scientific process and demonstrates that findings are not the result of something unusual about the original study or participants.

Who participated in the studies?

A diverse national sample of children living in low-income households.



→ Children

48%

were female

16%

spoke a language other than English at home

17%

had an IEP or received other special education services or supports

→ Parents

23%

had up to a high school diploma or a GED

69%

had an annual household income of \$50,000 or less

→ Families' Race/Ethnicity



32% Black or African American



28% White



22% Multiracial



14% Hispanic or Latino



2% Indigenous Peoples



3% Other



What was the research design?

Both studies were nine-week randomized controlled trials.

All participants received data-enabled tablets, and we randomly assigned participants to one of two groups:

- 1 **Treatment group** – Tablets for participants had curated *Molly of Denali* resources pre-loaded.
- 2 **Control group** – Tablets for participants blocked access to all of PBS KIDS, as well as other apps focused on informational text.

A randomized controlled trial is a rigorous study design that lets researchers conclude that an intervention (in this case, engaging with the *Molly of Denali* videos and games) caused an outcome (in this case, an improvement in children's ability to use informational text).





Families Received...	Treatment Group	Control Group
Samsung Galaxy II tablet with a 9-week data plan	✓	✓
Instructions to use the tablet for about 1 hour a week	✓	✓
Text message reminders	✓	✓
Family orientation guide	✓	✓
<i>Molly of Denali</i> resources: Videos, digital games, and hands-on activities	✓	
Introductory videos for parents	✓	
Access to PBS KIDS and other informational text apps blocked		✓

→ What resources did families receive?

Families in the **treatment group** received access to the following *Molly of Denali* resources on their tablets:



52 **videos** (39 animated, 13 live-action)

3 **digital games**

3 **hands-on, real-world activities**, printed and as PDFs on the tablet

7 **introductory videos for parents** (2-4 minutes each)



→ The research team organized the resources into “bundles” of content, focusing on the following content areas:

- **Captions**
- **Search boxes**
- **Flow diagrams**
- **Indexes**
- **Procedural text**
- **Evaluating sources**

→ Each video targeted one or two content areas, while the digital games focused on captions, flow diagrams, and procedural text.

→ New animated videos were released every Friday, but children could re-watch previous videos.

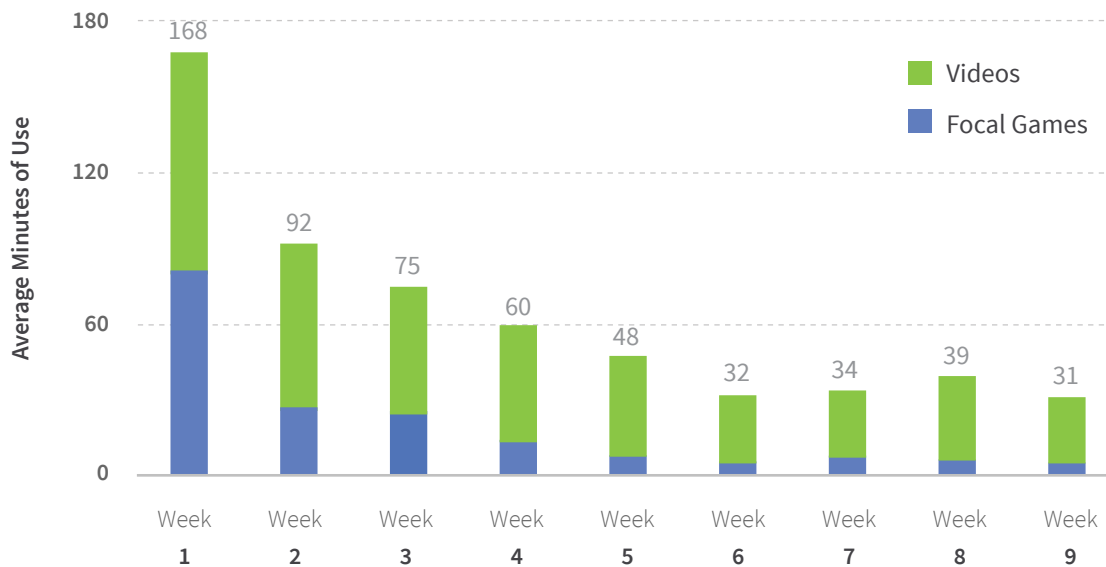
→ Children’s media usage was tracked using software installed on their tablets.

How did children use the resources?

For children in the **treatment group**, the study experience was a more structured version of how children can engage with *Molly of Denali* materials in everyday life.

In these studies, families used the resources most in the first week, especially the games. Averaged over the course of the study, children engaged in the resources about an hour per week.

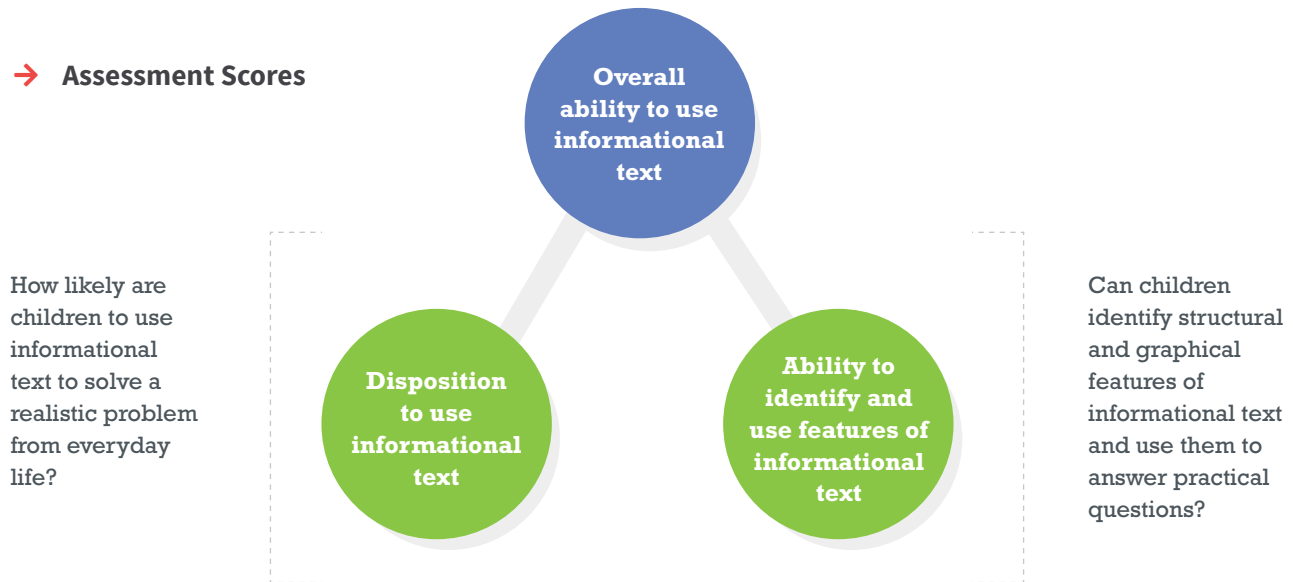
→ Average Minutes Using *Molly of Denali* Resources (Videos and Focal Games), by Week



How did we measure impact?

The research team developed and piloted a standardized assessment to measure children's ability to use informational text to solve real-world questions.

→ Assessment Scores



We also measured other characteristics that might affect children's performance on the informational text assessment:

✔ Expressive language ability (EVT-3)

✔ Reading ability (DIBELS-8; Study 1 only)

fro {
Green
Plant 5, 5, 8
red 1, 2, 3, 10, 11, 12

← Videos

Rafting,	132
Rainbow Mountain,	76
Repellent	
Bear,	216
Moose,	237
Mosquito,	276
Raccoon,	220
Ridge Trail,	18
Shelters	

An index written by a child in first grade after watching *Molly of Denali*.

What did children learn?

Access to the *Molly of Denali* resources **improved children's ability to use informational text** to solve real-world problems.

The statistically significant difference between children in the treatment and control groups was driven primarily by improvements in children's ability to identify and use features of informational text (e.g., captions and Web searches), rather than their disposition to use informational text (e.g., selecting a field guide to identify a bird).

1

Younger children benefited more from access to *Molly of Denali* resources.



2

The **more time** children spent with the *Molly of Denali* resources, the better they performed. For every hour that children spent, they scored about a quarter of a point higher at post-test.

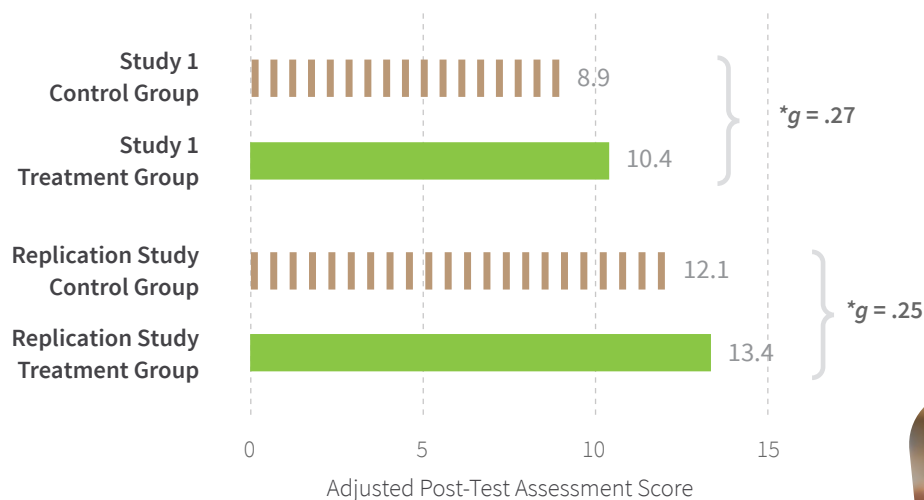


Replication of findings

The replication study found **similar positive and statistically significant impacts** as Study 1, with new participants.

The benefit of access to the *Molly of Denali* resources likely reflects measurable learning rather than something unusual about our original study.

→ Impact of Access to *Molly of Denali* Resources, by Study



Notes:

* $p < .05$.

g represents Hedge's g , a measure of effect size.

“Adjusted Post-Test Assessment Score” is the average assessment score at post-test, adjusted for the estimated effects of child characteristics which varied across the samples. These include pre-test score, gender, age, ethnicity, IEP status, family income, parents' education, and urbanicity.



Why are these findings important?

Children’s ability to use informational text to answer real-world questions is critical to their success in school and in life. This research is the first to show that children can improve their ability to use informational text through digital media.

Educational media can support children’s learning at home. These studies provide further evidence that learning can take place when children engage with intentionally developed, high-quality digital content at home. This is particularly important at a time when millions of children’s in-school education has been substantially disrupted due to the COVID-19 pandemic. It is also meaningful for children who lack access to quality early learning opportunities.

These are promising impacts for a short-term, light-touch intervention. Although the effect sizes were modest, they were nonetheless notable for a nine-week intervention in which children only interacted with *Molly of Denali* resources for about an hour a week on

average. Quite often, educational interventions rely on intensive yearlong curricula to achieve similar impacts.

The findings successfully replicated with new participants. Few findings in education research are confirmed by conducting the same study a second time. Our successful replication helps to confirm the impact of the *Molly of Denali* resources on children’s ability to use informational text.

Education research can continue during a pandemic. The replication study occurred during a pandemic, which meant data collection happened entirely remotely. Capacity to perform these kinds of fully remote studies is essential to the continued performance of education research.

Learn more

This overview is just the beginning. Our full report includes complete research questions, findings, data tables, and much more.

Visit: edc.org/infotext



Mahsi'choo!
(Thank you!)

We are extremely grateful to the participating families who took the time from their busy schedules for these studies. Without their participation, this research would not have been possible.

We appreciate community outreach provided by PBS member station, Alaska Public Media (Anchorage, AK).

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- **Angela Larson**, MA, Founder and Principal Evaluator for the Goldstream Group

About EDC

Education Development Center (EDC) is a global nonprofit that advances lasting solutions to improve education, promote health, and expand economic opportunity. Since 1958, we have been a leader in designing, implementing, and evaluating powerful and innovative programs in more than 80 countries around the world.

About SRI

SRI Education, a division of SRI International headquartered in Menlo Park, California, is tackling the most complex issues in education and learning to help students succeed. We work with federal and state agencies, school districts, major foundations, nonprofit organizations, and international and commercial clients to address risk factors that impede learning, assess learning gains, and use technology for educational innovation.

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