

Storybook Inventing

Fostering 21st Century Literacy through the
Convergence of Reading and Invention

TOGETHER WE CAN






KIDSPARK
E D U C A T I O N

About Kid Spark Education

Kid Spark Education is a national STEM education nonprofit that partners with schools and informal education providers across the United States to provide consistent, hands-on STEM education to Pre-K - 8th grade students. Our goal is to bridge the widening STEM achievement gap and prepare all children to succeed in the 21st century. Kid Spark focuses on reaching students who are systemically underserved or underrepresented based on race, gender, and economic or geographic disadvantage.

Since 2009, Kid Spark has partnered with educational researchers and educators to ensure the effectiveness of our programs in enhancing children's STEM skills, knowledge, confidence, and curiosity. Our dedicated research efforts over the past five years have unequivocally demonstrated the success of Kid Spark in achieving its goals.

-  **Elementary school children who participate in Kid Spark's STEM program report a dramatic increase in how much they like or love STEM.**
-  **Educators using Kid Spark's program report that their students substantially increase learning of STEM concepts and show increases in curiosity and creativity.**
-  **Educators report significant increases in their own comfort with teaching STEM.**

Early exposure to STEM is pivotal, influencing children's decisions regarding STEM paths by grade 3 or 4. Disparities in this early exposure often dissuade underserved youth from pursuing STEM paths, leading to a loss of talent and innovation across generations. Kid Spark exists to disrupt this pattern by providing continuous STEM education from the earliest years of schooling, aiming for transformative change in both formal and after-school educational settings.



Introducing Storybook Inventing

As one of the nation's experts in early STEM education, Kid Spark is uniquely positioned to help shape how the education and STEM communities think about STEM learning: to increase the emphasis on an early start and continued engagement, and to lead the way in design research and innovation.

Now, Kid Spark is embarking on an innovative initiative to support early childhood literacy in the 21st century with the launch of Storybook Inventing. This groundbreaking initiative represents a significant expansion of their commitment to nurturing positive STEM identities and fostering inventive mindsets among young learners.

By merging the worlds of literature and hands-on engineering, Storybook Inventing introduces an innovative perspective on literacy development and STEM education. Through this unique approach, students not only enhance their reading skills but also engage deeply with STEM concepts, fostering a love for learning that extends far beyond the pages of a book.



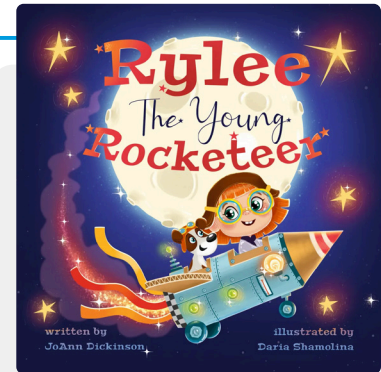
In the 21st century, literacy encompasses more than traditional skills like reading, writing, and basic math; it involves developing a strong STEM identity and an inventive mindset. These competencies enhance critical thinking and problem-solving skills, preparing children for success in our increasingly technology-driven world, and providing valuable skills for diverse life paths.

HOW STORYBOOK INVENTING WORKS

Storybook Inventing carefully selects a diverse range of popular children's books suited for various reading levels—beginning, emerging, and proficient readers. In collaboration with children's literacy experts, book selections are made based on the books' ability to captivate young minds and support children on their journey to learning how to read, while seamlessly integrating STEM-related concepts.

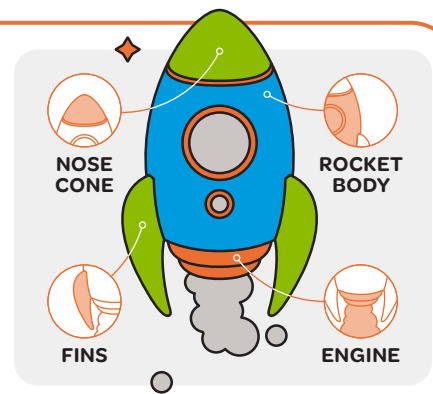
Step 1 - Read

Educators and mentors engage children with these specially curated books, either through interactive read-aloud sessions or independent reading. Each story serves as a catalyst for exploration and imagination, nurturing a love for reading while providing opportunities for literacy development.



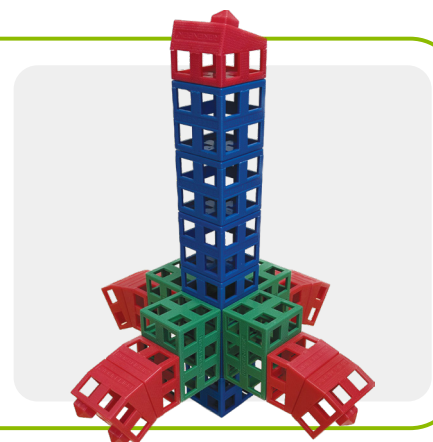
Step 2 - Learn & Explore

Building on each book's thematic content, children are introduced to STEM concepts and creative ideas inspired by the narrative. Guided by educators and mentors, children embark on interactive learning journeys, uncovering the connections between literature, STEM, and language skills.








Step 3 - Invent

With newfound knowledge and inspiration, children are encouraged to unleash their creativity. Using Kid Spark engineering materials, they apply their understanding of STEM concepts to invent something unique. These hands-on experiences reinforce learning and cultivate critical thinking, problem-solving, and language development skills.



Through this reciprocal approach, Storybook Inventing bridges the gap between literacy and STEM education, empowering children to apply what they've read and learned in meaningful and imaginative ways while advancing their literacy skills.

ANTICIPATED OUTCOMES

-  Children will demonstrate enhanced reading skills and engagement.
-  Children will demonstrate enhanced comprehension of storylines and concepts presented in literature.
-  Children will cultivate a robust STEM identity, envisioning themselves as adept learners and active participants in the realms of science, technology, engineering, and mathematics.
-  Children will develop an inventive mindset, empowering them to confidently apply their knowledge and skills to invent and solve problems creatively.
-  Educators and mentors will enhance their confidence in teaching STEM concepts through the familiar medium of reading, facilitating a more seamless integration of STEM education into their instruction.



IMPLEMENTATION STRATEGY & TIMELINE

Phase 1 (May 2024)

Debut at San Diego Children's Discovery Museum

Kid Spark Education and The San Diego Children's Discovery Museum (SDCDM) have collaborated to produce Storytime Inventing, a new exhibit that will debut at the museum in May of 2024. Utilizing large format, original artwork, the architecture and design of the exhibit guides the activities. Depicting children and adults collaborating in reading and inventing, the aim is to redefine how caregivers and children interact to develop literacy and positive STEM identity. The exhibit will undergo careful deployment and study, providing helpful insight for the future use of Storybook Inventing in schools and informal learning spaces nationwide.



Phase 2 (Spring 2025)

Integration into Schools and Informal Learning Settings

Leveraging insights gained from the Storytime Inventing exhibit at SDCDM, Kid Spark will develop and seamlessly integrate Storybook Inventing materials, curriculum, and training into all of their early learning programs for distribution nationwide. Scheduled for an early 2025 release, this initiative ensures that children throughout the country can participate in Storybook Inventing directly from their classrooms or informal learning spaces.

STEP 01
READ
Read "Clara and Clem In Outer Space"

STEP 02
LEARN & EXPLORE
Learn about the different parts of a space robot!

Head
The robot's head is like a cool explorer dome. It helps the robot look around and figure out where to go next in space.

Eyes
The robot's eyes are Starry Peepers that help it see all the cool stuff in space. They twinkle with excitement, especially when the robot finds something amazing!

Body/Power Center
In the middle, there's a power center that gives the robot energy. It's like the robot's battery, keeping it charged up for space adventures!

Arms
The robot has friendly wavers for arms. They're always ready to give space high-fives and friendly waves. These arms are like the robot's happy helpers.

Legs
The robot wears boomer boosters on its legs. They help it move fast and jump around in space. It's like the robot has turbocharged sneakers!

R is for Robot
RO (Rob) The first sound in the word "RO" is "Roh"
BOT (Bot) The middle part in "Bot" is "ooh" like "Boo"
RO-BOT Try saying "Roh"
RO-BOT Try saying "Boo"

STEP 03
INVENT
Create your own space robot that includes all five important parts!

05. IMPLEMENTATION STRATEGY & TIMELINE

RESEARCH QUESTIONS

Kid Spark Education has a rich history of collaboration with researchers and educators from esteemed university partners. This longstanding tradition will continue with Storybook Inventing, including the design, evaluation, and enhancement of engineering materials, curricula, professional development programs, and support resources. The project gives rise to pivotal research questions as it explores the intersection of literacy and STEM education:

01.

Can Storybook Inventing improve children's reading skills and engagement by integrating literature with hands-on STEM experiences, and are there discernible differences in literacy and STEM skill development compared to traditional educational approaches?

02.

To what extent does Storybook Inventing contribute to children's understanding and comprehension of stories and their content? Does the integration of STEM concepts into the narrative enrich the overall learning experience?

03.

Is Storybook Inventing an effective gateway for early elementary educators to gain confidence in teaching STEM? By introducing STEM concepts through a familiar medium like reading, does it facilitate a smoother transition for educators, making STEM instruction more approachable?

04.

Are there variations in the effectiveness of Storybook Inventing across different demographic groups or educational settings?

05.

How does participation in Storybook Inventing influence students' overall attitudes and perceptions towards reading and STEM subjects?



PARTNERSHIP OPPORTUNITIES

Kid Spark Education extends an invitation to potential partners to collaborate and support Storybook Inventing nationwide. Various avenues are available for organizations, universities, nonprofits, individuals, or others to get involved.

Opportunity 1: Support Development Initiatives

Curriculum:

Kid Spark Education is actively designing dozens of Storybook Inventing lessons/activities. Partners are encouraged to propose and provide financial support for additional sponsor-themed activities/lessons.

The diagram illustrates a three-step curriculum for 'ABCs of IndyCar Racing' by Bridgestone.
STEP 01: READ - Read "ABCs of IndyCar Racing". The image shows the book cover with the title 'ABCs OF INDYCAR RACING' and 'MY FIRST GUIDE TO INDYCAR RACING'.
STEP 02: LEARN & EXPLORE - Learn about the different parts of an IndyCar! This step features a central illustration of a red IndyCar with callouts to its parts:
- **Cockpit**: The cockpit of the IndyCar is like its special seat for the driver. It's where the driver sits and steers the car, like a captain guiding a ship.
- **Chassis**: The chassis of the IndyCar is like its skeleton, holding everything together and keeping it strong. It's the main frame that gives the car its shape and structure.
- **Wheels**: The wheels of the IndyCar are like big circles that help it move super fast. They spin round and round to help the car zoom around the track.
- **Rear Spoiler**: The rear spoiler on the IndyCar is like a special wing that helps it stay on the ground when it goes really fast. It's like a superhero cape for the car, keeping it stable and steady.
A central graphic reads 'I is for IndyCar IN-DY-CAR' with a 'BRIDGESTONE' logo.
STEP 03: INVENT - Create your own IndyCar that includes all four important parts! The image shows a child's construction of an IndyCar using colorful building blocks and wheels.
The 'BRIDGESTONE' logo is present at the bottom of each step.

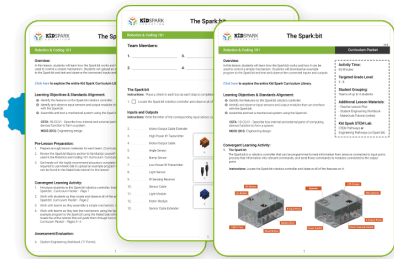
New Kid Spark Engineering Materials:

Kid Spark is currently designing new student engineering components for Storybook Inventing, catering to diverse learners, including those with disabilities. The total cost for engineering and tooling exceeds \$100,000, and contributions to support developing these new student engineering materials are pivotal.

Four new student engineering materials are shown in individual light blue rounded square frames:
1. **WHEEL**: A red plastic hub with a black rubber tire.
2. **AXLE**: A purple plastic component with a central hole and four rectangular protrusions.
3. **BRACE**: An orange plastic L-shaped component with a central hole.
4. **HINGE**: A teal plastic component with a central hole and two curved protrusions.

Opportunity 2: Support our STEM Equity Grants Initiative

The STEM Equity Grants Initiative offers schools and informal learning providers free or reduced-cost access to Kid Spark's Educational Programs. **Each grant supports everything schools or informal learning providers need to successfully launch a STEM program, including curriculum, student engineering materials, and professional development for educators.** The cost of awarding a school or extended education provider a program ranges from \$6,000 to \$18,000. Kid Spark is scheduled to launch Storybook Inventing within their elementary STEM programs in early 2025.



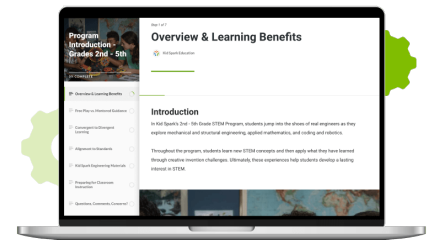
CURRICULUM

A progressive, engineering and computer-science based curriculum including teacher lesson plans, student workbooks, design challenges, evaluation rubrics, interactive coding tutorials (2nd-8th Grade only), and unit assessments.



STEM LABS

Kid Spark STEM Labs feature diverse, reusable engineering and robotics materials that effortlessly cater to various STEM concepts across multiple Grade levels. These materials are sturdy, user-friendly, and perfect for collaborative learning and invention.



PROFESSIONAL LEARNING

Kid Spark specializes in transforming educators into confident STEM mentors. Through targeted training and support, we ensure that educators not only gain expertise but also the confidence to implement impactful STEM learning in their classrooms or informal spaces. Kid Spark is committed to ensuring ongoing program success by providing continuous support each year.

Opportunity 3: Support Research

Kid Spark Education is assembling a team of educators and researchers from university partners who will contribute expertise, design, and evaluations to this innovative literacy-with-invention approach to 21st Century Literacy. Funding support for research costs is critical and will further enhance the credibility and expand the reach of Storybook Inventing nationwide.



Conclusion

In the dynamic landscape of education, Kid Spark Education stands at the forefront of early childhood STEM education, championing innovative approaches to bridge the gap for underserved students. With the launch of Storybook Inventing, we embark on a journey to support 21st-century literacy, empowering children to thrive in an ever-evolving world.

Through collaboration with children's literacy experts, our initiative seamlessly integrates captivating children's books with hands-on engineering experiences. By fostering a love for reading and exploration, Storybook Inventing not only enhances literacy skills but also cultivates a strong STEM identity and an inventive mindset in children.

As we unveil Storybook Inventing, we envision a future where every child is provided the opportunity to engage in meaningful learning experiences that transcend traditional boundaries. Our implementation strategy, backed by research and supported by valuable partnerships, will ensure that Storybook Inventing reaches schools and informal learning providers nationwide, enriching the educational landscape for generations to come.

We invite you to join us on this transformative journey. Together, let's inspire curiosity, ignite imaginations, and empower learners to unlock their full potential in the realms of literacy, STEM, and beyond. With Storybook Inventing, the possibilities are endless and the impact is profound.

GET INVOLVED!

If you'd like to learn more about the Storybook Inventing project or explore how you or your organization can get involved, please contact us at:

Partner@kidsparkeducation.org





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