



Best STEM Books



Books published in 2022

STEM books offer endless opportunities for engaged learning. They invite students to see the world differently and to think in new ways about what they observe.

We have chosen titles that provoke readers to examine the “thinking stance” of characters—not simply to look at actions and results.

Best STEM Books winners explore problems and possible solutions in the scientific world and, where applicable, in the lives of the protagonists. Instead of focusing on specific content, the Best STEM Books emphasize real-world issues that cross disciplinary boundaries.

Teachers can use these books to foster and model “minds-on” work. Parents, grandparents, and other caregivers can involve even the very youngest children in the process of STEM thinking.

How do we prepare 21st-century kids for challenges and jobs that we at present cannot even describe? The Best STEM Books help by celebrating convergent and divergent thinking, analysis and creativity, persistence, and the sheer joy of figuring things out.

About the Reviews

In addition to standard publishing information, the reviews indicate the following:

1. International Standard Book Numbers (ISBN) are included for trade editions.
2. The prices are current as of January 2024.
3. Reading levels (K-2, 3-5, 6-8, and 9-12) are provided by the reviewers. They are intended as guidelines and are not meant to limit the potential use of titles.
4. The reviewer's initials follow each description (see Table of Contents).

Action! How Movies Began

MEGHAN MCCARTHY. Simon & Schuster/Paula Wiseman Books. 40pp. ISBN 9781534452305, \$18.99. (K-2)

Lights, camera, action, and popcorn. Have you ever wondered who invented movies? Starting in the late 1800s to the present, travel through time and learn how movies changed from still pictures, silent, to action films through the years. The lights, sounds, actors, and music come together to create ACTION! Notes, Timeline, Bibliography (AF)



The Amazing World of Video Game Development

DENIS GALANIN. Familius. 32pp. ISBN 9781641707497, \$17.76. (K-2)

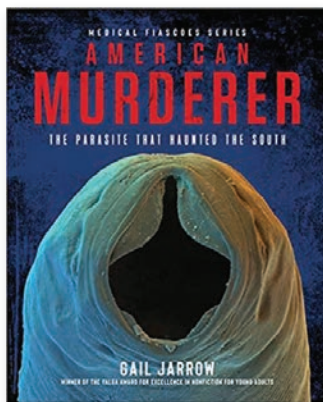
Going deeper than just coding, this story profiles the people and skills needed to bring a video game to your screen. Discover how a team of people, from game designers, programmers, artists, music composers and producers, all contribute their skills to take a new game from an idea to its release. (WL)



American Murderer: The Parasite That Haunted the South

GAIL JARROW. Astra Publishing for Young Readers / Calkins Creek. 160pp. ISBN 9781684378159, \$23.99. (6-8, 9-12)

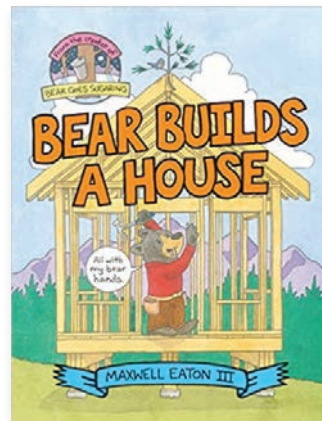
A medical mystery that provides a narrative of STEM thinking as the mystery of hookworm is slowly unraveled. With the parasite identified, the story then looks at how interdisciplinary thinking can be utilized to help improve community health. (WL)



Bear Builds a House

MAXWELL EATON, III. Holiday House / Neal Porter Books. 32pp. ISBN 9780823447145, \$18.99. (K-2)

Bear and his friends engage in a story filled with STEM thinking as they build a house. Discover how they share ideas, communicate, plan, problem solve, and build. (WL)



Blast Off! How Mary Sherman Morgan Fueled America into Space

SUZANNE SLADE. Illustrated by Sally W. Comport. Astra Publishing House / Calkins Creek. 48pp. ISBN 9781684372416, \$18.99. (3-5)

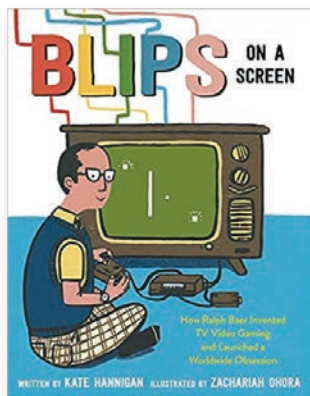
This beautifully illustrated tale of Mary Sherman Morgan takes the students through the process of developing the rocket fuel used to launch America's first satellite. This tale shows that the process of STEM is made up of failures, reevaluation, and trying again until eventual success. (BH)



Blips on a Screen: How Ralph Baer Invented TV Video Gaming and Launched a Worldwide Obsession

KATE HANNIGAN. Illustrated by Zachariah Ohora. Random House Children's Books / Alfred A Knopf. 48pp. ISBN 9780593306710, \$17.99. (K-2, 3-5)

Perseverance and patience are two of the traits that the story of Ralph Baer's invention of video gaming helps to illustrate. Vivid illustrations help to tell how he used, applied, and leveraged his curiosity and skills to develop video games for television. (CR)



Break Down: Explosions, Implosions, Crashes, Crunches, Cracks, and More...A How Things Work Look at How Things Don't

MARA GRUNBAUM. National Geographic Kids Books. 208pp. ISBN 9781426373053, \$19.99. (3-5, 6-8)

With chapters like Another One Bites the Dust and Famous Failures, *Break Down* allows kids to question things like design flaws and cursed construction. It's a browsable book that allows us to not only think about how things work, but also how they don't. After it shares the story of an explosion, implosion, crunch, or crack, the book shares with you "Just the Fact" to help explain. (CL)



Best STEM Trade Books Criteria and Rubric

OVERVIEW

STEM (Science, Technology, Engineering, and Mathematics) is an integrated and creative approach to discovering and applying knowledge about our world to solve problems which utilizes one, or more of the content areas. Trade books that deliver background and model the practices of STEM provide context and inspiration to readers. Recognizing the best publications in this field can help guide their use and provide direction to publishers.

CRITERIA

The best STEM trade books must invite STEM-like thinking by:

- Modeling real-world innovation
- Embracing real-world design, invention and innovation
- Connecting with authentic experiences
- Showing assimilation of new ideas
- Illustrating teamwork, diverse skills, creativity, and cooperation
- Inviting divergent thinking and doing
- Integrating interdisciplinary and creative approaches
- Exploring multiple solutions to problems
- Addressing connections between STEM disciplines
- Exploring Engineering Habits of Mind
 - Systems thinking,
 - Creativity
 - Optimisation
 - Collaboration
 - Communication
 - Ethical considerations
 - Critical thinking

The best STEM trade books might represent the practices of science and engineering by:

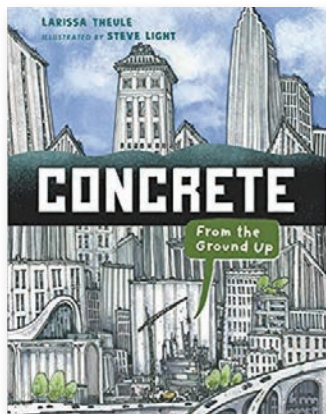
- Asking questions, solving problems, designing and redesigning
- Integrating STEM disciplines
- Showing the progressive changes that characterize invention and/or engineering by:
 - Demonstrating designing or redesigning, improving, building, or repairing a product or idea
 - Showing the process of working through trial and error
 - Progressively developing better engineering solutions
 - Analyzing efforts and makes necessary modifications along the way
 - Illustrates at points, failure might happen and that is acceptable, providing reflection and learning occurs.



Concrete: From the Ground Up

LARISSA THEULE. Illustrated by Steve Light. Candlewick Press. 48pp. ISBN 9781536212501, \$18.99. (3-5, 6-8)

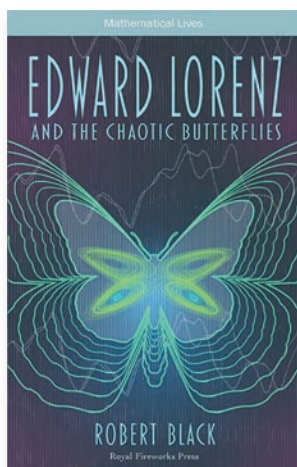
Imagine there was no concrete! This construction material has helped to build our modern world. Through witty text and engaging illustrations, readers discover the past, present, and future of this everyday building material. Learn how concrete has radically changed the human-engineered world. (JW)



Edward Lorenz and the Chaotic Butterflies

ROBERT BLACK. Cover illustrated by Christopher Tice. Royal Fireworks Press. 127pp. ISBN 9780880927857, \$20.00. (9-12)

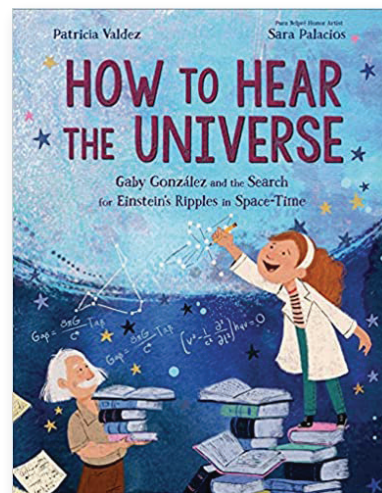
Through the need to better model meteorological concepts in World War II, Lorenz stumbled on an accidental discovery that would influence 20th-century physical sciences. While often known as the Butterfly Effect, the development of the chaos theory is explained. Problems at the end of the book are provided. (CR)



How to Hear the Universe: Gaby González and the Search for Einstein's Ripples in Space-Time

PATRICIA VALEZ. Illustrated by Sara Palacios. Random House Children's Books / Alfred A Knopf. 30pp. ISBN 9781984894595, \$17.99. (3-5)

After Einstein presented his theory of ripples in space, Gaby Gonzalez, a young girl from Argentina, wondered if there was something beyond the stars. As an adult, Gaby was the lead scientist on the LIGO project that helped prove Einstein's theory over a decade later. Notes, Timeline, Glossary (AF)



About CBC and NSTA

The Children's Book Council (CBC) is the nonprofit trade association for children's book publishers in North America, dedicated to supporting and informing the industry and fostering literacy. The CBC offers children's publishers the opportunity to work together on issues of importance to the industry at large, including educational programming, literacy advocacy, and collaborations with other national organizations. The anchor sponsor of Children's Book Week, the CBC is proud to partner with other national organizations on co-sponsored reading lists, educational programming, and literacy initiatives. For more information, visit www.cbcbooks.org.

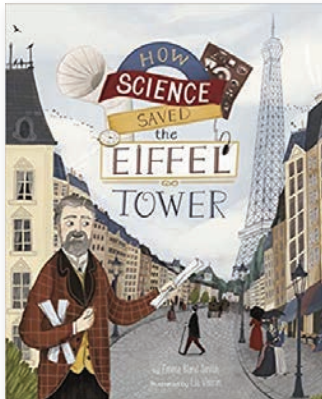
The books that appear in these lists were chosen by a review panel made up of educators and other subject-area experts, all appointed by the National Science Teachers Association. NSTA and CBC have joined forces on developing this annual list since 1973, and over the years it has become the go-to resource for school librarians, science teachers, and parents eager to cultivate a love of science in young readers. Initially, the list was primarily targeted at grades K through 8. Beginning in 2002, it expanded to include high school. Down through the years, this effort has had but a single mission—to highlight the very best in science trade books for young audiences.



How Science Saved the Eiffel Tower

EMMA BLAND SMITH. Illustrated Lia Visirin. Capstone / Capstone Editions. 32pp. ISBN 9781684464784, \$17.99. (3-5)

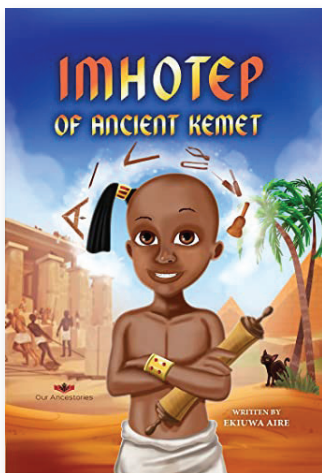
The story takes the reader on a STEM thinker's journey through time as Gustave Eiffel uses innovative thinking to convince the Parisians that the tower should stay. Gustave gathered data, engineered solutions outside of the box to keep the Eiffel Tower. (KR)



Imhotep of Ancient Kemet

EKIWA AIRE. Illustrated by Anastasia Kyrpenko and Simbarashe Langton Vera. Our Ancestories. 44pp. ISBN 9781777117993, \$19.99. (3-5)

Imhotep was a questioner, curious about everything. He designed his first "step pyramid" as a child when he was building with reeds and mud. It became clear that Imhotep was more than just curious. He had a mind with great wonders! (KR)



In Our Garden

PAT ZIETLOW MILLER. Illustrated by Melissa Crowton. Penguin Young Readers / G. P. Putnam's Sons. 32pp. ISBN 9781984812100, \$17.99. (K-2)

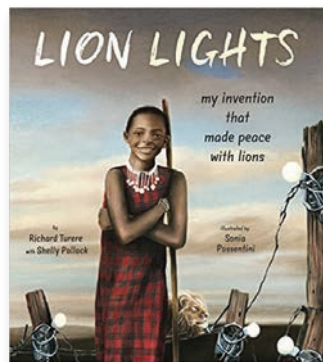
A charming tale of persistence and patience as an urban classroom creates a community rooftop garden. Young children will be introduced to the STEM skills of planning, collaboration, data collection, observation, and measurement as the diverse student characters build and monitor their garden. (JW)



Lion Lights: My Invention that Made Peace with Lions

RICHARD TURERE WITH SHELLY POLLOCK. Illustrated by Sonia Possentini. Tilbury House Publishers. 32pp. ISBN 9780884488859, \$18.75. (K-2, 3-5)

The quintessential STEM book, *Lion Lights*, tells the story of how a young boy solves a complicated problem with a simple and low cost solution. He perseveres until he finds a way to save the family cows in a humane way from lion attacks. His \$10 invention is now used around the world! (CL)



The Mystery of the Monarchs: How Kids, Teachers, and Butterfly Fans Helped Fred and Norah Urquhart Track the Great Monarch Migration.

BARB ROSENSTOCK. Illustrated by Erika Meza. Random House Children's Books / Alfred A Knopf. 40pp. ISBN 9781984829566, \$18.99. (K-2)

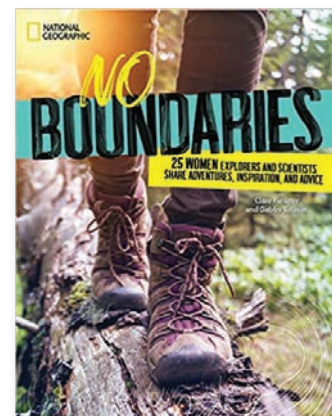
This beautiful picture book presents the work that went into solving the mystery of where monarch butterflies migrate. Also included is additional information about the monarch butterfly, and the individuals involved in solving this mystery. (BH)



No Boundaries: 25 Women Explorers and Scientists Share Adventures, Inspiration and Advice.

CLARE FIESELER AND GABBY SALAZAR. National Geographic Kids Books. 160pp. ISBN 9781426371769, \$16.99. (6-8)

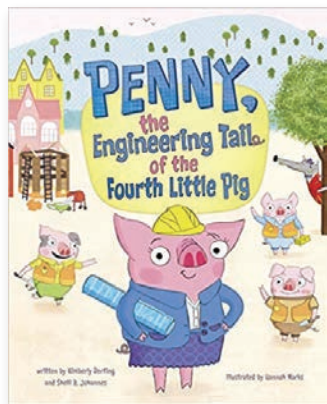
From a paleoanthropologist to astronomer, marine biologist to citizen scientist, *No Boundaries* allows readers to share the experiences of 25 different women that are making an impact in the field of STEM. Each story gives detailed accounts of their careers and missions. Great details and photography strengthen the interest of the reader. (CL)



Penny, the Engineering Tail of the Fourth Little Pig.

KIMBERLY DERTING AND SHELLIE R. JOHANNES. Illustrated by Hannah Marks. Capstone Editions. 32pp. ISBN 9781684464814, \$17.70. (K-2)

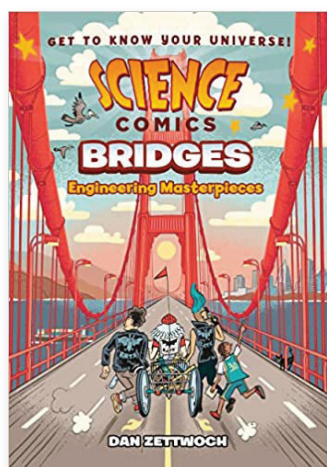
A delightful and clever retelling of the classic story where the fourth little pig uses her science and engineering knowledge to save her three brothers from the wolf. Penny introduces the reader to the Engineering Design Process, mechanics, and blueprinting. (JW)



Science Comics: Bridges: Engineering Masterpieces.

DAN ZETTSCH. Macmillan Children's Publishing Group / First Second. 128pp. ISBN 9781250216892, \$21.99. (3-5, 6-8)

Presenting the engineering process through an engaging comic format makes this book a fun way for young people to be introduced to problem solving and STEM. Students will get to follow the evolution of the bridge through time as people need to solve various problems and challenges. (BH)



About the Books and the Selection Process

The books that appear in this annotated bibliography selected as Outstanding Science Trade Books were published in 2022. They are intended primarily for grades K-12. They were selected by members of a book review panel appointed by the National Science Teachers Association (NSTA) and assembled in cooperation with the Children's Book Council (CBC). NSTA and CBC have cooperated on this bibliographic project since 1973.

The panel looks at both content and presentation. Selection is based generally on the following criteria:

- The book has substantial science content.
- Information is clear, accurate, and up-to-date.
- Theories and facts are clearly distinguished.
- Facts are not oversimplified to the point that the information is misleading.
- Generalizations are supported by facts, and significant facts are not omitted.
- Books are free of gender, ethnic, and socioeconomic bias.

The panel also uses rigorous selection guidelines relating to the presentation of material, including the following: logical presentation and a clear sequence of ideas; appropriate content level for the intended audience; compatible text and illustrations; illustrations that are accurate representations in size, color, and scale; appropriate trim size and format of the book for the subject and audience; and well-organized layout that advances the text. The panel also gives attention to the quality of binding, paper, reproduction, and the appropriateness of typeface. Each panel member reads all the books, but reviews reflect only the appraisal of the individual panelist whose initials appear at the end of each entry.

Publishers' names appear in abbreviated form; complete names and addresses are available from the CBC and in standard reference works such as Children's Books in Print. CBC's Member List is available at www.cbcbooks.org/publishers/our-members.

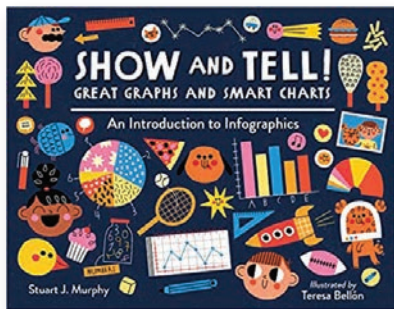
Titles are arranged by subject category. Although some titles are appropriate for more than one category, the books have been placed where their usefulness in science education appears greatest. Panelists have also indicated the Next Generation Science Standard (see About the Reviews on page 70) to which the books relate. Where more than one standard is listed, the most applicable standard is given first.



Show and Tell! Great Graphs and Smart Charts: An Introduction to Infographics.

STUART J. MURPHY. Illustrated by Teresa Bellón. Charlesbridge. 48pp. ISBN 9781580898232, \$17.99. (3-5)

Through appealing illustrations and relevant examples, this book shows readers how to present information with symbols and artwork. Young children can learn how and when to use different types of pictographs to present data. Step-by-step instructions are provided. *(BL)*



Sleuth and Solve Science: 20+ Mind-Twisting Mysteries.

ANA GALO. Illustrated by Victor Escandell. Chronicle Books. 57pp. ISBN 9781797214559, \$18.99. (3-5)

Can you solve mysteries using science while playing? Individually or with a research team, use your knowledge, logical deductions, the principles of STEM to find the answers to mysteries that occur in our world with a little twist. Conduct experiments to discover the principles behind the mystery. *(AF)*



Something Great.

JEANETTE BRADLEY. Levine Querido. 40pp. ISBN 9781646141715, \$18.27. (K-2)

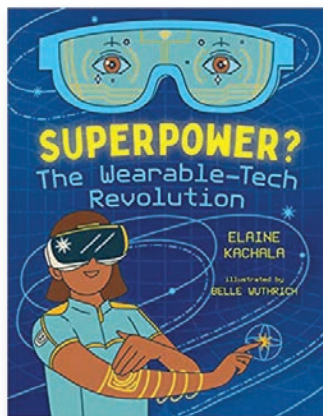
Quinn believes they have invented "something great". What others see as trash; Quinn sees as a possibility for greatness. Quinn is extremely resilient in their pursuit of something great. Their "something great" found them a new friend. *(KR)*



Superpower? The Wearable-Tech Revolution.

ELAINE KACHALA. Illustrated by Belle Wuthrich. Orca Book Publishers. 112pp. ISBN 9781459828278, \$24.95. (3-5, 6-8)

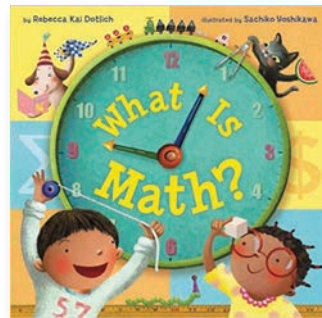
This book showcases examples on how technological innovation helps people thrive in our daily life. It contains beautiful illustrations and photographs of the design and operation of the devices. A chapter on ethical issues on technology use is included. *(BL)*



What Is Math?

REBECCA KAI DOTLICH. Illustrated by Sachiko Yoshikawa. Christy Ottaviano Books / Little, Brown BYR. 40pp. ISBN 9780316337779, \$17.99. (K-2)

A fun and engaging series of poems helps to show where and how mathematics can be found in everyday life. Calendars, recipes, shapes, and charts are a few of the common objects that help to bring math to life in everyday events. *(CR)*



Zhang Heng and the Incredible Earthquake Detector.

RANDEL MCGEE. Familius. 32pp. ISBN 9781641701686, \$17.99. (3-5)

This historical informational book presents the invention of the Chinese earthquake detector in 132 CE that successfully predicted many earthquakes. The shadow puppets used in the illustrations have added to the cultural authenticity of this picture book. *(BL)*



Call for Submissions

for 2024 Best STEM Books for Students K-12

Deadline for submissions: July 8, 2023

ELIGIBILITY

- Titles should be for grades K-12.
- All titles must originate from a children's publishing company or division and must be published (not simply distributed) by a publisher incorporated in the United States.
- Titles must be published in 2023.
- Titles originally published abroad are eligible only if they have a 2023 U.S. publication date; reprints or licensed editions of titles initially published in the United States before 2023 are not eligible.
- Original paperbacks are eligible; paperback reprints are not. If a book is published simultaneously in hardcover and paperback, either edition may be submitted. If both editions are submitted, they constitute separate entries.
- Revisions are eligible only if the book has been newly illustrated or if substantial text, constituting at least 25% of the book, has been changed or added.
- Math books are not eligible unless the mathematical principles are applied to scientific functions such as measuring for experiments, using statistical models for scientific research, and so on.
- Textbooks, workbooks, kits, experiment-only books, and activity books are not eligible.
- Spanish-language editions of titles published in English before 2023 are not acceptable. Spanish-language editions published simultaneously with English-language editions in 2023 are eligible.
- Fiction is eligible if the book has substantial science content.

NUMBER OF TITLES YOU MAY SUBMIT

Each participating publisher may submit an unlimited number of titles.

SUBMISSION GUIDELINES

Books should have value for both classroom studies and library collections supporting students' work.

Full submission guidelines will be available throughout the month of June, 2023 at www.cbcbooks.org/curated-reading-lists.

FEES

There is no submission fee for CBC Regular and Affiliate Members. The fee is \$75 per title for Associate and Initiating Members and \$300 per title for non-members. All fees are non-refundable. Titles may not be substituted. There is no refund if a title is canceled or postponed.

