

Developing children's interest and engagement in
Science, Technology, Engineering and Mathematics (STEM)
through picture books



EARLY CHILDHOOD

STEM

B O O K L I S T

brought to you by



WHY

STEM?

Early childhood is the natural starting point for STEM learning, as young children are curious and want to explore their environments. Children are very capable STEM learners, and their knowledge and skills are often greatly underestimated by educators and parents. Children can develop complex understandings about the world around them with the right guidance from adults. Early STEM experiences can set children up for later formal STEM learning. In line with the Early Years Learning Framework, we want children to be confident and involved learners. We need children to feel that they can 'do' STEM, as well as understand and speak the language of STEM.

¹van den Heuvel-Panhuizen, M., Elia, I., & Robitzsch, A. (2016). Effects of reading picture books on kindergartners' mathematics performance. *Educational psychology, 36*(2), 323-346.

²Early Childhood STEM Working Group. (2017). *Early STEM Matters: Providing High-Quality STEM Experiences for All Young Learners*. Chicago: University of Chicago STEM Education/Erikson Institute. Retrieved from <http://ecstem.uchicago.edu/>

WHY

PICTURE BOOKS?

Picture books are a great way to engage children's interest in Science, Technology, Engineering and Mathematics (STEM). Picture books can act as hooks to explore and learn about new things. Picture books introduce new vocabulary, concepts and ways of thinking and doing. Picture books use text and pictures to tell a story. Stories help children's understanding, and assist them in retaining and recalling information.

WHY

THESE BOOKS?

The books listed do not focus on the separate STEM disciplines or on content related to the disciplines. Rather, the books focus on STEM practices or 'habits of mind' that are common across the four disciplines. These habits or practices include problem solving, working together, persistence, imagination, experimenting, predicting, designing and making.

This list is not exhaustive, but does include a comprehensive range of books that will engage young children aged between four and eight in STEM.

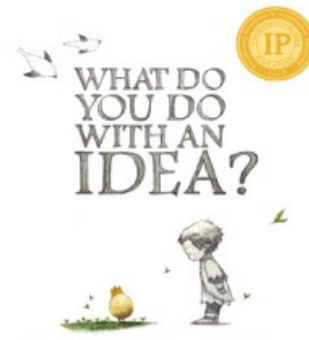


THE MOST MAGNIFICENT THING

Ashley Spires

Kids Can Press ISBN: 9781554537044

The girl has a wonderful idea. She is going to make the most MAGNIFICENT thing! She knows just how it will look. She knows just how it will work. All she has to do is make it, and she makes things all the time. Easy-peasy!?!? But making her magnificent thing is anything but easy, and the girl tries and fails, repeatedly.



WHAT DO YOU DO WITH AN IDEA?

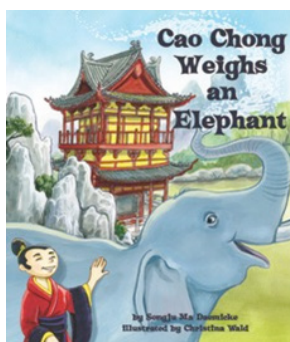
Kobi Yamada

Illustrated by Mae Besom

Compendium Inc

ISBN: 9781938298073

This is the story of one brilliant idea and the child who helps to bring it into the world. As the child's confidence grows, so does the idea itself. And then, one day, something amazing happens. This is a story for anyone, at any age, who's ever had an idea that seemed a little too big, too odd, too difficult.



CAO CHONG WEIGHS AN ELEPHANT

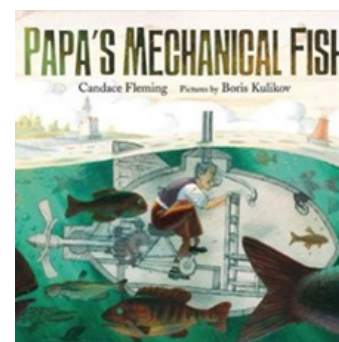
Songju Ma Daemicke

Illustrated by Christina Wald

Arbordale Publishing

ISBN: 9781628559033

How much does an elephant weigh? How do you know? How would you know if you didn't have a modern scale? Six-year-old Cao Chong, the most famous child prodigy in Chinese history, faced just this problem!



PAPA'S MECHANICAL FISH

Candace Fleming

Illustrated by Boris Kulik

Farrar, Straus & Giroux

ISBN: 9780374399085

Clink! Clankety-bang! Thump-whirr! That's the sound of Papa at work. Although he is an inventor, he has never made anything that works perfectly, and that's because he hasn't yet found a truly fantastic idea. But when he takes his family fishing on Lake Michigan, his daughter Virena asks, 'Have you ever wondered what it's like to be a fish?' –and Papa is off to his workshop.



SHARK LADY

Jess Keating Illustrated by **Marta Alvares Miguens**
Sourcebooks Inc ISBN: 9781492642046

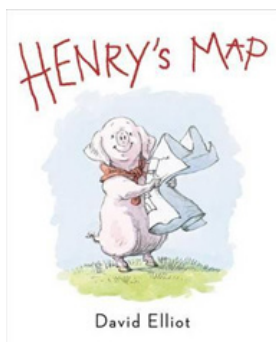
Eugenie Clark fell in love with sharks from the first moment she saw them at the aquarium. She couldn't imagine anything more exciting than studying these graceful creatures. But Eugenie quickly discovered that many people believed sharks to be ugly and scary—and they didn't think women should be scientists.



ME... JANE

Patrick McDonnell
Little, Brown & Company ISBN: 9780316045469

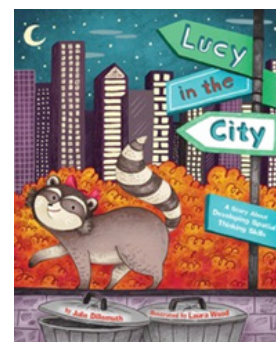
The story of a young Jane Goodall and her special childhood toy chimpanzee named Jubilee. As the young Jane observes the natural world around her with wonder, she dreams of 'a life living with and helping all animals,' until one day she finds that her dream has come true.



HENRY'S MAP

David Elliot
Philomel Books ISBN: 9780399160721

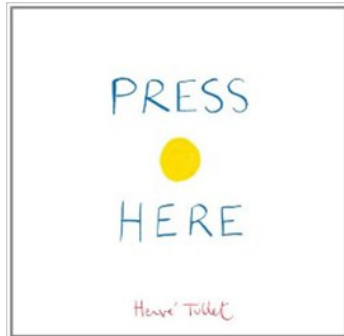
Henry is a very particular sort of pig. 'A place for everything and everything in its place,' he always says. But when he looks out his window he is troubled. The farm is a mess! Henry is worried that nobody will be able to find anything in this mess. So he draws a map showing all the animals exactly where they belong.



LUCY IN THE CITY

Julie Dillemath Illustrated by **Laura Wood**
Philomel Books ISBN: 9781433819285

One night, Lucy the raccoon follows her family out of their den, headed for the best garbage bins in town. Distracted by a jar of peanut butter, she gets separated from her family. How will she ever find her way back to her family and her cozy den? With the help of a friendly owl and his bird's-eye view, Lucy tunes into the world around her and navigates herself home.



PRESS HERE

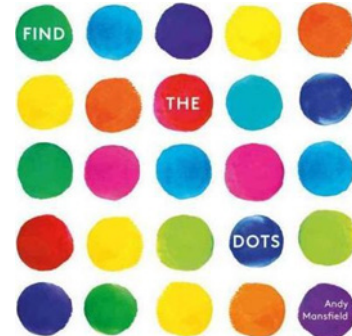
Herve Tullet

Allen & Unwin

ISBN: 9781742375281

Press here.

That's right. Just press the yellow dot...and turn the page.



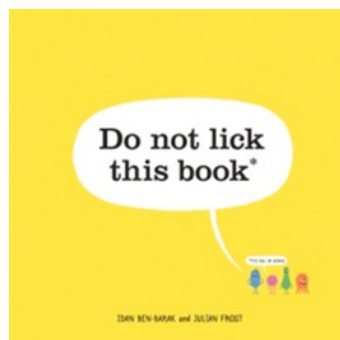
FIND THE DOTS

Andy Mansfield

Candlewick Studio

ISBN: 9780763695583

Push, pull, lift, turn, and twist to find where the dots are hiding in this ingenious book-puzzle fun for all ages!



DO NOT LICK THIS BOOK

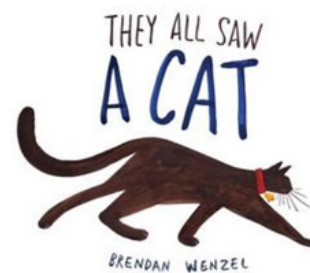
Idan Ben-Barak

Allen & Unwin

Illustrated by Julian Frost

ISBN: 9781760293055

Min is a microbe. She is small. Very small. In fact so small that you'd need to look through a microscope to see her: Or you can simply open this book and take Min on an adventure to amazing places she's never seen before—like the icy glaciers of your tooth or the twisted, tangled jungle that is your shirt.



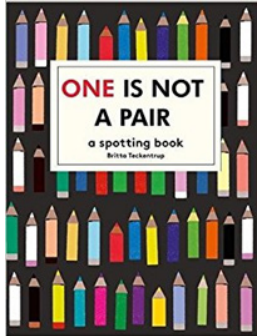
THEY ALL SAW A CAT

Brendan Wenzel

Chronicle Books

ISBN: 9781452150130

The cat walked through the world, with its whiskers, ears, and paws... In this glorious celebration of observation, curiosity, and imagination, Brendan Wenzel shows us the many lives of one cat, and how perspective shapes what we see. When you see a cat, what do you see?



ONE IS NOT A PAIR

Britta Teckentrup

Templar Publishing

ISBN: 9781783704637

In *One is Not a Pair*, each patterned page contains a set of pairs... but one thing does not match any of the others. Can you find it?



WHICH ONE DOESN'T BELONG?

Christopher Danielson

Stenhouse Publishers

ISBN: 9781625311306

Which One Doesn't Belong? contains a thoughtfully designed set of four shapes. Each of the shapes can be a correct answer to the question, 'Which one doesn't belong?' Because all their answers are right answers, students naturally shift their focus to justifications and arguments based on the shapes' geometric properties.



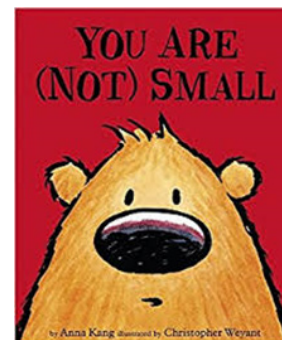
HOW BIG IS A MILLION?

Anna Milbourne Illustrated by **Serena Riglietti**

Usborne Publishing

ISBN: 9780746077696

Pipkin the smallest penguin is always asking questions, but what he wants to know most of all is how big is a million? So he sets off to find out, and along the way meets a hundred penguins, sees a thousand snowflakes and meets one new friend before being amazed to finally find out how big a million really is.



YOU ARE (NOT) SMALL

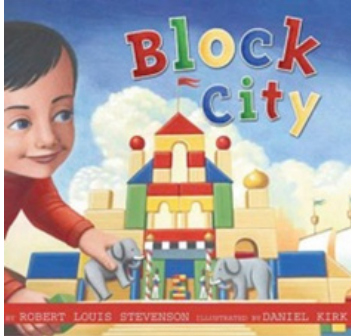
Anna Kang

Hachette Children's Group

Illustrated by **Christopher Weyant**

ISBN: 9781477847725

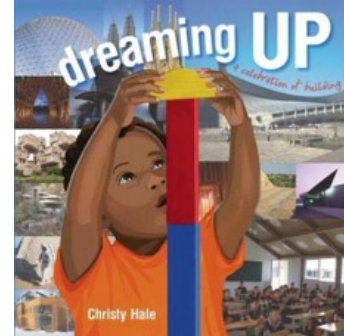
Two fuzzy creatures can't agree on who is small and who is big, until a couple of surprise guests show up, settling it once and for all!



BLOCK CITY

Robert Louis Stevenson Illustrated by Daniel Kirk
Simon & Schuster ISBN: 9780689869648

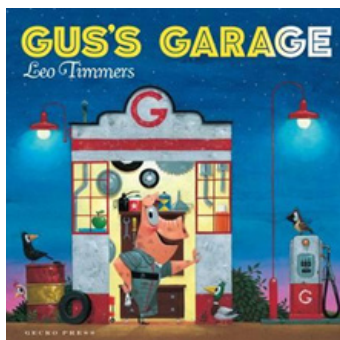
What are you able to build with your blocks? Renowned illustrator Daniel Kirk has joined his 'blocks'—in this case, bright colours, bold shapes, and retro style—with Robert Louis Stevenson's classic poem to construct a nostalgic yet exuberant celebration of fun and imagination.



DREAMING UP

Christy Hale
Lee & Low Books ISBN: 9781600606519

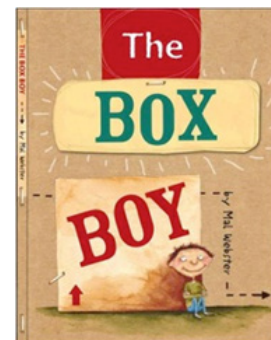
A collection of illustrations, concrete poetry, and photographs that shows how young children's constructions, created as they play, are reflected in notable works of architecture from around the world.



GUS'S GARAGE

Leo Timms
Gecko Press ISBN: 9781776570935

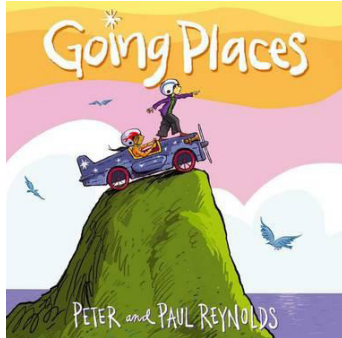
Gus's workshop is chockful of useless odds and ends. But when his friend Rico comes over with a problem (his scooter seat is way too small for a rhino), Gus finds just the thing to solve it. He creates a fabulous new vehicular contraption with an old lounge chair! One by one Gus's friends bring him their vehicles and Gus solves their troubles with ingenious solutions.



THE BOX BOY

Mal Webster
Windy Hollow Books ISBN: 9781921136504

A boy loves collecting things, especially cardboard boxes. He makes more and more amazing things from boxes, until his work is noticed by an art gallery director who gives him a big exhibition.



GOING PLACES

Peter and Paul Reynolds
Simon & Schuster

ISBN: 9781442466081

It's time for this year's Going Places contest! Finally, Time to build a go-cart, race it—and win. Each kid grabs an identical kit, and scrambles to build. Everyone but Maya. She sure doesn't seem to be in a hurry...and that sure doesn't look like anybody else's go-cart! But who said it had to be a go-cart? And who said there's only one way to cross the finish line?

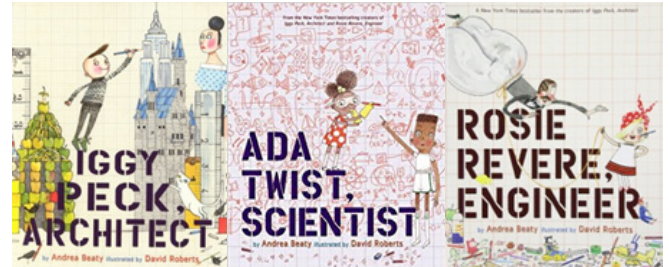


11 EXPERIMENTS THAT FAILED

Jenny Offill
Schwartz & Wade Books

Illustrated by Nancy Carpenter
ISBN: 9780746077696

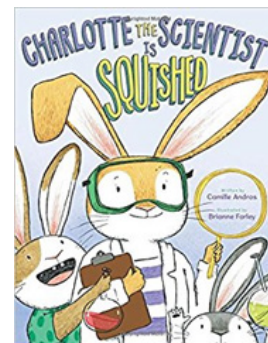
Is it possible to eat snowballs doused in ketchup and nothing else all winter? Can a washing machine wash dishes? By reading the step-by-step instructions, kids can discover the answers to such all-important questions along with the book's curious narrator:



IGGY PECK, ARCHITECT ADA TWIST, SCIENTIST ROSIE REVERE, ENGINEER

Andrea Beaty Illustrated by David Roberts

These books all have an underlying theme: Dream Big. The fun part is each story is told from a different child in Ms. Lila Greer's classroom.



CHARLOTTE THE SCIENTIST IS SQUISHED

Camille Andros
Houghton Mifflin

Illustrated by Brianna Farley
ISBN: 9780544785830

Charlotte is a serious scientist. She solves important problems by following the scientific method. She has all the right equipment: protective glasses, a lab coat, a clipboard, and a magnifying glass. What she doesn't have is space. She has so many brothers and sisters (she is a rabbit, after all) that she is too squished to work on her experiments!

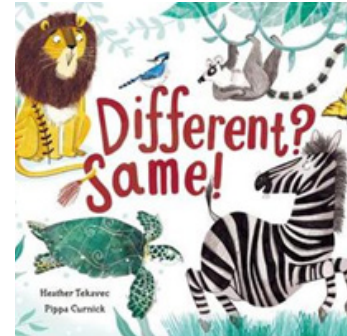


THE ART OF CLEAN UP

Ursus Wehrli

Chronicle Books ISBN: 9781452114163

Tapping into the desire for organisation and the insanity of uber-order, Wehrli humorously categorises everyday objects and situations by colour, size, and shape. He arranges alphabet soup into alphabetical order; sorts the night sky by star size, and aligns sunbathers' accoutrements—all captured in bright photographs sure to astonish even the pickiest of neat freaks.

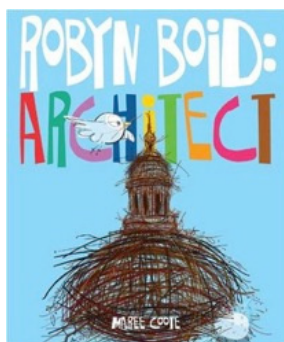


DIFFERENT? SAME!

Heather Tekavec

Kids Can Press ISBN: 9781771385657

This clever picture book introduces the concept of animal characteristics by highlighting how there can be both differences and similarities within a group. For example, the zebra gallops, the bumblebee flies, the lemur leaps and the tiger prowls? But look closer now... We all have STRIPES!? And so it goes.

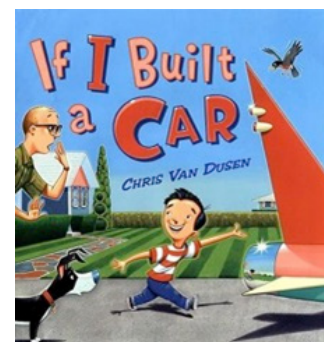


ROBYN BOID: ARCHITECT

Maree Coote

Melbournestyle ISBN: 9780992491741

Meet Robyn Boid—a small, dedicated bird who loves to build nests and dreams of becoming an architect. She lives at the University, where she listens to the architecture class through the window each day. Eager to learn, Robyn practises building all the important architectural shapes, but all the while, she seeks the perfect design for her very own nest.

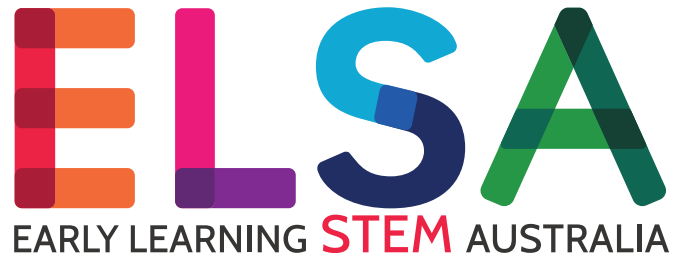


IF I BUILT A CAR

Chris Van Dusen

Dutton EP ISBN: 9780525474005

Young Jack is giving an eye-opening tour of the car he'd like to build. There's a snack bar, a pool, and even a robot named Robert to act as chauffeur. With Jack's soaring imagination in the driver's seat, we're deep-sea diving one minute and flying high above traffic the next in this whimsical, tantalising take on the car of the future.



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BOOKLIST



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