

Next Generation Science Standards Interactive Read Alouds

A comprehensive list of children's
literature aligned to the NGSS standards

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Kindergarten

K-PS2-1 Motion and Stability: Forces and Interactions

Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

K-PS2-2 Motion and Stability: Forces and Interactions

Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

Llewellyn, C. (2004). *And everyone shouted: "Pull!"*: A first look at forces and motion.

Farm animals struggle to get a cart moving using pushes and pulls. A great way to introduce the topics of forces and motion.

Waring, G. (2009). *Oscar and the cricket: A book about moving and rolling*.

A boy works with his cricket friend to learn how objects and animals move.

Mayer, L. (2013). *Newton and me*.

A boy and his dog explore motion through pulling a wagon, throwing a ball, and pushing a truck. Discusses Newton's laws of gravity and motion.

Koehler, L. (2015). *The little snowplow*.

No one believes that the little snowplow will be able to push and pull the snow as well as the big snowplows.

Kindergarten

K-LS1-1 From Molecules to Organisms: Structures and Processes

Use observations to describe patterns of what plants and animals (including humans) need to survive.

Barrett, J. (1988). *Animals should definitely not wear clothing.*

Beginning with a porcupine whose quills stick through a piece of clothing, this book goes through the reasons that humans wear clothes – and animals already have their own. A great way to discuss animal adaptations and needs.

Mazer, A. (1994). *The salamander room.*

A boy finds a salamander in the woods and his mother asks him how he will provide what the salamander needs to survive. Extend to talk about what all animals need.

Cannon, J. (1993). *Stellaluna.*

A fruit bat is separated from her mother and has to survive with a family of birds, mimicking the behavior of this different species.

Stewart, M. (2014) *Feathers: Not just for flying.*

Young naturalists meet sixteen birds in this elegant introduction to the many uses of feathers. Explore informative sidebars, which underscore specific ways each bird uses its feathers.

Kindergarten

K-ESS2-1 Earth's Systems

Use and share observations of local weather conditions to describe patterns over time.

Kaner, E. (2007). *Who likes the rain? (Exploring the elements)*.

Characters observe the rain and share why they like it. Includes fold-out pages that give more information on the science of rain. This book is one of four in the Exploring the Elements series. Series also includes books on wind, snow, and sun.

Hutchins, P. (1993). *The wind blew*.

A fun, rhyming book about villagers reacting to a giant windstorm.

Shannon, D. (2000). *The rain came down*.

Animals and humans alike react to the rain.

Asch, F. (2008). *Like a windy day*.

A little girl tumbles and twirls through the world, much the way the wind does each day.

Kindergarten

K-ESS2-2 Earth's Systems

Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

Peet, B. (1981). *Wump world*.

A unique tale that tells the story of a far off planet, all lush and green and untouched, populated by creatures called Wumps. All is well until one day little Martian creatures called the pollutians land on Wump World, forcing the Wumps to hide underground while they tear up and pollute their planet.

Brown, P. (2009). *The curious garden*.

While out exploring one day, a little boy named Liam discovers a struggling garden and decides to take care of it. As time passes, the garden spreads throughout the dark, gray city, transforming it into a lush, green world.

Cole, H. (2007). *On meadowview street*.

Caroline moves to Meadowview Street - but where's the meadow? As she sits in the backyard of her new home, she notices a tiny wildflower growing. She begs her dad to mow around it. The next day there is another flower...and another...and before long there are true meadows popping up all over Meadowview Street.

Blasco, J. (2015). *Animal architects: Amazing animals who build their homes*.

From gladiator frogs to chimpanzees, learn about how animals all over the world build their homes. Each spread contains a beautiful, colorful illustration of each animal and its home, plus a unique fold-out information panel, with stats and a simple architectural diagram showcasing the creation of the 'architect'.

Kindergarten

K-PS-3-1 Weather & Climate

Make observations to determine the effect of sunlight on Earth's surface.

K-PS-3-1 Weather & Climate

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Asch, F. (2008). *The sun is my favorite star*.

A simple story explaining that there are many stars in the galaxy. But only the sun wakes us in the morning, helps us grow, plays hide-and-seek behind the clouds, and paints pretty pictures in the evening sky.

Branley, F. (2002). *The sun: Our nearest star*.

Pairs bright, computer-produced cartoon art with a basic discussion of the sun and its importance to life on this planet. Imparts such information as how large, hot, and distant the sun is, and how its energy is stored, not only in the foods we eat, but also in the fossil fuels we use.

Kleven, E. (2004). *Sun bread*.

Winter's gray chill has set in and everyone misses the sun-especially the baker. So she decides to bring some warmth to the town by making sun bread. And as the bread bakes, rising hot and delicious, everyone comes out to share in its goodness. Everyone, including the sun itself.

Bang, M. (2004). *My light*.

Often taken for granted, the sun gives us more than its light. Here, acclaimed author and illustrator Molly Bang presents a celebration of the wonder and power of the sun and its radiance. With dazzling paintings and a simple poetic text, *My Light* follows the paths of the sun's rays, showing the many ways in which we obtain energy from its light. The sun explains the different ways in which its light is transformed into energy.

Kindergarten

K-ESS3-1 Earth and Human Activity

Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

Asch, F. (2008). *The earth and I*.

A boy reflects on how the earth helps him and how he can help the earth. Could be used to discuss the impact humans have on the earth, and how they can help lessen this impact.

Schwartz, D. (2007). *Where in the wild: Camouflaged creatures concealed*.

A full page of fascinating information accompanies each animal so readers can learn how nature's camouflage serves hunter and hunted alike.

Hesse, K. (1999). *Come on rain*.

"Come on, Rain!" Tess pleads to the sky as listless vines and parched plants droop in the endless heat. Then the clouds roll in, and the rain pours. And Tess, her friends, and their Mamas join in a rain dance to celebrate the shower that renews both body and spirit

Rylant, C. (2008). *In November*.

Poetic language and lovely oil paintings evoke the traditional and seasonal activities that occur in November for various animals.

Kindergarten

K-ESS3-2 Earth and Human Activity

Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.*

Rabe, T. (2004). *Oh say can you say what's the weather today? All about weather.* The Cat in the Hat and friends travel to learn how weather is studied and predicted. Covers various types of weather, tools used by meteorologists, and how to stay safe during storms.

Gibbons, G. (1993). *Weather forecasting.* With straightforward text and colorful pictures, this behind-the-scenes look at a modern weather station answers basic questions kids ask most, and makes weather forecasting more fun and accessible than ever.

Dean, J. (2013). *Freddy the frogcaster.* Freddy the Frog loves learning about the weather, and he's known for having the best predictions in town. But what happens when the town picnic is almost ruined by a storm that catches the local frogcaster by surprise? Freddie has to step in to save the day!

DeWitt, L. (2015). *What will the weather be?* Filled with rich climate vocabulary, colorful diagrams and clear explanations of meteorology everyday weather instruments like thermometers and barometers.

Kindergarten

K-ESS3-3 Earth and Human Activity

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*

Suzuki, D. & Ellis, S. (2006). *Salmon forest*.

One fall day, Kate goes with her father, a fish biologist, to the river. From her adventures, Kate discovers how the forest and the salmon need each other and why the forest is called the salmon forest.

Burningham, J. (2009). *Hey! Get off our train*.

At bedtime a young boy takes a trip on his toy train and rescues several endangered animals.

Sayre, A.P. (2010). *Turtle, turtle, watch out!*

Sea turtles face many dangers as they grow, eat, travel, and breed. In this dramatization of one female turtle's challenges, the author highlights the role that humans have in helping this endangered species.

Bang, M. (2014). *Common ground: The water, earth and air we share*.

A simple story of our planet's natural resources with jewel-like paintings by Caldecott Honor author Molly Bang. Through the example of a shared village green and the growing needs of the townspeople who share it, Molly Bang presents the challenge of handling our planet's natural resources.

1st grade

1-PS4-1 Waves and Their Applications in Technologies for Information Transfer

Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

Lowery, L. (2012). *What makes different sounds?*

On their walk home from school, twins Jane and Jim explore why sounds can be startling (like sirens), soothing (like music), or mysterious (like eerie creaking in an empty house). Readers are introduced to the roles vibration, pitch, and volume play in how rustles, rumbles, and rat-a-tat-tats are made and transferred to their own ears.

Waring, G. (2009). *Oscar and the bat: A book about sound.*

When Oscar hears a blackbird singing in the meadow, Bat swoops in to talk to him about sound. A sudden thunderstorm and a visiting cow give Oscar lots of opportunities to learn about sounds that are loud or soft, near or far, deep or high.

Showers, P. (1961). *The listening walk.*

On a listening walk with her father, a little girl awakens to the many unexpected sounds of their neighborhood.

Rosinsky, N. (2002). *Sound: Loud, soft, high, and low.*

Non-fiction book that breaks down the concepts of sound and how sound travels for young learners. The author also addresses pitch, sound waves, and other facts.

1st grade

1-PS4-2 Waves and Their Applications in Technologies for Information Transfer

Make observations to
construct an
evidence-based account
that objects in darkness
can be seen only when
illuminated.

Boyd, L. (2014). *Flashlight*.

Inside a tent it's cozy. But what is going on outside? Is it dark? Is it scary? Not if you have your trusty flashlight! Told solely through images and using a spare yet dramatic palette, artist Lizi Boyd has crafted a masterful exploration of night, nature, and art.

Waring, G. (2008). *Oscar and the moth: A book about light and dark*.

As Oscar the kitten watches the sun set one evening, he has lots of questions about light and dark. Who better than Moth to help out? Moth shows how sources of light are as different as the sun, stars, fireflies, streetlights, and airplanes, and also explains how shadows are made and why darkness comes at night. Includes lesson summaries!

Rocco, J. (2011). *Blackout*.

One hot summer night in the city, all the power goes out. The TV shuts off and a boy wails, "Mommm!" His sister can no longer use the phone, Mom can't work on her computer, and Dad can't finish cooking dinner. What's a family to do?

Yankey, L. (2015). *Sun and moon*.

Sun and Moon have always held their own places in the sky, but after a lifetime of darkness Moon wants to trade. Sun agrees, but only if first Moon takes a careful look at his night, before making his final decision.

1st grade

1-PS4-3 Waves and Their Applications in Technologies for Information Transfer

Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

Zschock, H. (2005). *Whoo's there? A bedtime shadow book.*

Use a flashlight (not included) to cast picture shadows on your wall as you read the gentle rhyming tale of winsome animals keeping busy during the night.

Golding, E. (2011). *Moonlight animals.*

Do you know what happens in the forest after dark? Now you can with a touch of the magic flashlight that reveals hidden creatures! Each spread appears to be dark, but once the flashlight is pointed, brilliant wildlife illustrations magically illuminate.

Rocco, J. (2011). *Blackout.*

One hot summer night in the city, all the power goes out. The TV shuts off and a boy wails, "Mommm!" His sister can no longer use the phone, Mom can't work on her computer, and Dad can't finish cooking dinner. What's a family to do?

Marino, G. (2015). *Night animals.*

Animals turn topsy-turvy in fear of things that go bump in the night

1st grade

1-LS1-1 From Molecules to Organisms: Structures and Processes

Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*

Jenkins, S. (2014). *Eye to eye: How animals see the world.*

Explains how for most animals, eyes are the most important source of information about the world in a biological sense. The simplest eyes—clusters of light-sensitive cells—appeared more than one billion years ago, and provided a big survival advantage to the first creatures that had them. Since then, animals have evolved an amazing variety of eyes, along with often surprising ways to use them.

Lee, D. (2011). *Biomimicry: Inventions inspired by nature.*

Examines the extraordinary innovations of the natural world and the human inventions they have inspired.

Kamkwamba, W. (2012). *The boy who harnessed the wind: Picture book edition.*

A drought hit the country of Malawi in sub-Saharan African. Fascinated by machines, William is inspired by a diagram of a windmill in a library book to scavenge parts from the junkyard and makes them into a windmill, mounts it on a tower, and turns on a light with the wind.

Fleming, C. (2013). *Papa's mechanical fish.*

A fictional account based on events in the life of eccentric inventor Lodner Phillips as told from the perspective of his daughter, Virena. With a lot of persistence and a little bit of help, Papa creates a submarine that can take his family for a trip to the bottom of Lake Michigan.

1st grade

1-LS1-2 From Molecules to Organisms: Structures and Processes

Read texts and use media
to determine patterns in
behavior of parents and
offspring that help
offspring survive.

Cannon, J. (1993). *Stellaluna*.

A fruit bat is separated from her mother and has to survive with a family of birds, mimicking the behavior of this different species.

Carrick, C. (2007). *Mothers are like that*.

Describes mothers of all species, from a chicken guarding an egg-filled nest to a woman tucking her baby into bed at night. The text is tender without being sappy, its comforting descriptions anchored by the title refrain: "Mother keeps her babies clean,/ and close,/ and safe from harm./ She can find them in a crowd./ Mothers are like that."

Woelfle, G. (2005). *Animal families, animal friends*.

Teaches readers about the many funny and fascinating relationships found in nature, using the familiar concepts of family, friends, and neighbors. Luminescent, realistic paintings and simple text make this an inviting introduction to animal communities and cooperation.

Kasza, K. (1997). *Don't laugh, Joe!*

Mother Possum is concerned that Joe laughs so much, he cannot play dead to escape predators. Until he meets Mr Bear.

1st grade

1-LS3-1 Heredity: Inheritance and Variation of Traits

Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

Knowles, S. (1988). *Edward the emu*.

Tired of his life as an emu, Edward decides to try being something else for a change. He tries swimming with the seals. He spends a day lounging with the lions. He even does a stint slithering with the snakes. But Edward soon discovers that being an emu may be the best thing after all. And so he returns to his pen, only to find a big surprise awaiting him.

Petty, D. (2015). *I don't want to be a frog*.

Frog wants to be anything but a slimy, wet frog. A cat, perhaps. Or a rabbit. An owl? But when a hungry wolf arrives—a wolf who HATES eating frogs—our hero decides that being himself isn't so bad after all.

Waddell, M. (2002). *Owl babies*.

Three baby owls awake one night to find their mother gone, and they can't help but wonder where she is. What is she doing? When will she be back? What scary things move all around them?

Fleming, D. (1998). *Mama cat has three kittens*.

Using her own cats as models, Denise Fleming has captured the moods, expressions, and antics of a mother cat and her kittens. But there is a rebel in every crowd, and Boris is sure to charm readers who will recognize themselves in his contrary ways.

1st grade

1-ESS1-1 Earth's Place in the Universe

Use observations of the sun, moon, and stars to describe patterns that can be predicted.

Curtis, C. (2004). *I took the moon for a walk*.

When the day has ended and everyone else has fallen asleep, a young boy embarks on a magical adventure with his friend the Moon. Their unusual journey is described in lyrical verse, creating an enchanting story that celebrates the serene beauty of the world at night.

Henkes, K. (2004). *Kitten's first full moon*.

Tells the story of a kitten who thinks the moon is a bowl of milk.

Asch, F. (2008). *The sun is my favorite star*.

A simple story explaining that there are many stars in the galaxy. But only the sun wakes us in the morning, helps us grow, plays hide-and-seek behind the clouds, and paints pretty pictures in the evening sky.

Rockwell, A. (2002). *Our stars*.

Begins and ends with stars, while informing readers about planets, meteors, comets, and moons in between.

1st grade

1-ESS1-2 Earth's Place in the Universe

Make observations at different times of year to relate the amount of daylight to the time of year.

Kleven, E. (2004). *Sun bread*.

Winter's gray chill has set in and everyone misses the sun-especially the baker. So she decides to bring some warmth to the town by making sun bread. And as the bread bakes, rising hot and delicious, everyone comes out to share in its goodness. Everyone, including the sun itself.

Pfeffer, W. (2003). *The shortest day: Celebrating the winter solstice*.

Explains what the winter solstice is and how it has been observed by various cultures throughout history.

Branley, F. (1974). *Sunshine makes the seasons*.

Find out how the light from the sun affects life on the earth for all living things in this look at the only star in our solar system.

Gibbons, G. (1995) *The reason for seasons*.

How the position of Earth in relation to the sun causes seasons.

2nd grade

2-PS1-1 Matter and Its Interactions

Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-2 Matter and Its Interactions

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

Mason, A. (2005). *Touch it! Materials, matter and you.*

Non-fiction book asking readers to describe various materials through observing, feeling and comparing.

Beaty, A. (2013). *Rosie Revere, engineer.*

A little girl works to design something that will help her aunt fly. After multiple failures and encouragement from her teacher, she finally succeeds. Use to introduce the concept of engineering and persevering to solve a problem.

Hutts Aston, D. (2012). *A rock is lively.*

A beautiful book about various rocks and their observable properties.

Stille, D. (2004.) *Matter: See it, touch it, taste it, smell it.*

The states of matter (solids, liquids, and gases) are explained and demonstrated. Includes an experiment to try.

2nd grade

2-PS1-3 Matter and Its Interactions

Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

Mason, A. (2006). *Build it! Structures, systems and you.*

Explores the function of structures, the materials they're made of, how their parts are joined together and more.

Van Dusen, C. (2007). *If I built a car.*

A little boy relates all of the wonderful things about the car he plans to design, including safety features, a pool, a robot driver, and the ability to go underwater and fly through the air.

Beaty, A. (2007). *Iggy Peck, architect.*

Iggy has one passion: building. When his second-grade teacher declares her dislike of architecture, Iggy faces a challenge. He loves building too much to give it up!

Spires, A. (2014). *The most magnificent thing.*

A girl decides to make something magnificent but can't get it quite right. From her efforts, readers see the importance of planning, gathering supplies, building, and not giving up when a good idea doesn't initially work out.

2nd grade

2-PS1-4 Matter and Its Interactions

Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

Hanson, A. (2011). *Melting matter*.

This book describes what happens when objects experience different conditions (e.g. when an ice cream cone gets hot).

Zoehfeld, K.W. (2015). *What is the world made of? All about solids, liquids and gasses*.

Uses simple, fun diagrams to explain the difference between solids, liquids and gases. Includes a section with experiments designed to encourage further exploration and introduce record keeping.

Ross, M.E. (2007). *What's the matter in Mr. Whiskers' room?*

Using seven science stations, Mr. Whiskers encourages his kids to use all their senses to make observations and draw conclusions.

Braun, E. (2012). *Joe Joe the wizard brews up solids, liquids and gasses*.

Joe Joe the wizard has a problem. His spell to turn homework into chocolate bars has gone to syrup! Readers learn how solids, liquids, and gases help Joe Joe with his sticky mess.

2nd grade

2-LS2-1

Ecosystems: Interactions, Energy, and Dynamics

Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Carle, E. (2009). *The tiny seed*.

This classic story of the life cycle of a flower is told through the adventures of a tiny seed.

Krauss, R. (1945). *The carrot seed*.

When a little boy plants a carrot seed, everyone tells him it won't grow. But when you are very young, there are some things that you just know, and the little boy knows that one day a carrot will come up. So he waters his seed, and pulls the weeds, and he waits...

Rockwell, A. (1999). *One bean*.

What happens when you plant just one little bean? A fundamental childhood experiment charmingly unfolds in this first science book about planting and observation. Takes the reader step-by-step through a plant's growth cycle, from planting the bean in a paper cup to the tasty results.

Brown, P. (2009). *The curious garden*.

While out exploring one day, a little boy named Liam discovers a struggling garden and decides to take care of it. As time passes, the garden spreads throughout the dark, gray city, transforming it into a lush, green world.

2nd grade

2-LS2-2

Ecosystems: Interactions, Energy, and Dynamics

Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

Pallotta, J. (2010). *Who will plant a tree?*

"I wonder who will plant a tree?" begins this glowingly illustrated meditation on the interconnectedness of Earth's creatures. Each page features an animal in a different habitat that, by simply going about its everyday activities, unknowingly plants a tree.

Lawrence, E. (2012). *From bird poop to wind: How seeds get around.*

Informational book that introduces young readers to the many different ways that plants disperse their seeds.

Anthony, J. (1997). *The dandelion seed.*

A story about a dandelion seed that will not let go because it's afraid of the world. Eventually, the winds blow it free and it travels the world.

Macken, J. (2008). *Flip, float, fly! Seeds on the move.*

Presents clear pictures of the featured seeds in their natural dispersals, from tumbleweeds rolling across a Western landscape to coconuts dropping into a tropical sea. Many of the double-page illustrations contain a circular "bubble" with close-ups of leaves, flowers, pods, etc.

2nd grade

2-LS4-1 Biological Evolution: Unity and Diversity

Make observations of plants and animals to compare the diversity of life in different habitats.

Ward, J. (2009). *The busy tree*.

Rhyming text describes a tree's activities from its roots to its branches. Acorns nibbled by chipmunks, ants scurrying across a trunk, a spider spinning a web—everything adds up to a “busy tree” for all to “come and see.”

Fredericks, A. (2001). *Under one rock: Bugs, slugs and other ughs*.

Focuses on the whole community of neighbors where the ground beneath a big old rock is home to them all.

Fleming, D. (1998). *In the small, small pond*.

A frog's-eye view of life in a pond throughout the seasons.

Guiberson, B. (1991). *Cactus hotel*.

A story about a desert, a giant cactus, and the animals who live in it.

2nd grade

2-ESS1-1 Earth's Place in the Universe

Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

Hiscock, B. (1999). *The big rock*.

Tells the story of the big rock, a granite boulder that began as molten rock millions of years ago. Through the ages, the mountains above it wore down, the ocean flooded the region, and then new mountains heaved the rock upward, to the surface of a New York State forest.

Ewart, C. (2014). *Fossil*.

A young girl finds a fossil, and a day in the life of a pterosaur unfolds. The pterosaur finally lives out its natural life, and layers of Earth and time transform the creature into a fossil.

Meierhenry, M. (2007). *The mystery of the round rocks*.

While exploring their grandfather's farm, Max and Hannah discover hundreds of round rocks piled up in the corner of a field. The children seek out Grandpa to learn how the rocks got there and why the rocks are round.

Herman, J. (1996). *The magic school bus blows its top: A book about volcanoes*.

Mrs. Frizzle and her class visit an underwater volcano that eventually creates an island.

2nd grade

2-ESS2-1 Earth's Systems

Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

DeCristofano, C. (2016). *The sun and the moon*.

The sun is out in the day and always has a circle shape. The moon's shape seems to change and you can sometimes see it in the daytime and at night. What are the sun and the moon? How are they the same and how do they differ? Guides readers into a deeper understanding of their observations of the sun and the moon.

Smith, P. (2015). *How do wind and water change Earth?*

Explains how the shape of Earth is changed by weathering and erosion, the breaking down of rocks and minerals, which are then carried from one place to another by water, ice, wind, and gravity.

Hyde, N. (2010). *Soil erosion and how to prevent it*.

Describes the processes of weathering, erosion, and deposition, the impact of erosion on plants and animals, and kid-friendly steps to preventing erosion.

Koontz, R. (2006). *Erosion: Changing Earth's surface*.

An informative look at the effects of erosion, this text, which is a part of the Amazing Science series, blends video game--stylized illustrations with scientific facts.

2nd grade

2-ESS2-2 Earth's Systems

Develop a model to represent the shapes and kinds of land and bodies of water in an area.

Dorros, A. (2000). *Follow the water from brook to ocean.*

Describes how water shapes the earth and why it is important to keep our water clean.

Locker, T. (2002). *Water dance.*

The author takes readers on a poetic journey through various bodies of water.

Smith, P. (2015). *Earth's landforms and bodies of water.*

Explains how Earth is covered by landforms and bodies of water, all of which change shape over time.

Lobel, A. (1993). *Ming Lo moves the mountain.*

Ming Lo's wife is angry. The couple live beside a big mountain which causes them no end of trouble. Shadows fall over their garden. Rocks fall through their roof. And it is always raining. "Husband," says Ming Lo's wife, "you must move the mountain so that we may enjoy our house in peace." But how can a man as small as Ming Lo move something as large as a mountain? Maybe the village wise man can help. This whimsical literary folktale is set in China.

2nd grade

2-ESS2-3 Earth's Systems

Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Lyon, G. (2011). *All the water in the world*.

With occasional rhymes, the short, poetic lines are conversational and instructive and evoke a sense of mystery about the water cycle.

Kerley, B. (2006). *A cool drink of water*.

Combines striking National Geographic photographs with a poetic text to show how people in various cultures use and conserve the world's most vital resource.

Paul, M. (2015). *Water is water: A book about the water cycle*.

This spare, poetic picture book follows a group of kids as they move through all the different phases of the water cycle.

Rosinsky, N. (2002). *Water: Up, down, and all around*.

Describes the water cycle and the importance of water, explaining evaporation and condensation, dew and frost, and the three states of water.

K-2nd grade

K-2-ETS1-1 Engineering Design

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Beaty, A. (2013). *Rosie Revere, engineer.*

A little girl works to design something that will help her aunt fly. After multiple failures and encouragement from her teacher, she finally succeeds. Use to introduce the concept of engineering and persevering to solve a problem.

Portis, A. (2007). *Not a stick.*

Begins with a little pig holding a long, forked object. An unenlightened voice offstage suggests, "Hey, be careful with that stick." The pig corrects the false impression ("It's not a stick") and demonstrates the item's many uses.

Lamug, K. K. (2011). *A box story.*

Invites the reader to look at things in a different way. With the use of hand drawn images, you are taken through simple thought provoking ideas about a box and how it is *not* just a box.

Hale, C. (2012). *Dreaming up: A celebration of building.*

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.

K-2nd grade

K-2-ETS1-2 Engineering Design

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 Engineering Design

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

- Spires, A. (2014). *The most magnificent thing*. Toronto, ON: Kids Can Press.
A little girl tries to build a magnificent contraption, but can't seem to get it right. She uses diagrams to plan her design, and faces failure before she finally succeeds. Use to introduce engineering concepts.
- Laden, N. (2000). *Roberto, the insect architect*.
Ever since he was a wee mite (a termite, that is), Roberto has wanted to be an architect. Discouraged by his wood-eating family and friends, he decides to follow his dream to the big, bug city. There he meets a slew of not-so-creepy, crawly characters who spark in him the courage to build a community for them all.
- Beaty, A. (2007). *Iggly Peck, architect*.
Iggly has one passion: building. When his second-grade teacher declares her dislike of architecture, Iggly faces a challenge. He loves building too much to give it up!
- Saltzberg, B. (2010). *Beautiful oops!*
An increasingly complex series of scenarios celebrates random accidents, encouraging artistic experimentation rather than discouragement.

3rd grade

3-PS2-1 Motion and Stability: Forces and Interactions

Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

Hall, K. (2004). *Tug of war: All about balance.*

When the bigger Beasties take on the smaller Beasties in a game of tug-of-war, they soon learn that size matters.

Walsh, E. (2010). *Balancing act.*

Two mice make a teeter-totter. They're balancing just fine, but then along comes a frog. Can they make room for one more friend on their teeter-totter? What about two? What about more? But then a big bird comes along and wants to play too.

Kroll, V. (2005). *Equal shmequal.*

What does it mean to be equal? Mouse and her friends want to play tug-of-war but they can't figure out how to make teams that are equal. Nothing works until Mouse starts thinking mathematically.

Llewellyn, C. (2004). *And everyone shouted: "Pull!": A first look at forces and motion.*

Farm animals struggle to get a cart moving using pushes and pulls.

3rd grade

3-PS2-2 Motion and Stability: Forces and Interactions

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Tompert, A. (1996). *Just a little bit.*

When an elephant and a mouse try to play on a seesaw, they need help from a vast number of animal friends to balance the scales.

Walsh, E. (2010). *Balancing act.*

Two mice make a teeter-totter. They're balancing just fine, but then along comes a frog. Can they make room for one more friend on their teeter-totter? What about two? What about more? But then a big bird comes along and wants to play too.

Waring, G. (2009). *Oscar and the cricket: A book about moving and rolling.*

A boy works with his cricket friend to learn how objects and animals move.

Mason, A. (2005). *Move it! Motion, forces, and you.*

Simple language explores two forces of motion: push and pull. Readers learn that objects are moved by pushing or pulling. This could include lifting, jumping, blowing, throwing, and kicking.

3rd grade

3-PS2-3 Motion and Stability: Forces and Interactions

Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

Hughes, M. (2015). *Magnet Max*.

Magnet Max loves experimenting with magnets. He knows all about how they work and loves using them to attract new types of things. But when he shows them to his friend Nick, the other boy is baffled. Join Max and Nick as they explore the science behind the magic. Discover which objects are attracted and why some are while others aren't.

Rosinsky, N. (2002). *Magnets: Pulling together, pushing apart*.

Compasses and magnetite, magnetic poles and motors - learn about how magnets affect our lives.

Watley, B (1993). *That magnetic dog*.

Skitty is a very special dog - she's magnetic. But instead of attracting metal, she attracts food. All kinds of food, even peas!

Schanzer, R. (2002). *How Ben Franklin stole the lightning*.

Ben Franklin found a way to steal the lightning right out of the sky. Is such a thing possible? Is it. This book describes how he used his discovery about lightning to make people's lives safer.

3rd grade

3-PS2-4 Motion and Stability: Forces and Interactions

Define a simple design problem that can be solved by applying scientific ideas about magnets.

Branley, F. (2016). *What makes a magnet?*

Why does a magnet pick up a paper clip but not a leaf or a penny? How can the whole world be a magnet? Follow the step-by-step instructions about how to make your own magnet, and then find out for yourself what makes a magnet!

Stewart, J. (2000). *Magnets*.

Very simple photographic book invites the reader to predict and test theories of magnetic forces on common objects.

Alpert, B. (2011). *A look at magnets*.

Magnets stick to your refrigerator. Magnets make paperclips jump. Read more to find out the facts on magnets.

Weakland, M. (2011). *Magnets push, magnets pull*.

Can a magnet really crush a car? How do magnets stick to the fridge without tape or glue? Discover the wonder and science of magnets.

3rd grade

3-LS1-1 From molecules to Organisms: Structures and Processes

Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Aston, D. (2011). *A butterfly is patient.*

From iridescent blue swallowtails and brilliant orange monarchs to the world's tiniest butterfly and the largest, an incredible variety of butterflies are celebrated here in all of their beauty and wonder.

Swanson S. (2008). *To be like the sun.*

Within every tiny seed lies the secret of what's to come. First a shoot, then a stem, a leaf, a bud--and finally a brilliant sunflower reaching high for the sun. Join a young girl as she waters and watches, celebrating the everyday miracles of growth and life.

Kimura, K. (2011). *999 tadpoles.*

"We'll have to move," says Mother, after realizing the pond is too small. But moving a family of 999 young frogs is fraught with danger! Hungry snakes are crawling through the grass. Hungry hawks are flying through the sky. A young frog makes a mighty tasty morsel. Never underestimate the quick wits of 999 young frogs!

Guiberson, B. (1991). *Cactus hotel.*

A story about a desert, a giant cactus, and the animals who live in it.

3rd grade

3-LS2-1

Ecosystems: Interactions, Energy, and Dynamics

Construct an argument that some animals form groups that help members survive.

Johnston, T. (2001). *The barn owls*.

The hushed tones of this poetry book describe the lives of generations of owls, who have lived in a redwood barn for "one hundred years/ at least."

Asper-Smith, A. (2010). *Have you ever seen a smack of jellyfish? An animal alphabet*.

From a knot of frogs to a watch of nightingales, the book takes the reader on a fascinating journey through the alphabet with animals as their guide, starting with an army of ants, and ending with a zeal of zebras.

Wright, A. (2015). *A tower of giraffes*.

A drove of pigs, a romp of otters, an ostentation of peacocks, and a tower of giraffes...This clever book introduces young readers to some of the words we use to refer to animals in a group.

Nargi, L. (2011). *The honeybee man*.

Every morning, Fred greets the members of his enormous family: "Good morning, my bees, my darlings!" His honeybee workers are busy—they tend the hive, feed babies, and make wax rooms. They also forage in flowers abloom across Brooklyn... so that, one day, Fred can make his famous honey.

3rd grade

3-LS3-1 Heredity: Inheritance and Variation of Traits

Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

Patent, D. (1989) *Grandfather's nose: Why we all look alike or different.*

The story of the discovery of genetic science and the details of heredity covered in depth. Through the use of cartoon-like illustrations, complicated ideas about heredity and genetics are described.

Leedy, L. (1993) *Tracks in the sand.*

The story of the life cycle of loggerhead turtles is told as a female turtle enacts the ancient ritual of mating and egg laying on the shore of her birth. The hatchling loggerheads develop and emerge from their buried nest to reach the ocean and begin their life. Years later, the young turtles return to their nesting place to begin the cycle again.

Eastman, P. (1998). *Are you my mother?*

This classic story tells of a baby bird trying to find its mother after hatching from an egg. The baby bird leaves the nest and flits from animal to animal and object to object asking each, "Are you my mother?" At the end of the story, mother and baby bird is re-united.

Crenson, V. (2009). *Horseshoe crabs and shorebirds: The story of a food web.*

The story of a food web that involves the eggs of a horseshoe crab and the birds and mammals that rely on these eggs for survival.

3rd grade

3-LS3-2 Heredity: Inheritance and Variation of Traits

Use evidence to support the explanation that traits can be influenced by the environment.

Jenkins, S. (2008) *What do you do with a tail like this?*

The question of “What do you do with a ...nose, ears, tail, eyes, feet or mouth like this?” organizes the book to explain how physical characteristics of animals help them to survive in their environments.

Miller, D. (2007) *Arctic lights, arctic nights.*

Chronicles the physical and environmental changes that take place in Fairbanks Alaska from the summer solstice throughout the year on the 21st of each month. Information about the changes in the physical environment and the effects of these changes on the wildlife of the region is described.

Peters, L. (2003). *Our family tree: An evolution story.*

The story of the evolutionary process is told from the beginning of life on Earth to present life forms. The focus of this book is on families and how organisms have changed over time as a result of dramatic geologic events on the planet and the adaptable nature of life.

Bardoe, C. (2015). *Gregor Mendel: The friar who grew peas.*

Readable text describing a scientist whose physical and educational needs led him to the religious life, but whose curiosity about inherited traits caused him to become the father of genetics.

3rd grade

3-LS4-1 Biological Evolution: Unity and Diversity

Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

Baylor, B. (1984) *If you are a hunter of fossils*.

A fossil hunter searches the United States for fossils and evidence of life in ancient times. The fossil hunter imagines the environment of these organisms when they were living.

Aliki. (1990) *Dinosaur bones*.

Explains the events that lead to the discovery of dinosaur fossils, the scientists who mapped the evidence of fossils and shared their discoveries with the rest of the scientific community.

Sanders, S. (2002). *Crawdad creek*.

Two young naturalists discover the treasures that are a part of Crawdad Creek, a flowing body of water near their home. While panning for gold, they find different treasures, fossils from ages ago and an arrowhead left by people who may have once also visited this same creek.

Ewart, C. (2014). *Fossil*.

Transports readers back more than ninety million years to the age of the dinosaurs as a young girl finds a fossil, and a day in the life of a pterosaur unfolds. The pterosaur finally lives out its natural life, and layers of Earth and time transform the creature into a fossil--an amazing link to the past waiting to be discovered.

3rd grade

3-LS4-2 Biological Evolution: Unity and Diversity

Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

Cannon, J. (1993). *Stellaluna*.

A fruit bat is separated from her mother and has to survive with a family of birds, mimicking the behavior of this different species.

Patent, D. (1989) *Grandfather's nose: Why we all look alike or different*.

The story of the discovery of genetic science and the details of heredity covered in depth. Through the use of cartoon-like illustrations, complicated ideas about heredity and genetics are described.

McDermot, G. (1987). *Anansi the spider: A tale from the Ashanti*.

In this traditional Ashanti tale, Anansi sets out on a long, difficult journey. Threatened by Fish and Falcon, he is saved from terrible fates by his sons. But which of his sons should Anansi reward?

Arnosky, J. (1996). *Every autumn comes the bear*.

This book tells of a bear and his habits on his yearly visit to the wooded hill behind the author's Vermont farm.

3rd grade

3-LS4-3 Biological Evolution: Unity and Diversity

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Gall, C. (2006). *Dear fish*.

Peter Alan wants to have some fish over for a visit, but what happens when the creatures of the sea take him up on his offer? Something fishy, of course! At first, their visit is all fun and games, but then, things really start to get out of hand. An endpaper identifying over 30 species of fish appearing in the book is an educational bonus.

Barrett, J. (1988). *Animals should definitely not wear clothing*.

Beginning with a porcupine whose quills stick through a piece of clothing, this book goes through the reasons that humans wear clothes – and animals already have their own. A great way to discuss animal adaptations and needs.

Rockwell, A. (2006). *Backyard bear*.

Bears belong in the woods—they can find everything they need to survive there. But what happens when people start knocking down trees and building houses where the woods used to be? This young black bear is about to find out.

Lionni, L. (1974). *Fish is fish*.

A fish and a tadpole are friends. The tadpole becomes a frog and explores the world. Fish jumps out to see for himself but tadpole saves him. Fish realizes he needs water to survive.

3rd grade

3-LS4-4 Biological Evolution: Unity and Diversity

Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.*

Rockwell, A. (2006). *Backyard bear*.

Bears belong in the woods—they can find everything they need to survive there. But what happens when people start knocking down trees and building houses where the woods used to be? This young black bear is about to find out.

Base, G. (2001). *The water hole*.

Exquisitely drawn animals come to a water hole to drink. With each new group of visitors, the pool of crisp, cool water shrinks ever so slightly. By the end, there is no longer anything to drink, and the landscape is parched and dead. All the animals have gone away - until long rains come and revive the lush scenery.

Peet, B. (1981). *The wump world*.

A unique tale that tells the story of a far off planet, all lush and green and untouched, populated by creatures called Wumps. All is well until one day little Martian creatures called the pollutians land on Wump World, forcing the Wumps to hide underground while they tear up and pollute their planet.

Brown, P. (2009). *The curious garden*.

While out exploring one day, a little boy named Liam discovers a struggling garden and decides to take care of it. As time passes, the garden spreads throughout the dark, gray city, transforming it into a lush, green world.

3rd grade

3-ESS2-1 Earth's Systems

Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

Rabe, T. (2004). *Oh say can you say what's the weather today?: All about weather.* The Cat in the Hat and friends travel to learn how weather is studied and predicted. Covers various types of weather, tools used by meteorologists, and how to stay safe during storms.

Gibbons, G. (1993). *Weather forecasting.* With straightforward text and colorful pictures, this behind-the-scenes look at a modern weather station answers basic questions kids ask most, and makes weather forecasting more fun and accessible than ever.

Dean. J. (2013). *Freddy the frogcaster.* Freddy the Frog loves learning about the weather, and he's known for having the best predictions in town. But what happens when the town picnic is almost ruined by a storm that catches the local frogcaster by surprise? Freddy has to step in to save the day!

DeWitt, L. (2015). *What will the weather be?* Uses colorful, simple diagrams to explain meteorology in a fun, engaging way. Perfect for young readers and budding meteorologists, this bestseller is filled with rich climate vocabulary and clear explanations of everyday weather instruments like thermometers and barometers.

3rd grade

3-ESS2-2 Earth's Systems

Obtain and combine information to describe climates in different regions of the world.

Singer, M. (2001). *On the same day in March: A tour of the world's weather*.
What the weather is like on March 17th in spots around the world.

Morris, M. (1995). *Houses and homes*.

The world is full of houses. Big houses and little houses. Houses that stay in one place and houses that move from place to place. Some houses are made of wood or stone; others are made from mud or straw. But all of them are made for families to live in.

Aillaud, C. (2005). *Recess at 20 below*.

In Delta Junction, Alaska, it is recess (and school) as usual at 20 below zero. Join real students as they trudge to school in the dark, bundle up for snowy fun, and share what it is like to live in a cold and beautiful place.

Alberti, T. (2006). *Climates*.

Showcases Earth's diverse climates and will help children compare and contrast polar and boreal climates with those in tropical, subtropical, temperate, mountain and desert climates.

3rd grade

3-ESS3-1 Earth and Human Activity

Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*

Seuss, D. (1949). *Bartholomew and the oobleck*.

This entertaining tale about a king who makes a new type of precipitation fall from the sky can serve as a great conversation-starter about designing solutions to weather-related hazards.

Nivola, C. (2008). *Planting the trees of Kenya: The story of Wangari Mathaai*.

Tells the story of a Kenyan activist who plants trees to combat the drought and erosion occurring in her town.

Rose, C. (2015). *Over in the wetlands: A hurricane-on-the-bayou story*.

Both people and animals were devastated by Katrina, although we often forget about the effect severe storms have on our non-human friends. Read through these pages to discover how animals prepare for a hurricane and what they find when they emerge after the storm.

Simon, S. (2001). *Tornadoes*.

A fact-filled book about severe storms: their structure, intensity and the scale used to measure the intensity, formation, and results of a tornado.

4th grade

4-PS3-1 Energy

Use evidence to construct an explanation relating the speed of an object to the energy of that object.

Young, C. (2011). *Ten birds*.

Ten birds on one side of a bridge try to figure out how to get to the other side. The first nine birds each comes up with a technical solution: a parasail, a wheel-and-pulley, mechanical wings, a catapult, etc. Finally, there is only one bird left.

Kamkwamba, W & Mealer, B. (2012). *The boy who harnessed the wind*.

A drought hit the country of Malawi in sub-Saharan African. Fascinated by machines, William is inspired by a diagram of a windmill in a library book to scavenge parts from the junkyard and makes them into a windmill, mounts it on a tower, and turns on a light with the wind.

Mason, P. *Roller coaster! Motion and acceleration*. (2007).

This exciting book puts the reader in the shoes of a roller coaster designer. Full-color photographs, bold print words, and insets reveal the forces that affect roller coaster motion.

Frazee, M. *Roller coaster*. (2003).

The spare text and dynamic artwork of this picture book capture the anticipation and excitement a young girl experiences on her very first roller coaster ride. A delightful introduction to motion and forces.

4th grade

4-PS3-2 Energy

Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

Llewellyn, C. (2004). *And everyone shouted: "Pull!"*: A first look at forces and motion. Farm animals struggle to get a cart moving using pushes and pulls. A great way to introduce the topics of forces and motion.

Hayes, A. (1995). *Meet the orchestra*. This lyrical introduction to the orchestra begins with animal musicians slowly gathering for the evening performance. Each instrument of the orchestra-from oboes to timpani-is explained, with clear definitions as well as information on how each one sounds.

Berger, M. (1989). *Switch on, switch off*. Gives a clear introduction to electricity-what it is, what it does, and how it is made. The author explains circuits and generators, light bulbs, and plugs; also shows how to make electricity using a magnet, a compass, and a piece of wire.

Stille, D. (2004). *Temperature: Heating up and cooling down*. A blanket isn't hot. So how does a blanket keep you warm? Find the answer to this and other hot facts in this simple introduction to temperature and thermal energy.

4th grade

4-PS3-3 Energy

Ask questions and predict outcomes about the changes in energy that occur when objects collide.

Waring, G. (2009). *Oscar and the cricket: A book about moving and rolling.*

A boy works with his cricket friend to learn how objects and animals move.

Mayer, L. (2013). *Newton and me.*

A boy and his dog explore motion through pulling a wagon, throwing a ball, and pushing a truck. Discusses Newton's laws of gravity and motion.

Koehler, L. (2015). *The little snowplow.*

No one believes that the little snowplow will be able to push and pull the snow as well as the big snowplows.

Bradley, K. (2002). *Energy makes things happen.*

Includes information about the fueling of both objects and people; explains that energy gives both heat and light, that all activities require energy, and that energy can be transferred from one thing to another.

4th grade

4-PS3-4 Energy

Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*

Beaty, A. (2013). *Rosie Revere, engineer*.

A little girl works to design something that will help her aunt fly. After multiple failures and encouragement from her teacher, she finally succeeds. Use to introduce the concept of engineering and persevering to solve a problem.

Spires, A. (2014). *The most magnificent thing*.

A little girl tries to build a magnificent contraption, but can't seem to get it right. She uses diagrams to plan her design, and faces failure before she finally succeeds. Use to introduce engineering concepts.

Drummond, A. (2015). *Energy island: How one community harnessed the wind and changed their world*.

The rather ordinary citizens of Samsø have accomplished something extraordinary—in just ten years they have reduced their carbon emissions by 140% and become almost completely energy independent. A narrative tale and a science book in one, this inspiring true story proves that with a little hard work and a big idea, anyone can make a huge step toward energy conservation.

Mayer, L. (2013). *Newton and me*.

While at play with his dog, Newton, a young boy discovers the laws of force and motion in his everyday activities. Told in rhyme, Lynne Mayer's *Newton and Me* follows these best friends on an adventure as they apply physics to throwing a ball, pulling a wagon, riding a bike, and much more. They will realize that Newton's Laws of Motion describe experiences they have every day, and they will recognize how forces affect the objects around them.

4th grade

4-PS4-1 Waves and Their Applications in Technologies for Information Transfer

Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

Pfeffer, W. (1999). *Sounds all around*.

This book provides a simple explanation of sounds and hearing. It describes how sound waves vibrate through the air, and how tiny bones in the ear vibrate. It also explains how animals hear, and notes that sound waves travel through the solid ground as well as through air and water.

Polacco, P. (1997). *Thunder cake*.

A loud clap of thunder booms, and rattles the windows of Grandma's old farmhouse. "This is Thunder Cake baking weather," calls Grandma, as she and her granddaughter hurry to gather the ingredients around the farm. A real Thunder Cake must reach the oven before the storm arrives. But the list of ingredients is long and not easy to find...

Johnson, R. (2014). *How does sound change? Light and sound waves close up*.

This engaging title provides a close-up look at the science behind different sounds. Readers discover how sound waves travel through different matter and learn about concepts such as echoes, volume, and pitch.

Waring, G. (2009). *Oscar and the bat: A book about sounds*.

When Oscar hears a blackbird singing in the meadow, Bat swoops in to talk to him about sound. A sudden thunderstorm and a visiting cow give Oscar lots of opportunities to learn about sounds that are loud or soft, near or far, deep or high.

4th grade

4-PS4-2 Waves and Their Applications in Technologies for Information Transfer

Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

Berne, J. (2016). *On a beam of light: A story of Albert Einstein*.

A boy rides a bicycle down a dusty road. But in his mind, he envisions himself traveling at a speed beyond imagining, on a beam of light. This brilliant mind will one day offer up some of the most revolutionary ideas ever conceived. From a boy endlessly fascinated by the wonders around him, Albert Einstein ultimately grows into a man of genius recognized the world over for profoundly illuminating our understanding of the universe.

Boyd, L. (2014). *Flashlight*.

A wordless book featuring a boy and his flashlight, illuminating the world around him.

Seuss, D. (2001). *The eye book*.

A lyrical book about all the eyes can see.

Ziefert, H. (2014). *Does an owl wear eyeglasses?*

A series of goofy questions about the visual capacity of various animals and equally silly pictures of eyeglass-wearing oysters, owls, monkeys, etc. Simple, clear explanations about the eyesight of these animals lead into an exploration of why some people need glasses, and other vision-related conditions and products.

4th grade

4-PS4-3 Waves and Their Applications in Technologies for Information Transfer

Generate and compare multiple solutions that use patterns to transfer information.*

Anders, T. (1999). *Chip the little computer; Chip, el pequeno computador.*

Endearing story of persistence and determination written in English and Spanish. Chip, a little computer, learns the value of having faith in his dream while he faces an uncertain outcome and seemingly insurmountable problems.

Rozier, L. (2015) *Jackrabbit McCabe and the electric telegraph.*

Jackrabbit McCabe can outrun anything on the American frontier: horses, trains, and even twisters. So of course, everyone in the town of Windy Flats always counts on his speed when a message has to get out fast. Then something new comes to town: the telegraph, which can send Morse code messages with the speed of electricity.

Asare, M. (2001) *Sosu's call.*

Sosu is a disabled African boy whose bravery eclipses his physical limitations. When storm waters rage one day, Sosu drags himself to the drum shed, where he beats out a rhythm to call the men back from their work, to help save the others.

Liukas, L. (2015). *Hello Ruby.*

When Ruby's father travels out of town, he leaves her with a challenge: to find five gems. Armed with four scraps of paper, she uses her analytic skills to draw a map of the imaginary world where the gems are hidden, and children follow Ruby as she looks for them. Involves a loose tie-in to a host of coding concepts, such as sequencing, patterns, loops, and pattern recognition.

4th grade

4-LS1-1 From Molecules to Organisms: Structures and Processes

Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Markle, S. (2013). *What if you had animal teeth?*

A fun exploration of how a child would adapt to having various types of animal teeth.

Jenkins, S. (2008). *What do you do with a tail like this?*

Explores different animal body parts including tails, ears, and mouths, and explains how each variation helps different animals survive.

Aston, D. (2014) *A seed is sleepy.*

Describes the diverse and complex world of seeds and their adaptations for survival.

Stewart, M. (2014). *Feathers: Not just for flying.*

Young naturalists meet sixteen birds in this elegant introduction to the many uses of feathers.

4th grade

4-LS1-2 From Molecules to Organisms: Structures and Processes

Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Hickman, P. (1998). *Animal senses: How animals see, hear, taste, smell and feel*. Reveals the extraordinary ways animals sense their environment. Easy-to-do experiments and activities show kids how to compare animal senses to their own.

Hall, K. (2005). *Animal sight*. From a five-part series on animal sense. In this series beginning readers discover the interesting ways that animals use their senses. Each book focuses on one of the five senses and describes how a variety of animals--from large mammals to tiny insects--use that sense.

Davies, N. (2004). *Bat loves the night*. A bat uses echolocation to search for her evening meal.

Stojic, M. (2009). *Rain*. The animals of the African savanna use their senses to predict and enjoy rain.

4th grade

4-ESS1-1 Earth's Place in the Universe

Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

Hooper, M. (2015). *The pebble in my pocket: A history of our earth.*

Tells the story of Earth's geologic history by tracing the environmental and physical changes that have taken place to a single pebble found by a child.

Aston, D. (2015). *A rock is lively.*

Gorgeous and informative introduction to the fascinating world of rocks. From dazzling blue Lapis Lazuli to volcanic Snowflake Obsidian, an incredible variety of rocks are showcased in all their splendor.

Baylor, B. (1984). *If you are a hunter of fossils.*

A fossil hunter searches the United States for fossils and evidence of life in ancient times. The fossil hunter imagines the environment of these organisms when they were living.

Brotzge, J. (2009). *My pet rock, Greg Granite.*

Ever wonder where your pet rock came from? Where it's been? What it's seen? My Pet Rock Greg Granite follows the adventurous life of Greg, an unassuming piece of granite with a very rocky beginning! Greg Granite is an educational beginner to the world of geology.

4th grade

4-ESS2-1 Earth's Systems

Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

Kalman, B. (2009). *What shapes the land?*

Presents various landforms and the processes that shape them, some rapid like volcanic eruptions, and some slow, like erosion and weathering. Includes labeled photographs, glossary, table of contents, and index.

Koontz, R. (2006). *Erosion: Changing Earth's surface.*

A non-fiction read aloud that teaches about the natural forces of erosion and how they shape the land.

McKinney, B. (1998). *A drop around the world.*

A rhyming book following a drop of water around the world as it changes form and affects the earth in various ways.

Vieira, J. (1997). *Grand Canyon: A trail through time.*

Describes the formation of one of our nation's greatest geological treasures.

4th grade

4-ESS2-2 Earth's Systems

Analyze and interpret data from maps to describe patterns of Earth's features.

Hartman, G. (1993). *As the crow flies: A first book of maps.*

A clever introduction to the concept of mapping. Several animals take a journey and then a lovely map illustrates the landscape.

Rabe, T. (2002). *There's a map on my lap! All about maps.*

The Cat in the Hat introduces beginning readers to maps—the different kinds (city, state, world, topographic, temperature, terrain); their formats (flat, globe, atlas, puzzle); the tools we use to read them (symbols, scales, grids, compasses); and funny facts about the places they show us.

Ritchie, S. (2009). *Follow that map! A first book of mapping skills.*

Explains and demonstrates key mapping concepts. Follows Sally and her friends as they search for Max and Ollie, a mischievous dog and cat on the lam from the backyard. Sally and friends take an imaginative trip through the neighborhood, city and country, around the world and beyond.

4th grade

4-ESS3-1 Earth and Human Activity

Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Bouler, O. (2011). *Olivia's birds: Saving the gulf.*

One 11 year-old girl can make a difference-as budding ornithologist and artist Olivia Bouler has proven, single-handedly raising over \$175,000 for the Gulf oil spill recovery.

Bang, M. & Chisholm, P. (2014). *Buried sunlight: How fossil fuels have changed the earth.*

What are fossil fuels, and how did they come to exist? This engaging, stunning book explains how coal, oil, and gas are really "buried sunlight," trapped beneath the surface of our planet for millions and millions of years.

Rand, G. (1994). *Prince William.*

In Prince William Sound, a little girl named Denny finds a baby seal covered with oil. How can she save its life?

Rockwell, A. (2009). *What's so bad about gasoline? Fossil fuels and what they do.*

The world is dependent on oil as its main source of energy. Although oil is plentiful right now, the supply will eventually run out, and even worse, burning oil is very damaging to the environment. What alternatives can help us use less oil and how can we protect the environment?

4th grade

4-ESS3-2 Earth and Human Activity

Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*

Barrett, J. (1982). *Cloudy with a chance of meatballs*.

A humorous look at zany fictional weather, and the steps a community takes to combat it.

Nivola, C. (2008). *Planting the trees of Kenya: The story of Wangari Mathaai*.

Tells the story of a Kenyan activist who plants trees to combat the drought and erosion occurring in her town.

Stallone, L. (1992). *The flood that came to Grandma's house*.

Rain from Hurricane Agnes forces citizens to sandbag the river, but finally, they must evacuate. Humorous but realistic illustrations show children what happens when a house fills with water and the mess left in its wake. It also reassures them about handling natural disasters.

Lyon, G. (1990). *Come a tide*.

This book uses the diction and homey imagery of a down-to-earth rural community and its first-person text (of a Grandma) to portray responding to a flood with common sense and humor.

5th grade

5-PS1-1 Matter and Its Interactions

Develop a model to describe that matter is made of particles too small to be seen.

Walliman, D. (2016). *Professor Astrocat's atomic adventure*.

Professor Astrocat takes the reader on a journey through the incredible world of physics. Learn about energy, power and the building blocks of you, me and the universe.

Kelsey, E. (2012). *You are stardust*.

Introduces the idea that every tiny atom in our bodies came from a star that exploded long before we were born and continues on to explain that we are intimately connected to the natural world.

Berne, J. (2016). *On a beam of light: A story of Albert Einstein*.

Provides an overview of Einstein's life and how his ideas shaped scientific thinking worldwide. Could be used to jumpstart a conversation on portraying complex ideas in a simple fashion.

Wells, R. (1995). *What's smaller than a pygmy shrew?*

Compares the size of a tiny animal (a pygmy shrew) to an insect (a ladybug), which is in turn contrasted with one-celled animals, bacteria, molecules, atoms, and sub-atomic particles.

5th grade

5-PS1-2 Matter and Its Interactions

Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

Mason, A. (2006). *Change it! Solids, liquids, gases and you.*

Professor Astrocat takes the reader on a journey through the incredible world of physics. Learn about energy, power and the building blocks of you, me and the universe.

Stille, D. (2004). *Matter: See it, touch it, taste it, smell it.*

The states of matter (solids, liquids, and gases) are explained and demonstrated. Includes an experiment to try.

Slade, S. (2014). *Splat! Wile E. Coyote experiments with states of matter.*

Wile E. Coyote wants nothing more than to get hold of Road Runner. Watch as he uses liquids, solids, and gases in clever ways to catch that bird. Will the states of matter help him succeed? Or will his schemes dry up in the hot desert sun?

Bang, M. (2017). *Rivers of sunlight: How the sun moves water around the earth.*

Readers will learn about the constant movement of water as it flows around the Earth and the sun's important role as water changes between liquid, vapor, and ice. From sea to sky, the sun both heats and cools water, ensuring that life can exist on Earth. How does the sun keep ocean currents moving, and lift fresh water from the seas?

5th grade

5-PS1-3 Matter and Its Interactions

Make observations and measurements to identify materials based on their properties.

5-PS1-4 Matter and Its Interactions

Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Braun, E. (2012). *Joe-Joe the wizard brews up solids, liquids and gases.*

Joe Joe the wizard has a problem. His spell to turn homework into chocolate bars has gone to syrup! Come along to learn how solids, liquids, and gases help Joe Joe with his sticky mess.

Green, D. (2008). *Physics: Why matter matters.*

Portrays physics concepts as goofy characters with traits that help explain complex ideas.

Yorifuji, B. (2012). *Wonderful life with the elements: The periodic table personified.*

In this *super* periodic table, every element is a unique character whose properties are represented visually: heavy elements are fat, man-made elements are robots, and noble gases sport impressive afros. You'll also learn about each element's discovery, its common uses, and other vital stats like whether it floats—or explodes—in water.

Munroe, R. (2015). *Thing explainer: Complicated stuff in simple words.*

Uses line drawings and simple words to provide explanations for some of the most interesting stuff there is, including the pieces everything is made of (the periodic table).

5th grade

5-PS2-1 Motion and Stability: Forces and Interactions

Support an argument that the gravitational force exerted by Earth on objects is directed down.

Prasad, K. (2004). *Why can't I jump very high? A book about gravity.*

A simple question asked on a basketball field sparks a discussion on gravity that carries on into the classroom. Coupled with demonstrations, which can be easily duplicated at home or in the classroom.

Chin, J. (2014). *Gravity.*

How do we stay put on our planet and not float away into outer space? What makes things fall to the ground from high places? Introduces readers to the concept of gravity, presenting the information in highly understandable language and captivating paintings.

Floca, B. (2009). *Moonshot: The flight of Apollo 11.*

Describes the adventure and discovery of the Apollo 11 mission. Could be used to jumpstart conversation about the role of gravity.

Walliman, D. (2013). *Professor Astrocat's frontiers of space.*

Characters such as Professor Astro Cat and his assistant Astro Mouse give a humorous, conversational tone to this nonfiction book's information about space, our solar system, gravity, and changing space exploration technology.

5th grade

5-PS3-1 Energy

Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

McKinney, B. *Pass the energy please* (2000).

Each of nature's creatures "passes the energy" in its own unique way. In this upbeat rhyming story, the food chain connects herbivores, carnivores, decomposers, and plants together in a fascinating circle of players.

Bang, M. (2012). *Ocean sunlight: How tiny plants feed the seas*.

Explains how energy from the sun moves from tiny phytoplankton up to the largest whale in the deep sea food web.

Bradley, K. (2002). *Energy makes things happen*.

This book introduces the concept of energy and explains how it is used through examples such as kites flying in the wind, moving rocks, and sunlight helping plants make food.

Bang, M. (2009). *Living sunlight: How plants bring the earth to life*.

Written from the point of view of the sun, this lyrical book teaches the basics of photosynthesis and the role the sun plays in keeping plant and animal life alive and thriving on earth.

5th grade

5-LS1-1 From Molecules to Organisms: Structures and Processes

Support an argument that plants get the materials they need for growth chiefly from air and water.

Lauber, P. (1994). *Be a friend to trees*.

Demonstrate the process of photosynthesis, step-by-step: how trees make food in their leaves and how they release the oxygen we need to breathe, as well as other information on why we need trees to survive.

Bang, M. (2009). *Living sunlight: How plants bring the earth to life*.

Written from the point of view of the sun, this lyrical book teaches the basics of photosynthesis and the role the sun plays in keeping plant and animal life alive and thriving on earth

Notkin, L. (1997). *The magic school bus gets planted: A book about photosynthesis*.

Busy, colorful illustrations and dialogue tell a story about Mrs. Frizzle and her class exploring photosynthesis.

O'Donnell, L. (2007). *Understanding photosynthesis with Max Axiom, super scientist*.

Follows the adventures of Max Axiom as he explains the science behind photosynthesis. Written in graphic-novel format.

5th grade

5-LS2-1

Ecosystems: Interactions, Energy, and Dynamics

Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Heinz, B. (2006). *Butternut hollow pond*.

In the course of a full day at Butternut Hollow Pond, readers meet water striders, snapping turtles, herons, woodchucks, and other animals that live in the pond. As each one is introduced, readers learn how that creature fits into the habitat's food chain.

Lauber, P. (2016). *Who eats what? Food chains and food webs*.

Part of the Read-and-Find-Out series, this book explores food webs and why every link in a food chain is important.

Slade, S. (2010). *What if there were no gray wolves?*

Deciduous forest ecosystems can be found on nearly every continent. Countless animals and plants live in them. So what difference could the loss of one animal species make? Follow the chain reaction, and discover how important gray wolves are.

Bial, R. (2001). *A handful of dirt*.

Soil may not be alive, but amazingly, multitudes of microscopic creatures live there, battling it out in an eat-or-be-eaten world. These tiny creatures, invisible to our eyes, provide food for the insects that in turn feed the reptiles and mammals that live in and above the soil.

5th grade

5-ESS1-1 Earth's Place in the Universe

Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.

Lowe, S. (2015). *Cosmos: The infographic book of space*.

An engaging book of infographics depicting various concepts about space and the solar system, including planetary distances.

Sisson, S. (2014). *Star stuff: Carl Sagan and the mysteries of the cosmos*.

Tells the story of astrophysicist Carl Sagan, from his days stargazing from the bedroom window of his Brooklyn apartment, through his love of speculative science fiction novels, to his work as an internationally renowned scientist who worked on the Voyager missions exploring the farthest reaches of space.

Simon, S. (1989). *The sun*.

Explores the wonders of the sun, from the constant nuclear explosions at its core to the sea of boiling gases that forms the surface

5th grade

5-ESS1-2 Earth's Place in the Universe

Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Gibbons, G. (1995) *The reason for seasons*.

How the position of Earth in relation to the sun causes seasons.

Bailey, J. (2004). *Sun up, sun down: The story of day and night*.

Follows the sun from dawn to dusk to explain how light rays travel, how shadows are formed, how the moon lights up the night sky, and more.

Zopfi, G. (2014). *Shadowman*.

This book of lights both small and tall follows Shadowman, a being who lives lost in the shadows without a guiding light to set him free. Struggling with being defined by others, Shadowman has to embrace his own blinding nature in order to explore the world outside.

5th grade

5-ESS2-1 Earth's Systems

Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Cole, J. *The magic school bus and the climate challenge*. (2010).

Ms. Frizzle takes her students soaring around the earth to study climate change, through the atmosphere to understand the greenhouse effect, above solar and wind power installations to see alternative energy sources, and above their town to observe carbon dioxide emissions. Back at school and at home, they start putting energy-saving practices into effect.

Bang, M. & Chisholm, P. (2014) *Buried sunlight: How fossil fuels have changed the earth*.

What are fossil fuels, and how did they come to exist? This engaging, stunning book explains how coal, oil, and gas are really "buried sunlight," trapped beneath the surface of our planet for millions and millions of years.

Rockwell, A. (2006). *Why are the ice caps melting? The dangers of global warming*.

Explains in simple language the greenhouse effect, the sources of global warming, what the effects of warming have been so far and what they might be in the future.

Chambers, C. (2016). *Stickmen's guide to Earth's atmosphere in layers*.

The Stickmen will take you on a tour of satellites in orbit, aircraft riding jet streams, and storms in the lowest layer of Earth's atmosphere.

5th grade

5-ESS2-2 Earth's Systems

Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

Strauss, R. (2007). *One well: The story of water on earth.*

Looking at all the water on Earth—in the atmosphere, the oceans, lakes, ponds, rivers, and rain as "One Well" into which all life dips to survive—Strauss presents a timely discussion of the use and abuse of a not-so-limitless resource.

Bang, M. (2014) *Common ground: The water, earth and air we share.*

A simple story of our planet's natural resources with jewel-like paintings by Caldecott Honor author Molly Bang. Through the example of a shared village green and the growing needs of the townspeople who share it, Molly Bang presents the challenge of handling our planet's natural resources.

Mulder, M. (2014). *Every last drop: Bringing clean water home.*

Looks at why the world's water resources are at risk and how communities around the world are finding innovative ways to quench their thirst and water their crops.

5th grade

5-ESS3-1 Earth and Human Activity

Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Paul, M. (2015) *One plastic bag: Isatou Ceesay and the recycling women of the Gambia*.

Plastic bags are cheap and easy to use. But what happens when a bag breaks or is no longer needed? In Njau, Gambia, people simply dropped the bags and went on their way. One plastic bag became two. Then ten. Then a hundred. Isatou Ceesay found a way to recycle the bags and transform her community.

Schuch, S. (2002). *A symphony of whales*.

Glashka can hear the voices of the whales in her dreams..but with that mysterious power comes great responsibility. When she discovers thousands of whales trapped in a rapidly freezing inlet, she knows it is up to her to gather the people of her town to help them.

Bouler, O. (2011). *Olivia's birds: Saving the gulf*.

One 11 year-old girl can make a difference-as budding ornithologist and artist Olivia Bouler has proven, single-handedly raising over \$175,000 for the Gulf oil spill recovery.

Drummond, A. (2015). *Energy island: How one community harnessed the wind and changed their world*.

The rather ordinary citizens of Samsø have accomplished something extraordinary—in just ten years they have reduced their carbon emissions by 140% and become almost completely energy independent. A narrative tale and a science book in one, this inspiring true story proves that with a little hard work and a big idea, anyone can make a huge step toward energy conservation.

3rd-5th grade

3-5-ETS1-1 Engineering Design

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 Engineering Design

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Berne, J. (2016) *On a beam of light: A story of Albert Einstein*.

Provides an overview of Einstein's life and how his ideas shaped scientific thinking worldwide. Could be used to jumpstart a conversation on portraying complex ideas in a simple fashion.

Fleming, C. (2013) *Papa's mechanical fish*.

A fictional account based on events in the life of eccentric inventor Lodner Phillips as told from the perspective of his daughter, Virena. With a lot of persistence and a little bit of help, Papa creates a submarine that can take his family for a trip to the bottom of Lake Michigan.

Wallmark, L. (2015). *Ada Byron Lovelace and the thinking machine*.

Ada Lovelace, the daughter of the famous romantic poet, Lord Byron, develops her creativity through science and math. When she meets Charles Babbage, the inventor of the first mechanical computer, Ada understands the machine better than anyone else and writes the world's first computer program in order to demonstrate its capabilities.

Yamada, K. (2016). *What do you do with a problem*.

A child struggles with the worry and anxiety that come with an unexpected problem. The longer the problem is avoided, the bigger it seems to get. But when the child finally musters up the courage to face it, the problem turns out to be something quite different than it appeared.

3rd-5th grade

3-5-ETS1-3 Engineering Design

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Beaty, A. (2013). *Rosie Revere, engineer*.

A little girl works to design something that will help her aunt fly. After multiple failures and encouragement from her teacher, she finally succeeds. Use to introduce the concept of engineering and persevering to solve a problem.

Spires, A. (2014). *The most magnificent thing*.

A little girl tries to build a magnificent contraption, but can't seem to get it right. She uses diagrams to plan her design, and faces failure before she finally succeeds. Use to introduce engineering concepts.

Offill, J. (2011). *11 experiments that failed*.

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. Here are 12 "hypotheses," as well as lists of "what you need," "what to do," and "what happened" that are sure to make young readers laugh out loud as they learn how to conduct science experiments.

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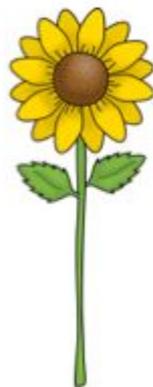


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