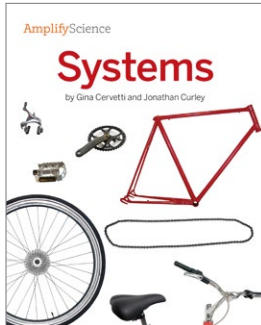


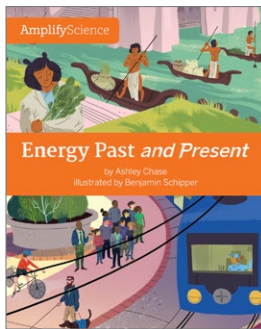
## Energy Conversions: Blackout in Ergstown



ISBN: 978-1-943228-41-6  
Lexile Measure: 810L

### Systems

*Systems* introduces students to a concept that is essential to the unit: what makes a system. The book's introduction defines structure and function and uses the example of a bicycle to illustrate how parts have a structure that allows them to perform specific functions. Once all the parts are connected, that makes a system. The next example presented is a home, which is a system made of systems—plumbing, heating, electrical, etc. Each system is made up of parts that work together, and all the smaller systems work together to make the whole system of the home. In turn, the home is part of larger municipal systems, such as the public water system and the electrical energy system. The final pages of the book discuss system failure and encourage students to think further about why systems are an important concept and what systems they see in their daily lives. This book sets the context for the unit and introduces vocabulary and concepts that will be used extensively throughout the unit.



ISBN: 978-1-943228-25-6  
Lexile Measure: 930L

### Energy Past and Present

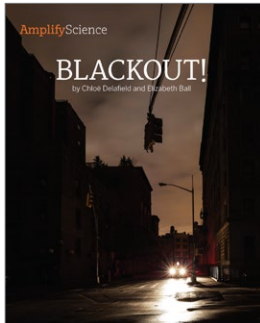
*Energy Past and Present* looks at how people use electrical devices to do various tasks in their everyday lives and how people accomplished these same tasks before electrical devices were invented. Each spread includes a blurb about the present day and a blurb about the past with information about the transfer and conversion of energy. For example, the section about hot baths explains where hot water comes from in a contemporary home and how ancient Romans heated water for communal bathing pools. The pages are full of intriguing details and fascinating information, and the concluding pages encourage students to learn lessons from the past that may help them use less electrical energy. The book delivers important unit content in the context of an engaging and lively exploration of life with and without electrical devices.



ISBN: 978-1-943228-26-3  
Lexile Measure: 900L

### Sunlight and Showers

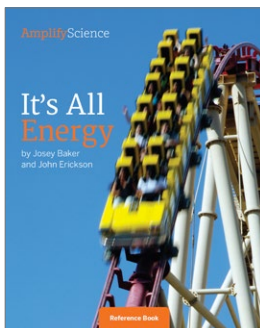
*Sunlight and Showers* introduces readers to Dr. Ashok Gadgil, an engineer who uses his scientific knowledge to address real-world problems. Dr. Gadgil's students work together as a team to design a solar water heater for use in Guatemala. The book describes various ways the young engineers solve the design problem—working as a team, investigating the issues and gathering data, and designing and testing a solution. The book demonstrates that solar energy is useful as an alternative source of energy and models the practices of engineering by providing a compelling example of engineers solving real problems for real people. The book allows students to reflect on how they have been like engineers and to anticipate more behaviors as they continue being engineers throughout the unit.



ISBN: 978-1-943228-27-0  
Lexile Measure: 750L

## Blackout!

*Blackout!* is formatted like a series of news articles about real-life blackouts that have occurred around the world. Each blackout has a different cause, from a runaway truck crashing into utility poles to an overburdened electrical energy system failing in a heat wave. The articles encourage students to think about energy sources, energy conversion and transfer, and what happens when one part of a system fails. The readings reinforce the role of the electrical energy system, including the grid, and plant the idea that blackouts occur for a variety of reasons. Different parts of the system, including sources and converters, are vulnerable to failure. Sometimes getting through blackouts and finding solutions requires trade-offs. These ideas support students' thinking and provide secondhand evidence as they investigate the causes of and remedies for the blackouts occurring in Ergstown.



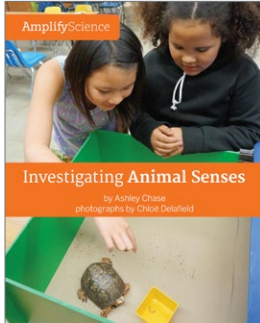
ISBN: 978-1-943228-29-4  
Lexile Measure: N/A

## It's All Energy

*It's All Energy* is the reference book for this unit, giving students a place to search for information about forms of energy, energy converters, energy sources, and energy transfer. The book defines energy, introduces and gives examples of energy forms (electrical, motion, sound, thermal, light, and chemical), and discusses how these energy forms are harnessed and converted for human use. Students can also compare the renewability, reliability, cost, and environmental impact of various energy sources. As they delve into the problem context, students can use the reference book to match energy converters with sources and compare renewable and nonrenewable energy sources. This book serves to deliver and reinforce important content throughout the unit, as well as provide students with a rich resource to support their firsthand investigations.

Reference Book

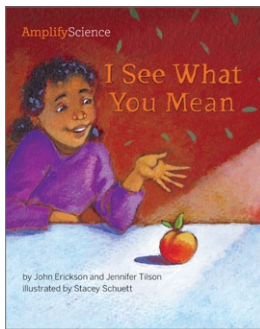
## Vision and Light: Investigating Animal Eyes



ISBN: 978-1-945192-44-9  
Lexile Measure: 760L

### Investigating Animal Senses

Inspired by a real class field trip, *Investigating Animal Senses* follows elementary students engaged in the practices of scientific investigation. The students plan and conduct their own investigations with animals to determine which sense each animal depends on more for finding food: vision or smell. The practices modeled in this story include asking questions, planning and conducting an investigation, and controlling variables. In addition to modeling key practices, *Investigating Animal Senses* helps set the context for the unit. It also reinforces the concepts that light, sound, and scent carry information about the environment and that animals have structures that allow them to sense their environment.



ISBN: 978-1-945192-47-0  
Lexile Measure: 640L

### I See What You Mean

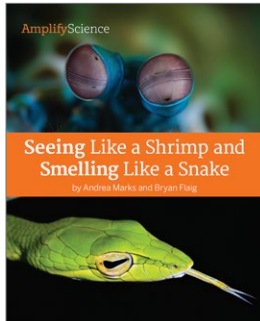
Framed with a narrative about two friends exploring light at home, *I See What You Mean* traces the path of light in vision, from source to object to eye. Through the course of the book, the friends build a detailed explanation of how vision works. Combined with students' experiences working with the Vision and Light Simulation, *I See What You Mean* supports students in understanding a key idea that is difficult to observe firsthand—light needs to reflect off an object and get to the eye for an animal to see the object.



ISBN: 978-1-945192-50-0  
Lexile Measure: 820L

### Crow Scientist

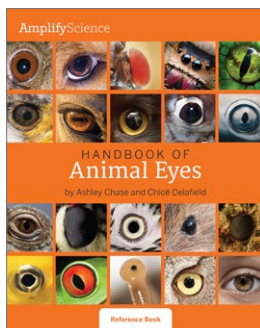
*Crow Scientist* profiles prominent wildlife biologist John Marzluff. The book focuses on Marzluff's investigation of the American crow's ability to recognize individual human faces. This investigation required careful varying of an interesting variable: the face. Marzluff and his team created masks of different faces. By trapping (and immediately releasing) wild crows while wearing masks of certain faces, the team trained the crows to associate those faces with danger. Masks of other faces were used as "neutral" versions of this variable. The scientists kept all other variables besides the faces constant. Marzluff and his team found that crows consistently scolded (and often attacked) people wearing masks of "dangerous" faces, evidence that the crows recognized and remembered those faces. *Crow Scientist* models controlling variables in a scientific investigation, and also reinforces concepts around sensory processing. Through reading the book, students learn that animal brains process information by forming an image and comparing it to memories; then, animals can make decisions that help them survive.



ISBN: 978-1-945192-53-1  
Lexile Measure: 880L

## Seeing Like a Shrimp and Smelling Like a Snake

This engaging book explores all five senses, focusing on a different animal for each sense. Students read about a mantis shrimp's vision, a star-nosed mole's sense of touch, a catfish's sense of taste, a fennec fox's sense of hearing, or a snake's sense of smell. These fascinating examples of animal senses help students understand that vision (and other senses) can be different for different animals and that some animals are more sensitive than others. The book also highlights each sense in humans, and includes hints about the ways vision can be different in nocturnal versus diurnal animals. This will help students figure out the mystery they are presented with in the unit—why nighttime highway lights are causing problems for nocturnal Tokay geckos. This book also sets the context for students' final investigations, inviting them to consider how different animals have different sensitivities to information about their environment.



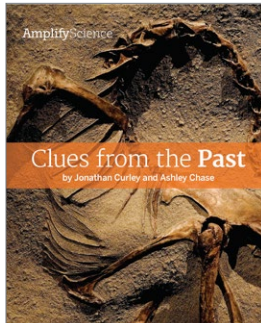
ISBN: 978-1-945192-56-2  
Lexile Measure: N/A

## Handbook of Animal Eyes

This reference book includes cross-section diagrams of eyes, vivid close-up photos, and accessible text about the eyes of humans and the eyes of a diverse set of 20 other animals. Each entry contains information about the structures of that animal's eyes, such as the sensitivity of the receptors. Also included are descriptions of how vision helps the animal survive. Students return to *Handbook of Animal Eyes* multiple times throughout the course of the unit to support their understanding of vision and eye structures. This book supports students' firsthand investigations as they learn about vision and eye structures and how the brain processes information, and as they discover the role of different types of light receptors in nocturnal and diurnal animals.

Reference Book

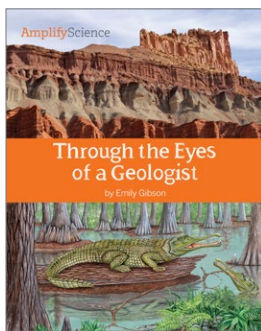
## Earth's Features: Mystery in Desert Rocks Canyon



ISBN: 978-1-945192-29-6  
Lexile Measure: 670L

### Clues from the Past

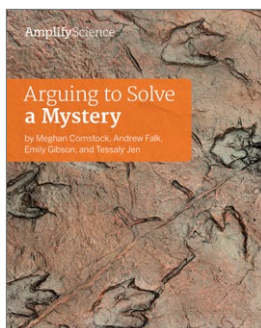
*Clues from the Past* follows a paleontologist named Rodolfo Coria through his process of making inferences about a dinosaur called *Argentinosaurus* based on his observations of fossils. Of course, Coria can't observe the *Argentinosaurus* directly, so he must combine his observations of fossils with what he knows about existing animals to infer what the dinosaur was like. To support students in understanding how fossils form, *Clues from the Past* explains the process of sedimentary rock formation, and explains how this relates to using fossils as clues from the past. The book models the scientific practice of making inferences by providing an example of a real scientist at work.



ISBN: 978-1-945192-32-6  
Lexile Measure: 890L

### Through the Eyes of a Geologist

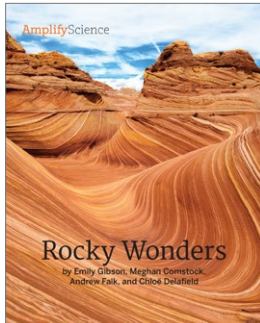
*Through the Eyes of a Geologist* uses an innovative format to explore how geologists make inferences about the past based on rocks and fossils. The book invites students to view present-day landscapes through the eyes of a geologist by making careful observations. Students learn what geologists can infer from observing rocks and fossils in a mountainous area of Canada that used to be an ocean, a desert area of Utah that used to be a swamp, and more. For each place, students can observe photographs of the present-day landscape and read about what it is like in the present, along with information about rocks and fossils that have been found there. Then, the book presents a detailed illustration of what the place may have looked like millions of years ago, with explanations of how geologists have made inferences about what the place was like in the past. *Through the Eyes of a Geologist* models the practice of making inferences based on observations and scientific principles, and provides context for the ideas that students are learning.



ISBN: 978-1-945192-35-7  
Lexile Measure: 870L

### Arguing to Solve a Mystery

*Arguing to Solve a Mystery* explores the fascinating mystery of why the dinosaurs went extinct, and describes how scientists use argumentation to further our understanding of what might have happened. The book follows the work of geologist Walter Alvarez, exploring his claim that a massive asteroid was the catalyst for the dinosaur extinction event. The evidence that Alvarez used to support this claim is described in detail. Another claim, that volcanoes caused the extinction, is proposed by geologist Courtney Sprain, and her work finding evidence to support new and more complete arguments about what happened is explained. Through reading about the mystery of why the dinosaurs went extinct, students learn that argumentation is the way in which science moves forward. *Arguing to Solve a Mystery* models the scientific practice of argumentation, and helps students understand how evidence can be used in support of claims.



ISBN: 978-1-945192-38-8  
Lexile Measure: 850L

## Rocky Wonders

*Rocky Wonders* introduces students to many spectacular rock formations around the world and points out that while the rock formations are all very different, erosion caused them all to look the way they do. Beautiful photographs, detailed diagrams, informative descriptions, and a lively “Hazard Warning!” section combine to help students engage with the science behind rock formations. From the mushroom-shaped columns of rock in the White Desert in Egypt to the steep and narrow Black Canyon in Colorado, this book offers students an opportunity to apply ideas about erosion to understanding how many different rock formations came to be. *Rocky Wonders* delivers important content about erosion as well as provides real-world contexts in which students can see the effect of this process.



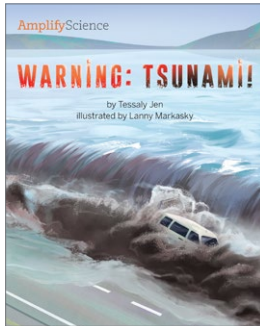
ISBN: 978-1-945192-41-8  
Lexile Measure: N/A

## Fossil Hunter's Handbook

*Fossil Hunter's Handbook* is the reference book for this unit. The book provides detailed information about fossils, rocks, the process of sedimentary rock formation, and environments in which fossils are likely to form. The “Fossils” section includes information on fossils from many different plants and animals and explains what these fossils can tell us about the past. The “Rock” section has entries for eight different types of rock, including information about how and where they form. The “Environments” section of the book describes these places and notes the sediments that commonly build up in them. Students use this reference book extensively in the unit to gather evidence, identify rocks and fossils, and learn about the process of sedimentary rock formation. *Fossil Hunter's Handbook* supports students' firsthand investigations by providing information that they can combine with their observations to make inferences about what environments may have been like in the past.

Reference Book

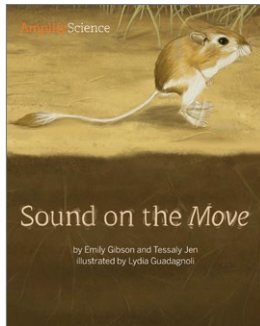
## Waves, Energy, and Information: Investigating How Dolphins Communicate



ISBN: 978-1-943228-37-9  
Lexile Measure: 930L

### Warning: Tsunami!

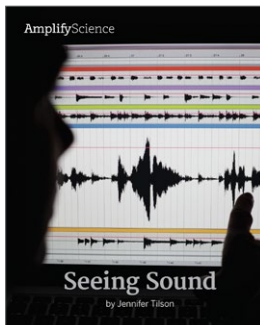
*Warning: Tsunami!* explores the exciting topic of tsunamis in order to demonstrate how waves travel. Tsunamis provide a memorable depiction of the fact that waves are patterns of motion, not transporters of matter across distances. The book begins with a description of tsunamis and diagrams to show the sequence of events when a tsunami occurs. The book then explores how tsunamis are different from regular ocean waves and from sound waves. The book specifies that what actually travels in a tsunami is the energy of the wave, not the water. The conclusion explains tsunami detection and safety. *Warning: Tsunami!* provides students with a compelling example to help them understand that a wave is a pattern of motion. The book also helps students understand the characteristics shared by all waves.



ISBN: 978-1-943228-31-7  
Lexile Measure: 760L

### Sound on the Move

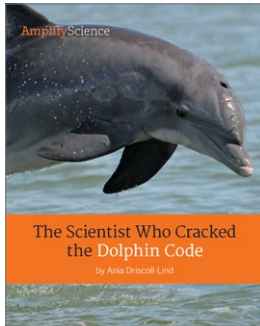
*Sound on the Move* introduces the idea that sound waves travel as a series of collisions of particles that are too small to see. The engaging context of animal communication through air, water, and ground helps students solidify their understanding of tricky concepts. The book begins with an introduction to animal communication, human communication, and vocal structures. Clear diagrams overlaid on beautiful nature illustrations help students understand the differences in how particles are arranged in air, water, and ground. Diagrams similar to those in the Sound Waves Simulation show how sound waves travel at the particle level. Three organisms—mountain bluebirds, sperm whales, and kangaroo rats—serve as examples of animals using sound to communicate. This book delivers essential unit content about particles, sound waves, patterns, and vibration.



ISBN: 978-1-943228-35-5  
Lexile Measure: 760L

### Seeing Sound

*Seeing Sound* introduces students to professionals who use visual representations of sound in their jobs: scientists, audiologists, sound engineers, and doctors. The book provides examples that show the importance of visual representations of sound, such as waveforms, in various kinds of work. Students learn that scientists investigate sound for many reasons, including to study how animals communicate. A section about audiologists explains how these professionals administer hearing tests and make visual representations of the sounds that people can hear. Students find out that sound engineers can change the amplitude and wavelength of recorded sounds to make movies and music sound better to listeners. Finally, students may be surprised to learn that doctors can use sound to diagnose and heal patients. The book reinforces science content about the properties of sound waves, including wavelength, pitch, amplitude, and volume, and how these properties can be visually represented and even manipulated to change a sound. The book shows students that their knowledge about sound applies to the real world and gives them additional context for looking at waveforms.



ISBN: 978-1-943228-33-1  
Lexile Measure: 860L

## The Scientist Who Cracked the Dolphin Code

*The Scientist Who Cracked the Dolphin Code* profiles a marine biologist named Laela Sayigh, with a focus on her study of bottlenose dolphin communication. The book follows her years of research and data analysis, culminating in her discovery of how dolphins recognize each other based on the pitch of their signature whistles. Colorful visual representations provide a clear depiction of how changes in pitch can be recognized and sorted by their differences. The final pages of the book discuss how Sayigh's research has raised new questions for further study. *The Scientist Who Cracked the Dolphin Code* depicts a scientist engaging in investigations of sound waves and dolphin communication, offering students a practical model of the kind of investigations they are doing in the unit and of scientific practices in general.



ISBN: 978-1-945191-00-8  
Lexile Measure: N/A

## Patterns in Communication

*Patterns in Communication* is the reference book for this unit. It provides students a place to find information about how and why various animals use patterns to communicate. The introduction explains how most of these patterns travel in waves and explains some features that all waves have in common. The book is divided into four sections focusing on different types of organisms: marine mammals, birds, insects, and humans. Each section offers many accessible examples of auditory and visual communication, such as bee dances and dolphin whistles. Each example includes an explanation of the mechanisms involved in the communication, the patterns that the organisms use, and the reasons for the communication. In addition to reinforcing key unit content, this reference book supports students' firsthand investigations of waves and serves as a resource from which students can gather secondhand evidence about features of sound waves.

Reference Book



# About the books

Each unit of Amplify Science K–5 includes five student books authored by the curriculum experts at the University of California, Berkeley’s Lawrence Hall of Science. These age-appropriate books were built specifically to enhance students’ experiences in the Amplify Science curriculum. The books engage students with science phenomena that are too big, too small, too far, happen too slowly, or are too dangerous for students to engage with firsthand in the classroom, while reinforcing reading and literacy skills. These content-rich, nonfiction and informational texts provide opportunities for students to search for evidence relevant to their firsthand investigations, see science practices and dispositions modeled, extend their science knowledge, and provide real world connections as they master reading-to-learn, and close reading skills, and construct evidence-based arguments. The five books in each unit include one book for approximately every five days of instruction and one reference book that students draw upon throughout the 20-lesson units.



**THE LAWRENCE  
HALL OF SCIENCE**  
UNIVERSITY OF CALIFORNIA, BERKELEY

The program is designed to provide strong support in how to read like a scientist and for the development of vocabulary, language, and reading comprehension particularly relevant to reading informational text. It can serve as a complement to an English Language Arts program that addresses other literacy components (e.g., skill-based or fluency-oriented literacy instruction). Big books come with the program for all titles in grades kindergarten and 1.

## Lexile Levels

The Lexile<sup>1</sup> measure is provided for all non-reference books.<sup>2</sup> At this time, our reference books are not given Lexile measures because these books are not designed to be read from cover to cover; rather, students use these books to find targeted information to support their investigations. All books in the Amplify Science program fall within, or in a few cases, just outside, the range of Lexile measures specified for the grade level.

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1 Target Lexile measures by grade band are specified by the Common Core in Supplemental Information for Appendix A of the Common Core State Standards for English Language Arts and Literacy: New Research on Text Complexity, available at <http://www.corestandards.org/wp-content/uploads/Appendix-A-New-Research-on-Text-Complexity.pdf>. MetaMetrics further specifies target Lexile measures for each grade, available at <https://lexile.com/about-lexile/grade-equivalent/grade-equivalent-chart/>

2 Lexile measures are available for the Grades 2–5 books; there are no current official Common Core recommendations for Lexile measures for kindergarten and Grade 1.