GRADE 4 SCIENCE

Key Features

Focus Areas

- The relationship of speed and energy in the motion of an object,
- energy can be converted from one form to another.
- patterns of waves,
- plants and animals have internal and external structures with specific functions,
- animals use their senses to respond to information,
- patterns in rock formations and fossils,
- weathering and erosion,
- seasonal weather patterns,
- climate,
- natural resources, and
- reduction of human impacts of Earth's natural processes.

By the end of Grade 4, students can

- Use evidence to construct an explanation.
- Make observations and measurements, ask questions, predict outcomes.
- Design, test, and refine a solution to a problem.
- Explain that the faster a given object is moving, the more energy it possesses.
- Provide evidence that energy is present whenever there are moving objects, sound, light, or heat.
- Predict that when objects collide their motion can change.
- Show how motion energy can be converted to electric energy, and stored energy (batteries) can cause motion or produce light or sound
- Model how waves form patterns and can cause objects to move.
- Describe that light reflecting from objects and entering the eye allows objects to be seen.
- Explain how digitized information can be transmitted over long distances. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.
- Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.
- Describe how animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- Gather evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
- Provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
- Interpret data from maps to describe patterns of Earth's features.
- Describe how all materials, energy, and fuels that humans use come from natural sources, and their use affects the environment in multiple ways.
- Identify that some resources are renewable over time, and others are not.
- Identify a variety of hazards that result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions).
- Explain how humans cannot eliminate the hazards but can take steps to reduce their impacts.
- Compare solutions to decrease the known risks natural hazards pose for humans.

Home to School Connections

Questions you can ask your learner could include:

- Why is it harder to see objects at night compared to in the daylight?
- What happens when two objects run into each other?
- How can we protect our house from flooding?
- Where does the energy for a car's motor come from?

Questions you can ask your learner's teacher could include:

- What are some classroom activities that you are using to show that energy can change from one form to another?
- Where are there local examples of weathering that I can show my learner?

Activities and learning you can do outside of the classroom to support your learner could include:

- Roll an object with wheels or a ball down different ramps to see how the speed changes.
- Observe objects around your house that require energy: electricity flowing into a light bulb; metal spoons making sound; warm and cold water.
- Line up two round objects, such as sports balls or marbles. Observe what happens when the first object is rolled into the second one.
- Look for solar panels or electric car charging stations in your community and discuss how energy is changed from one form into another.
- Use rubber bands, wire, or yarn to illustrate the movement of waves.
- Shine a flashlight on objects in the dark. Identify colors that can be seen and types of surfaces that are reflective.
- Investigate together how QR codes, barcodes, and Morse code are used to send information.
- Explore plants and animals that live in South Carolina and describe how their structures help them grow and survive in their habitats. Examples of structures could include thorns, leaves, roots, heart, lungs, or skin.
- Picking produce is a great example of how humans use their senses to pick out foods that taste good. Red strawberries are sweet while green strawberries are bitter.
- Create or find an item with layers and identify the oldest and youngest layers. Cakes, bed sheets, sandwiches are a few examples.
- Observe the movement of materials after a rainstorm.
- Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, or earthquakes.
- Have the learner count the number and types of batteries in household objects. Research the natural resources used to make batteries and discuss where batteries go once their energy is used up.
- Identify a local natural hazard (earthquake, flood, hurricane, tornado or coastal erosion) that has impacted or could impact your family. Discuss a solution that would protect items of value.

Books

- Baby Professor. *Where Do Small Rocks Come From?*
- Johnson, Rebecca L. *When Lunch Fights back*
- Nelson, Maria. *Weathering and Erosion (That Rocks!)*
- Rice, Barry. *Monster Plants: Meat Eaters, Real Stinkers, and Other Leafy Oddities*

Resources

- American Museum of Natural History: Ology (https://www.amnh.org/explore/ology)
- Britannica Kids (https://kids.britannica.com/)
- CK-12 Foundation: (https://www.ck12.org/student/)
- Discus Kids (https://www.scdiscus.org/discus-kids)
- Edventure Children's Museum (https://edventure.org/)
- Exploratorium (https://www.exploratorium.edu/)
- Khan Academy Kids (https://learn.khanacademy.org/khan-academy-kids/)
- NASA Kid's Club (https://www.nasa.gov/learning-resources/nasa-kids-club/)
- PBS Kids Science (https://pbskids.org/games/science)
- South Carolina State Museum (https://scmuseum.org/)