

Second Grade

Plants and Animals - Needs of Living Things

Indicator(s): Es1.1/Ls 2.1 Identify and explain that resources are things that we get from the living (e.g., forests) and nonliving (e.g., minerals, water) environment and that resources are necessary to meet the needs and wants of a population. Ls2.5. Explain that food is a basic need of plants and animals (e.g., plants need sunlight to make food and to grow, animals eat plants and/or other animals for food, **food chain**) and is important because it is a source of energy (e.g., energy used to play, ride bicycles, read, etc.). Ls1.4. Investigate that animals eat plants and/or other animals for food and may also use plants or other animals for shelter and nesting. Ls1.5. Recognize that seasonal changes can influence the health, survival or activities of organisms. Ls2.7. Compare the habitats of many different kinds of **Ohio plants and animals** and some of the ways animals depend on plants and each other. Ls2.8 Compare the activities of Ohio's common animals (e.g., squirrels, chipmunks, deer, butterflies, bees, ants, bats and frogs) during the different seasons by describing changes in their behaviors and body covering. **Ls3.6. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful.**

I can...

- _____ 1. Define habitat, biotic (living), abiotic (nonliving), resources, source, environment, organism, seasons, producers, consumers, predators, decomposers, prey, population, energy, food chain, food web
- _____ 2. List living and nonliving resources (for animals, humans, and plants) from an environment and explain how each is used.
- _____ 3. Locate on a food web or food chain the producers, consumers, predators, prey, and decomposers.
- _____ 4. Illustrate my own food chain or web using local plants and animals.
- _____ 5. Give examples of ways that animals seek shelter and build homes.
- _____ 6. Point out the differences and similarities between habitats in Ohio like a pond, lake, stream, river, deciduous forest, wetland, grassland, etc.
- _____ 7. Research and discuss ways that animals, including humans, depend on plants and other animals for food, protection, and shelter.
- _____ 8. Identify ways that animals prepare for seasonal changes.
- _____ 9. Compare seasonal behaviors of many animals and explain why those changes benefit that animal (migrating, gathering food, hibernating, change thickness/color of fur).
- _____ 10. Describe ways (seasonal or man-made) that an animal's habitat can change to benefit them or to harm them.

Adaptations

Indicator(s): LsK.5. Investigate observable features of plants and animals that help them live in different kinds of places. **Ls2.6. Investigate the different structures of plants and animals that help them live in different environments (e.g., lungs, gills, leaves and roots).** **Ls1.3. Explore that humans and other animals have body parts that help to seek, find and take in food when they are hungry (e.g., sharp teeth, flat teeth, good nose and sharp vision).** Ls3.5. Observe and explore how fossils provide evidence about animals that lived long ago and the nature of the environment at that time. Ls3.4 Use examples to explain that extinct organisms may resemble organisms that are alive today.

I can...

- _____ 1. Define adapt, structures, vision, survival, fossil, extinct, evidence
- _____ 2. Identify special structural features of plants and animals that help them live in a certain environment (lungs, gills, wings, leaves, roots).
- _____ 3. Discuss why characteristics/structures help an animal or plant survive in a certain environment.
- _____ 4. Compare and contrast physical characteristics and structures of animals that help them survive (get food and shelter) from one environment to another (e.g. sharp teeth, good nose, sharp vision).
- _____ 5. Compare and contrast physical characteristics and structures of plants that help them survive (get food and shelter) from one environment to another (e.g. tree roots – fine, thick, widespread, deep, above ground).
- _____ 6. Predict what would happen to plants and animals if they did not change or adapt to meet their needs.
- _____ 7. Explain how fossils are formed and that they show evidence of plants and animals from long ago before humans.
- _____ 8. Provide examples of dinosaurs and plants that we have discovered by studying fossils.
- _____ 9. Hypothesize what the habitats of dinosaurs were like.
- _____ 10. Predict why dinosaurs became extinct because of changes in their environment.
- _____ 11. Conclude ways that dinosaurs could have adapted to keep from them from becoming extinct.

Energy

Indicator(s): Define states of energy, potential and kinetic. Ps1.8. Recognize that the sun is an energy source that warms the land, air and water. **Ps1.9. Describe that energy can be obtained from many sources in many ways (e.g., food, gasoline, electricity or batteries).** Ps1.7. Explore how energy makes things work (e.g., batteries in a toy and electricity turning fan blades). ST1.4. Explore ways people use energy to cook their food and warm their homes (e.g., wood, coal, natural gas and electricity).

I can...

- _____ 1. Define energy, potential, kinetic, work
- _____ 2. Observe that the sun is a source of energy and is absorbed differently depending on the color or material of an object.
- _____ 3. Provide examples of ways that we get energy other than the sun and how we use it.
- _____ 4. Make a toy or machine work with...
 - _____ a. batteries
 - _____ b. wind
 - _____ c. water
 - _____ d. sunlight
 - _____ e. heat
- _____ 5. Invent my own machine that uses energy to do work (cause motion).

Energy

Indicator(s): Ps2.1. Explore how things make sound (e.g., rubber bands, tuning fork and strings). Ps2.2. Explore and describe sounds (e.g., high, low, soft and loud) produced by vibrating objects. Ps2.3. Explore with flashlights and shadows that light travels in a straight line until it strikes an object. Define energy and provide examples of forms of energy [light, sound (acoustic), heat (thermal), electrical, chemical, mechanical].

Explain that energy can change form.

I can...

- _____ 1. Define sound (acoustic), heat (thermal), light, chemical, electrical, mechanical, vibrating, loudness, pitch, reflection, absorb.
- _____ 2. Make sound by causing an object to vibrate.
- _____ 3. Describe the pitch and the loudness of sounds.
- _____ 4. Recognize that sounds change in different substances.
- _____ 5. Demonstrate and explain that light travels in a straight line
- _____ 6. Provide examples of what happens when light hits objects (reflect, absorb, pass through)
- _____ 7. Recognize energy can change from one form to another.
- _____ 8. Predict where energy goes when it is used. (photosynthesis – light to chemical, flashlight – light to heat)

Space

Indicator(s): **Define rotation and recognize that Earth’s rotation produces day and night. Illustrate that the Earth is tilted on its axis and the tilt causes seasons and changes in the amount of daylight. **Name the 8 planets and recognize that the Earth and the other planets orbit the sun (Solar System).**

I can...

- _____ 1. Define rotation, axis, orbit, tilt, solar system, planet, star, moon
- _____ 2. Recognize that the Earth rotates on its axis.
- _____ 3. Explain that the day and night are caused by the Earth rotating.
- _____ 4. Relate that sunset and sunrise are made by the Earth rotating.
- _____ 5. Illustrate that the Earth is tilted on its axis.
- _____ 6. Demonstrate that the Earth’s tilt causes different amount of light and the seasons throughout the year.
- _____ 7. Explain that years are caused by the Earth traveling all the way around the sun.
- _____ 8. Contrast planets, moons, and stars.
- _____ 9. Illustrate and name the planets that orbit our star, the Sun.

Space

Indicator(s): Es2.1. Recognize that there are more stars in the sky than anyone can easily count. Es2.2. Observe and describe how the sun, moon and stars all appear to move slowly across the sky. EsK1. Observe that the sun can be seen only in the daytime, but the moon can be seen sometimes at night and sometimes during the day. Es2.3. Observe and describe how the moon appears a little different every day but looks nearly the same again about every four weeks. Illustrate the phases of the moon. Recognize that the moon appears different due to the amount of sunlight reflecting from it to Earth.

I can...

- _____ 1. Define phase, crater, constellation, brightness, waxing, waning
- _____ 2. Recognize that there are more stars that I can count, that they are different distances from Earth, and they have different amount of brightness.
- _____ 3. Recognize that stars seem to make patterns called constellations.
- _____ 4. Observe that the sun, moon, and stars appear to move slowly across the sky.
- _____ 5. Explain that the sun, moon, and stars look like they are moving because the Earth is rotating.
- _____ 6. Observe that sun is only visible during the day but the moon can be seen at day or night.
- _____ 7. Describe how the moon looks different over time, each day, week, and month and repeats in a pattern.
- _____ 8. Explain why sunlight reflecting off the moon causes phases and makes it look different when viewed from Earth.
- _____ 9. Illustrate and name the phases of the moon.

Science and Technology Standards

Benchmark K-2: Explain why people, when building or making something. Need to determine what it will be made of and how it will affect people and the environment.

STK.1. Explore that objects can be sorted as "natural" or "man-made".

STK2. Explore that some materials can be used over and over again (e.g., plastic or glass containers, cardboard boxes and tubes).

ST1.1. Explore that some kinds of materials are better suited than others for making something new (e.g., the building materials used in the *Three Little Pigs*).

ST1.3. Identify some materials that can be saved for community recycling projects (e.g., newspapers, glass and aluminum).

ST1.4. Explore ways people use energy to cook their food and warm their homes (e.g., wood, coal, natural gas and electricity).

ST1.5. Identify how people can save energy by turning things off when they are not using them (e.g., lights and motors).

ST2.1. Explain that developing and using technology involves benefits and risks.

ST2.2. Investigate why people make new products or invent new ways to meet their individual wants and needs.

ST2.3. Predict how building or trying something new might affect other people and the environment.

Benchmark K-2: Explain that to construction something requires planning, communication, problem-solving, and tools.

STK.3. Explore that each kind of tool has an intended use, which can be helpful or harmful (e.g., scissors can be used to cut paper but they can also hurt you).

ST1.2. Explain that when trying to build something or get something to work better, it helps to follow directions and ask someone who has done it before.

ST1.6. Investigate that tools are used to help make things and some things cannot be made without tools.

ST1.7. Explore that several steps are usually needed to make things (e.g., building blocks).

ST1.8. Investigate that when parts are put together they can do things that they could not do by themselves (e.g., blocks, gears and wheels).

ST2.4. Communicate orally, pictorially, or in written form the design process used to make something.

Scientific Inquiry Standards

Benchmark K-2: Ask a testable question.

SIK.1. Ask "what if" questions.

SIK.2. Explore and pursue student-generated "what if" questions.

SI1.1. Ask "what happens when" questions.

SI1.2. Explore and pursue student-generated "what happens when" questions.

SI2.1. Ask "how can I/we" questions.

SI2.2. Ask "how do you know" questions (not "why" questions) in appropriate situations and attempt to give reasonable answers when others ask questions.

SI2.3. Explore and pursue student-generated "how" questions.

Benchmark K-2: Design and conduct a simple investigation to explore a question.

SIK.4. Use the five senses to make observations about the natural world.

Benchmark K-2: Design and conduct a simple investigation to explore a question.

SIK.10. Make new observations when people give different descriptions for the same thing.

SI K.3, 1.3, 2.4. Use appropriate safety procedures when completing scientific investigations.

SI K.7, 1.6, 2.7. Use appropriate tools and simple equipment/instruments to safely gather scientific data (e.g., magnifiers, non-breakable thermometers, timers, rulers, balances and calculators and other appropriate tools).

SI2.8. Measure properties of objects using tools such as rulers, balances and thermometers.

Benchmark K-2 C: Gather and communicate information from careful observations and simple investigations through a variety of methods.

SIK.5. Draw pictures that correctly portray features of the item being described.

SIK.6. Recognize that numbers can be used to count a collection of things.

SIK.8. Measure the lengths of objects using non-standard methods of measurement (e.g., teddy bear counters and pennies).

SIK.9. Make pictographs and use them to describe observations and draw conclusions.

SI1.4. Work in a small group to complete an investigation and then share findings with others.

SI1.5. Create individual conclusions about group findings.

SI1.7. Make estimates to compare familiar lengths, weights and time intervals.

SI1.8. Use oral, written and pictorial representation to communicate work.

SI1.9. Describe things as accurately as possible and compare with the observations of others.

SI2.5. Use evidence to develop explanations of scientific investigations. (What do you think? How do you know?)

SI2.6. Recognize that explanations are generated in response to observations, events and phenomena.

SI2.9. Use whole numbers to order, count, identify, measure and describe things and experiences.

SI2.10. Share explanations with others to provide opportunities to ask questions, examine evidence and suggest alternative explanations.

Scientific Ways of Knowing

Benchmark K-2 SWK A. Recognize that there are different ways to carry out scientific investigations. Realize that investigations can be repeated under the same conditions with similar results and may have different explanations.

SWKK.1. Recognize that scientific investigations involve asking open-ended questions. (How? What if?)

SWKK.2. Recognize that people are more likely to accept your ideas if you can give good reasons for them.

SWK1.1. Discover that when a science investigation is done the same way multiple times, one can expect to get very similar results each time it is performed.

SWK1.2. Demonstrate good explanations based on evidence from investigations and observations.

SWK2.1. Describe that scientific investigations generally work the same way under the same conditions.

Benchmark K-2 SWK B. Recognize the importance of respect for all living things.

SWKK.3. Interact with living things and the environment in ways that promote respect.

SWK2.3. Describe ways in which using the solution to a problem might affect other people and the environment.

Benchmark K-2 SWK C. Recognize that diverse groups of people contribute to our understanding of the natural world.

SWKK.4. Demonstrate ways science is practiced by people everyday (children and adults).

SWK1.3. Explain that everybody can do science, invent things and have scientific ideas no matter where they live.

SWK2.2. Explain why scientists review and ask questions about the results of other scientists' work.

SWK2.4. Demonstrate that in science it is helpful to work with a team and share findings with others.