NEBRASKA

Alternate Science Instructional Supports for NSCAS Science Extended Indicators Grade 5

for
Students with the Most Significant Cognitive Disabilities
who take the
Statewide Science Alternate Assessment

Table of Contents

Overview

Introduction

Science standards apply to all students, regardless of age, gender, cultural or ethnic background, disabilities, aspirations, or interest and motivation in science (NRC, 1996).

The science standards, extended indicators, and instructional supports in this document were developed by Nebraska educators to facilitate and support science instruction for students with the most significant intellectual disabilities. They are directly aligned to the Nebraska's College and Career Ready Standards for Science adopted by the Nebraska State Board of Education.

The instructional supports included here are sample tasks that are available to be used by educators in classrooms to help instruct students with significant intellectual disabilities.

The Role of Extended Indicators

For students with the most significant intellectual disabilities, achieving grade-level standards is not the same as meeting grade-level expectations, because the instructional program for these students addresses extended indicators.

It is important for teachers of students with the most significant intellectual disabilities to recognize that extended indicators are not meant to be viewed as sufficient skills or understandings. Extended indicators must be viewed only as access or entry points to the grade-level standards. The extended indicators in this document are not intended as the end goal but as a starting place for moving students forward to conventional reading and writing. Lists following "e.g." in the extended indicators are provided only as possible examples.

Students with the Most Significant Intellectual Disabilities

In the United States, approximately 1% of school-aged children have an intellectual disability that is "characterized by significant impairments both in intellectual and adaptive functioning as expressed in conceptual, social, and practical adaptive domains" (U.S. Department of Education, 2002 and American Association of Intellectual and Developmental Disabilities, 2013). These students show evidence of cognitive functioning in the range of severe to profound and need extensive or pervasive support. Students need intensive instruction and/or supports to acquire, maintain, and generalize academic and life skills in order to actively participate in school, work, home, or community. In addition to significant intellectual disabilities, students may have accompanying communication, motor, sensory, or other impairments.

Alternate Assessment Determination Guidelines

The student taking a Statewide Alternate Assessment is characterized by significant impairments both in intellectual and adaptive functioning which is expressed in conceptual, social, and practical adaptive domains and that originates before age 18 (American Association of Intellectual and Developmental Disabilities, 2013). It is important to recognize the huge disparity of skills possessed by students taking an alternate assessment and to consider the uniqueness of each child.

Thus, the IEP team must consider all of the following guidelines when determining the appropriateness of a curriculum based on Extended Indicators and the use of the Statewide Alternate Assessment.

- The student requires extensive, pervasive, and frequent supports in order to acquire, maintain, and demonstrate performance of knowledge and skills.
- The student's cognitive functioning is significantly below age expectations and has an impact on the student's ability to function in multiple environments (school, home, and community).
- The student's demonstrated cognitive ability and adaptive functioning prevent completion of the general academic curriculum, even with appropriately designed and implemented modifications and accommodations.
- The student's curriculum and instruction is aligned to the Nebraska College and Career Ready Science Standards with Extended Indicators.
- The student may have accompanying communication, motor, sensory, or other impairments.

The Nebraska Department of Education's technical assistance documents "***IEP Team Decision Making Guidelines—Statewide Assessment for Students with Disabilities***" and "***Alternate Assessment Criteria/Checklist***" provide additional information on selecting appropriate statewide assessments for students with disabilities. School Age Statewide Assessment Tests for Students with Disabilities—Nebraska Department of Education.

Instructional Supports Overview

As stated, these science instructional supports are sample tasks available for use by educators who are instructing students with significant intellectual disabilities. The instructional supports are aligned to the extended indicators in grades five, eight, and high school. Each instructional support includes the following components:

- Standard/extended indicator/access points
- Standard clarification
- Target activities for access point A
- Scaffolding activities for access points B and C
- Prerequisite skills (where applicable)
- Key terms
- Additional resources or links
- Cross-content standards
- Graphics (where applicable)

The standard clarification statement provides educators with additional science background knowledge related to the content of the extended indicator.

The target activities, scaffolding activities, and prerequisite skills are presented in a top down model with the most complex access or entry points (e.g., learning objective and activities for access point A) listed first and the least complex access or entry points (e.g., learning objective and activities for access point C or prerequisite skills) listed last.

The activities listed are suggestions for augmenting or enhancing current instruction and are intended to provide additional support for students to achieve the learning objective stated at each level (access point A, B, C, and prerequisite skills). The activities listed are not intended to be all-inclusive, nor is it intended to imply that all students would benefit from every activity. Educators can select and modify activities to support or enhance current instruction based on individual student needs and abilities.

Key terms may be selected and used by educators to guide vocabulary instruction as determined appropriate for each individual student. The list of key terms are suggestions and not intended to be an all-inclusive list.

Additional resources or links are optional images, video clips, and other additional activities to provide guidance or further support instruction.

The cross-content standards and life skills activities are suggestions to assist educators in planning multidisciplinary activities for integrated curricula.

THIS PAGE IS INTENTIONALLY BLANK

Science—Grade 5 Physical Science

SC.5.3 Structure and Properties of Matter

SC.5.3.1.A

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Develop a model to describe that matter is made of particles too small to be seen. Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.	Participate in investigations to describe that matter is made of particles too small to see without magnification.	Observe models or objects to describe that matter of all sizes and shapes is made of many tiny particles that can be seen only when magnified.	Using real-world objects, identify that the object is made of many smaller parts.	Given a real-world, familiar object, recognize the difference between a part of the object and the object as a whole.

Standard Clarification

Students will investigate and observe that real-world objects are made up of smaller parts, some too small to be seen. Real-world objects should include both man-made and natural objects of various sizes.

Target Activities for Access Point A

A. Students observe and identify that rocks are made of smaller parts.

- observe a piece of rock (granite) with different color minerals, with or without a magnifying lens
- observe that a soft rock (sandstone, chalk, kinetic sand) can crumble in your hand and leave streaks on a rough surface such as a sidewalk

A. Students observe models (pictures, videos) showing magnification of real-world objects or, when possible, observe objects with a magnifying lens.

- observe cells in a leaf, onion cells, or grains of sand in rocks

Scaffolding Activities for Access Points B and C

B. Students recognize that objects are made of smaller parts.

- observe the parts of a plant: roots, leaves, stem, and flowers or fruit
- observe the smaller parts of leaves: plant veins and plant hair (fuzz)
- observe the smaller parts of a flower: petals, stem/stalk, pollen, and sepals
- identify that puzzle pieces belong to the completed puzzle, that something larger can be made of building block pieces, or that different pieces are needed to play a board game

B. Students observe and identify that food is made of smaller parts.

- identify that a blueberry muffin is made of flour, sugar, water, and blueberries
- identify that a pizza is made of dough, sauce, meat, cheese, and vegetables
- identify that dough is made of flour, salt, and water

C. Students recognize the difference between part of an object and the whole object.

- sort real objects or pictures of objects based on whether they are part of an object or a whole object
- compare slices of an apple to a whole apple
- compare a partially completed project/picture to the completed project/picture

Key Terms

magnify, magnifying lens, part, particles, pieces, tiny, whole

Additional Resources or Links

- This is a video of onion cell parts magnified.

  https://www.youtube.com/watch?v=dxv4M4HHUgs

- This is a video of a leaf structure magnified to show the cell parts.

  https://www.youtube.com/watch?v=Bf-RFPaZeAM&ab_channel=CaliforniaAcademyofSciences

Cross-Content Standards

- Language Arts: Context Clues (5.V.1.a), Relationship between Two Ideas (5.RI.7), and Relevant Evidence (5.W.6.b)
- Mathematics: Equivalent Fractions (5.N.2.a) and Divide a Whole Number by a Fraction (5.N.3.c)

SC.5.3.1.B

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
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. Assessment does not include distinguishing mass and weight.	Participate in investigations to demonstrate that heating, cooling, and mixing substances does not change their total weight.	Use data/ observation to identify that the weight of a substance before and after it is heated or cooled remains the same, and that the total weight of materials that are mixed together is equal to the weight of the individual parts of the mixture.	Identify that when a solid is melted, it has the same weight, and when a liquid is frozen, it has the same weight.	Recognize that the weight of an object is measured using a scale.

Standard Clarification

Students will recognize that all matter has weight. The combined weights of separate substances do not change when mixed together, heated, or cooled.

Target Activities for Access Point A

A. Students use data or measure the weight of objects before and after they are heated or cooled to observe that the weight does not change.

- measure the weight of an object (ice, food, a dish, a crayon, or a towel); heat the object; compare the weight of the object before and after it was heated
- measure the weight of an object (water, food, a dish, a crayon, or a towel); cool the object; compare the weight of the object before and after it was cooled

A. Students use data or measure the weight of ingredients before and after they are mixed to observe that the weight does not change.

- measure the weight of the ingredients for ooblick (cornstarch and water), hot chocolate (powder mix and water/milk), or cloud dough (hair conditioner and flour) before mixing; mix the ingredients and weigh; compare the weight of the ingredients before and after they were mixed

Scaffolding Activities for Access Points B and C

B. Students compare the weight of a substance in a solid state and a liquid state to observe that the weight does not change.

- compare the weights of an ice cube, frozen juice concentrate, a chocolate bar, or butter in solid and liquid states

C. Students use a scale to find out how much something weighs (standard units: ounces and pounds).

- weigh water, sand, a block of wood, or books

Prerequisite Skill: Students recognize whether objects have been mixed and identify the different parts of a mixture.

- mix together flour and water, water and sand, different colored beads

Prerequisite Skill: Students recognize that a scale is used to measure weight.

- identify common tools to measure weight
- discuss real-world weight scenarios: a student weighed at the doctor's office (discussion should be sensitive to people with weight issues), a pet weighed at the veterinary clinic, or produce weighed at the store

Prerequisite Skill: Students recognize that objects can feel heavy or light and that this is a relative measure of weight, which can be measured and assigned a number.

- compare the weights of two objects by holding them to feel which is heavier or lighter
- predict which of two items is heavier or lighter

Key Terms

cooling, freezing, heating, heavy, ingredients, light, liquid, mixing, mixture, scale, solid, weight

Additional Resources or Links

- This is a video about weight conservation.
  https://vimeo.com/180591098
- This is a video on measuring weight.
  https://www.youtube.com/watch?v=ybEU-6U7s8k
- This is a video on the concepts of heavy and light.
  https://www.youtube.com/watch?v=SQmI21BB8mA

Cross-Content Standards

- Language Arts: Text Features (5.RI.4) and Relevant Evidence (5.W.6.b)
- Mathematics: Compare Numbers (5.N.2.b)

THIS PAGE IS INTENTIONALLY BLANK

SC.5.G.1.c

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Make observations and measurements to identify materials based on their properties. Assessment does not include density or distinguishing mass and weight.	Participate in investigations to identify materials based on physical properties (color, shape, size, texture, weight, temperature) that can be observed or measured.	Given materials, use observable/ measurable physical properties to identify the materials or categorize the materials based on specific physical properties.	Given a material, identify two or more physical properties of the material.	Given two materials with opposite physical properties, recognize the material with a specified physical property.

Standard Clarification

Students will be able to identify or group materials/objects based on their observable/measurable physical properties. Physical properties include color, shape, size, texture, weight, and temperature.

Target Activities for Access Point A

A. Students put items into groups based on observable/measurable physical properties.

- sort items by size, shape, color, weight, or temperature
- sort items into two groups: hot or cold

A. Students identify items based on observable/measurable physical properties.

- select rocks that are rough or smooth from an assortment of rocks
- identify square shapes from a group of various shaped objects

Scaffolding Activities for Access Points B and C

B. Students identify two different physical properties (color, shape, size, texture, weight, or temperature) of an item.

- identify that a building block is hard and blue
- identify that an ice cube is cold and smooth

C. Students recognize that objects made from the same materials can have different physical properties.

- identify different colors and sizes of marbles
- identify different colors and sizes of paper
- identify an aluminum can and aluminum foil

C. Students select an object with the stated physical property when presented two objects with opposite physical properties.

- select the object that is hard when presented a pillow and a rock
- select the metal that is curved when presented a paper clip and a straight piece of wire

Prerequisite Skill: Students recognize opposites.

- hot/cold, large/small, day/night

Prerequisite Skill: Students identify colors.

Key Terms

measurement, opposite, physical properties, size, temperature, texture, weight

Additional Resources or Links

- This is a video on the physical properties of materials.

  https://www.youtube.com/watch?v=veUUii1U8-o

Cross-Content Standards

- Language Arts: Context Clues (5.V.1.a), Explicit Evidence (5.RP.6), and Relevant Evidence (5.W.6.b)
- Mathematics: Distinguish Between Two-Dimensional and Three-Dimensional Figures (5.G.1.b), Characteristics of a Cube (5.G.1.a), and Two-Dimensional Figures (5.G.1.c)

SC.5.3.1.D

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	Participate in investigations to determine whether mixing two or more substances results in the formation of a new substance.	Compare the observable properties of two or more substances before and after they are mixed to explain whether a new substance with different properties was formed.	Identify evidence of the formation of a new substance after two or more substances are mixed.	Recognize when two or more substances have been mixed or not mixed.

Standard Clarification

Students will investigate changes that occur when mixing two or more substances together. Students will indicate whether mixing substances results in property changes including color, shape, size, texture, weight, or temperature. The general education standard addresses chemical changes that result in a new substance, but for this population we only expect students to recognize a change in the properties, regardless of the type of reaction.

Target Activities for Access Point A

A. Students describe properties of substances before and after they are mixed.

- complete a Venn diagram to compare the ingredients used to make banana bread to the baked bread
- complete a compare/contrast chart listing properties before and after mixing substances together

A. Students explain whether a produced substance has the same or different properties as the materials used to make the new substance.

- observe that mixing dry pudding mix and milk results in a new substance (pudding) with different properties
- observe that mixing dirt and water results in a new substance (mud) with different properties
- observe that mixing rocks and sand results in the same substance (rock and sand mixture) with the same properties

Scaffolding Activities for Access Points B and C

B. Students identify the changes that occur when two or more substances are mixed and a new substance is formed.

- observe dry pudding mix and milk: the new substance is wet, thick, and a different color
- observe slime ingredients (water, glue, food coloring, and borax): the new substance is sticky, slimy, stretchy, and a different color

C. Students observe two different substances that when mixed together do not form a new substance.

- observe the results of mixing salt and pepper, water and oil, red and blue beads, or pennies and nickels

C. Students observe two different substances that when mixed together appear as a single substance.

- observe the results of mixing water and sugar, food coloring and water, or dirt and water

Prerequisite Skill: Students recognize different substances including salt, sand, water, and oil.

Prerequisite Skill: Students identify the properties of substances.

- identify wet and dry, solid and liquid, or smooth and rough

Prerequisite Skill: Students recognize that properties of a substance can change.

- recognize that a round clay ball can be flattened, paper can be torn into pieces, or cold water can be heated

Key Terms

mix, mixture, property, substance

Additional Resources or Links

- This is a video on different types of mixtures.

  https://www.youtube.com/watch?v=jA0PzblYPUM

Cross-Content Standards

- Language Arts: Relationship between Two Ideas (5.RI.7), Explicit Evidence (5.RI.6), and Relevant Evidence (5.W.6.b)
- Mathematics: Volume (5.G.4.c)

Science—Grade 5 Life Science

SC.5.8 Matter and Energy in Organisms and Ecosystems

SC.5.8.2.A

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.	Explain that energy from food is used for body repair, growth, and motion and to maintain body warmth for both animals and humans.	Describe that energy from food is used by animals and humans for body repair, growth, and motion and to maintain body warmth.	Recognize that animals, including humans, eat food for energy to grow and move.	Recognize that all animals and humans need energy to survive.

Standard Clarification

Students will understand that living things get energy from food. Energy helps people and animals grow, repair our bodies, move, and stay warm.

Target Activities for Access Point A

A. Students describe that food provides animals and people with energy to heal their bodies, help their bodies grow, move, and keep their bodies warm.

- identify berries, plants, nuts, and insects as food that provides energy for a bear to run and hunt for food
- observe a picture or video of a caterpillar eating leaves and identify the leaves as the source of energy for growth, movement, and to keep the caterpillar's body warm
- watch a video about eating proper foods to help human bodies heal, grow, stay warm, and move

Scaffolding Activities for Access Points B and C

B. Students recognize that food gives animals and people energy to grow.

- select the correct object (a banana, a block, or scissors) that will provide a human energy to grow
- select the correct object (grain, a fence, or rain) that will provide an animal energy to grow
- compare pictures of mature versus baby animals or humans and discuss how the changes occurred

B. Students recognize that food gives animals and people energy to move.

- select the correct object (a bike, a house, or an apple) that will provide a human energy to move

C. Students identify that animals and people, not objects, require energy to survive (heal, grow, move, and stay warm).

- select the correct picture (a dog running or sunglasses) that shows energy being used
- select the correct picture (a child playing or a rock) to identify something that needs energy to grow and stay healthy

Prerequisite Skill: Students recognize what is living and non-living.

- select the correct picture (a plant or a computer) to identify a living thing

Prerequisite Skill: Students identify people as animals.

- select the correct pictures (a frog, a turtle, a horse, a person, a house, or a tree) to identify animals

Prerequisite Skill: Students understand that energy cannot be seen, but we can see energy being used.

- identify energy being used in the classroom (students walking, students moving, students getting warm when exercising)

SC.5.8 Matter and Energy in Organisms and Ecosystems

Key Terms

animal, energy, grow, heal, maintain, motion, repair, warmth

Additional Resources or Links

- This is a video on foods that give people energy and how the bodies use energy.
  https://www.youtube.com/watch?v=fHyeUCI1_1s
- This is a video on why all living things need to eat.
  https://www.youtube.com/watch?v=z9TIlM96lT8
- This is a video on how broken bones heal (start at 1:44 to learn how eating healthy helps bones heal).
  https://www.youtube.com/watch?v=od8oU5OLMGU
- This is a video on eating healthy foods.
  https://www.youtube.com/watch?v=mMHVEFWNLMc
- These are photos of unhealthy foods.
  https://www.photosforclass.com/search/unhealthy-food
- These are photos of healthy foods.
  https://www.photosforclass.com/search/healthy-foods

Cross-Content Standards

- Language Arts: Relationship between Two Ideas (5.RI.7) and Explicit Evidence (5.RI.6)
- Life Skills: Healthy and Unhealthy Foods

THIS PAGE IS INTENTIONALLY BLANK

SC.5.8.2.B

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Support an argument that plants get the materials they need for growth chiefly from air and water.	Use evidence to support the claim that plants get materials for growth from air and water.	Use data/ observation to explain that plants need air and water to live and grow.	Identify water and air as the two materials plants need to live or grow.	Given an unrelated material and water, recognize that plants need water to live.

Standard Clarification

Students will use data to explain that plants need air and water to live and grow. Air and water are needed for plants to use energy from the sun to make food during photosynthesis. Water is taken in by plants from the soil, and it carries nutrients from the ground into the plant. These nutrients help make the plant healthy.

Target Activities for Access Point A

A. Students use data or observation to explain that plants need air and water to grow.

- use a simple data table or graph showing plant growth after different levels of watering to explain that plants with appropriate water amounts grow best
- use a simple data table or graph showing plant growth with and without access to air to explain that plants need air to grow
- participate in a plant growth investigation for several days: plant two identical plants in identical containers with the same soil but place each in a different controlled environment (1 in open air in a room, 1 in a sealed plastic bag to prevent air exchange); place both in sunlight and observe twice daily; record observations; after several days, identify what is different between the two plants and why (lack of air); repeat but do not provide water for 1 plant and eliminate the plastic bag; record observations twice daily for several days; identify the differences in the plants (one is droopy) and what caused those differences (lack of water)
- participate in an investigation into growing plants without soil (hydroponics), with water and air only
- watch a video about why plants need air and water to grow; observe an investigation done over an extended time period to explain the outcome and reasons for that outcome

Scaffolding Activities for Access Points B and C

B. Students identify air and water as the materials plants need to live and grow.

- look at detailed pictures of a yard or garden to identify which objects the plants/trees need to survive and grow
- compare pictures or videos of plants with air and water to those of plants that lack air and water

C. Students select water as the substance plants need to live when given a choice between two objects.

- choose between a container and water, book and water, or a garden tool and water
- look at a picture of a rainy day and discuss why rain is good for plants (helps plants grow)

Prerequisite Skill: Students understand the difference between living (plants, people, animals) and non-living things.

Key Terms

air, grow, living, nonliving, survive, water

Additional Resources or Links

- This is a NGSS video showing an experiment with five plants.
  https://www.youtube.com/watch?v=tXptM5HPm-Y
- This is a video showing an experiment on what plants need to grow.
  https://www.youtube.com/watch?v=Nffg3GlSuXg
- This is a Sesame Street video on giving a plant water to live and grow.
  https://www.youtube.com/watch?v=yE5A8-NGZbI
- This is a video on hydroponic gardening.
  https://www.youtube.com/watch?v=-flA5mTQ05A

Cross-Content Standards

- Language Arts: Context Clues (5.V.1.a), Text Features (5.RI.4), and Identify Evidence (5.W.6.b)
- Mathematics: Bar Graphs (5.D.2.a)

SC.5.8.2.C

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. Assessment does not include molecular explanations or the biochemical mechanisms of photosynthesis.	Use information and models to describe the flow of matter among plants and animals.	Given information about three organisms (plants, plant-eating animals, and animal-eating animals), describe the flow of matter between them.	Use a simple food chain to identify the source of food for a given organism.	Given information, recognize that animals depend on other organisms (plants or animals) for food.

Standard Clarification

Students will describe that when one organism (animal) eats another organism (plants or animals), matter is transferred from one organism to the other.

Target Activities for Access Point A

A. Students use information about organisms to create models that describe the flow of matter between organisms.

- create a model showing the flow of matter between three different organisms
- watch a video about a food chain and discuss the relationships between organisms

Scaffolding Activities for Access Points B and C

B. Students understand the relationships between the parts of a food chain.

- draw arrows to show the flow of matter in a simple food chain
- complete a simple food chain with one part missing (grass, _____, frog) when given choices (grasshopper, lion, or tree)

C. Students indicate that animals need plants or other animals for food.

- match animals to the food they eat (cows to grass, cats to mice, chickens to insects)

Prerequisite Skill: Students can discriminate food items from non-food items for animals.

SC.5.8 Matter and Energy in Organisms and Ecosystems

Key Terms

dependent, flow of matter, food chain, matter, organism

Additional Resources or Links

- This is a video on the flow of energy in a food chain.
  https://www.youtube.com/watch?v=MuKs9o1s8h8

Cross-Content Standards

- Language Arts: Relationship between Two Ideas (5.RI.7) and Explicit Evidence (5.RI.6)

Science—Grade 5 Earth and Space Sciences

SC.5.11 Space Systems: Earth's Stars and Solar System

SC.5.11.3.A

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Support an argument that the gravitational force exerted by Earth on objects is directed down. Assessment does not include mathematical representation of gravitational force.	Use evidence (data and observation) to support the claim that gravity pulls objects on Earth downward.	Use data/ observation to describe that objects dropped from a height are pulled toward Earth by gravity.	Use observation to predict that dropped objects are pulled down due to gravity.	Identify the direction that dropped objects will fall (down/toward the ground).

Standard Clarification

Students will develop an understanding that gravity keeps things from floating into space. Gravity is an invisible force that exists between any two objects (like Earth and a ball). Earth's gravity pulls things downward, toward its center (core). Because Earth is so large, it has a strong gravitational pull. Gravity is why water flows downhill and even underground. Gravity is why when people jump upward, they always come back to the ground.

Target Activities for Access Point A

A. Students examine data or make observations to explain that gravity is the reason objects are pulled toward Earth's surface/center.

- observe objects released from different heights and record the direction the objects move
- draw arrows on images of objects being released from different heights to show the direction they will travel and explain that they moved to Earth's surface because gravity pulled them downward
- watch related videos and discuss why all objects fall when released no matter the height from which they were released

Scaffolding Activities for Access Points B and C

B. Students predict how gravity affects different objects when they are released.

- respond to the question "What do you think is going to happen when I let go of _____?"
- respond to question "Why did the _____ fall?"
- watch related videos and discuss that objects fall because of gravity

C. Students identify which direction an object fell when dropped.

- respond to the question "Which direction did this object fall?"

Prerequisite Skill: Students understand directions (up, down).

- indicate whether an image shows an object moving up or down
- lift objects up and lower down, signal "thumbs up" and "thumbs down," and stand up and sit down on cue

Key Terms

direction, down, downward, Earth, gravity, height, objects

Additional Resources or Links

- This is a School House Rock video showing objects falling to the earth and explaining why objects fall.

  https://www.youtube.com/watch?v=HxPrT-eeZQc

- This is a video on gravity.

  https://www.youtube.com/watch?v=EwY6p-r_hyU

Cross-Content Standards

- Language Arts: Text Features (5.RI.4), Describe Experiences or Events (5.W.3.b), and Relevant Evidence (5.W.6.b)
- Mathematics: Convert Feet to Inches (5.G.3.a)

SC.5.11.3.B

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, and stage).	Use models to explain that the sun appears brighter than other stars because it is much closer to Earth.	Use models to explain that the sun appears brighter than other stars because it is much closer to Earth.	Given a model of the sun and one or more stars, identify which is brightest/ closest to Earth.	Given two objects that emit light, recognize which object is brighter.

Standard Clarification

Students will explain that because the sun is much closer to Earth than other stars are, it appears brighter than other stars.

Target Activities for Access Point A

A. Students explain that the sun appears brighter than other stars because it is much closer to Earth.

- model the positions of the sun, Earth, and stars (one person is the sun with a light, two people are stars with lights, and one person is Earth without a light) and discuss why the sun looks brighter than the other two stars when standing next to Earth
- watch related videos and discuss why the sun appears brighter than other stars

Scaffolding Activities for Access Points B and C

B. Students identify the sun as the brightest or closest star to Earth.

- identify the sun as the brightest/closest to Earth when given a picture of the sun and other stars
- identify the sun as the brightest/closest to Earth when using models (such as different size balls) to represent Earth, a star, and the sun and their relative positions

C. Students recognize the brightest object.

- identify a flashlight as the brighter object when shown pictures of a lit match and a flashlight shining bright
- identify headlights as the brighter object when shown pictures of a car with the headlights on and a nightlight
- compare two objects that give off light (a glow stick, a small flashlight, a lamp, a battery candle, or a phone flashlight) and indicate the object that is brighter

Prerequisite Skill: Students recognize objects that give off light.

- find objects in the classroom or school building that give off light

Prerequisite Skill: Students identify Earth, stars, and the sun.

Prerequisite Skill: Students recognize opposites.

- bright/dim, near/far, small/large

Key Terms

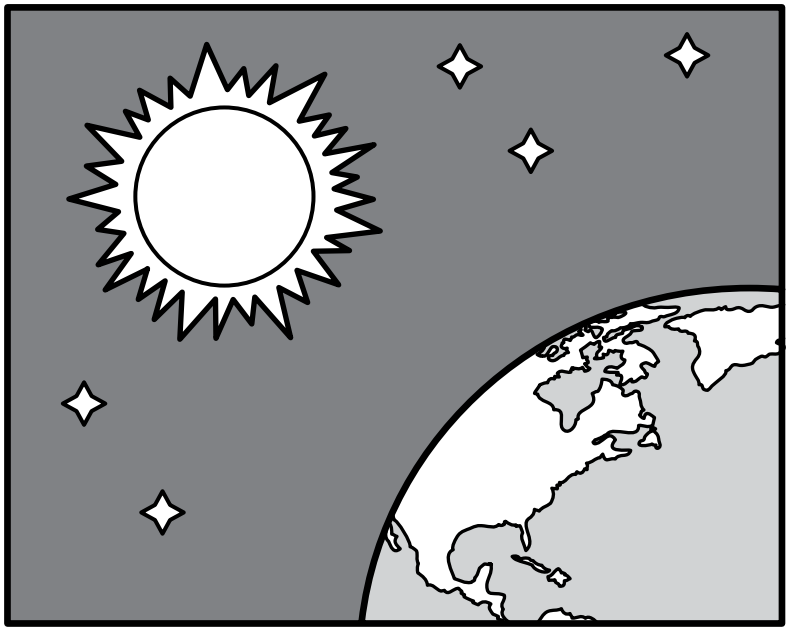
brighter, closest, Earth, emit, position, star, sun

Additional Resources or Links

- This is an image of the sun.
  https://lh6.googleusercontent.com/JIMVEpN9_TAtyTARUGSkN1BtSvBxHWT1J2FeA8H-U2MUwa4QFioPQwItLNsf_YWu7e9V5VJKk5j5aaFxWIIC-W8xez1GbV47M9EWan_Ge37gZsSEFCQuY9uAnCZ0Auz5rSdUjgPOrg_
- This is a video explaining the sun's brightness in relationship to Earth.
  https://www.youtube.com/watch?v=mw9avoRRAus
- This is a video explaining that our sun is a star of average size and brightness, that stars come in different sizes and distances from Earth, and that stars that are farther away appear smaller and dimmer.
  https://www.generationgenius.com/videolessons/sun-and-other-stars-video-for-kids/
- This is a video explaining that the sun is the brightest star because it's closest to Earth.
  https://www.youtube.com/watch?v=LSGepEpZ_kw

Cross-Content Standards

- Language Arts: Describe Experiences or Events (5.W.3.b) and Explicit Evidence (5.RI.6)
- Mathematics: Ordered Pairs on a Coordinate Plane (5.G.2.c)



THIS PAGE IS INTENTIONALLY BLANK

SC.5.11.3.C

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Represent data in graphical displays to reveal patterns of daily changes in the length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. Assessment does not include causes of seasons.	Use data to investigate patterns in the relative location of the sun, the hours of daylight, and the day-and-night cycle.	Use data and observation to describe daily patterns in the sun's location (sunrise, noon, sunset), and seasonal differences in the hours of daylight and darkness.	Identify the relative location of the sun at different times of the day and the relative length of day and night in summer and winter.	Recognize that the sun is present in the local sky during the day but is not present in the local sky at night.

Standard Clarification

Students will use data to describe the patterns of the sun's location and the differences in the hours of daylight during different seasons. Seasons are the result of Earth's anticlockwise movement around the sun and Earth's tilted axis. As Earth orbits the sun, the northern hemisphere can be tilted toward the sun (summer) or away from the sun (winter). When neither hemisphere is tilted toward the sun, it is either Fall or Spring. The sun is highest in the Nebraska sky during summer at mid-day. In winter, the sun is low on the horizon but still highest at noon.

Target Activities for Access Point A

A. Students use data or observation to describe the sun's location throughout a day.

- use a model of Earth and the sun to represent the location of the sun in the sky at different times of the day
- make a poster from data showing where the sun is located at different times of day

A. Students use data or observation to describe changes in the number of hours of daylight during different times of the year.

- study a simple data table with sunrise/sunset times and total hours of daylight to observe changes and patterns
- watch a video showing the number of hours of daylight during a day and during different seasons

Scaffolding Activities for Access Points B and C

B. Students identify the location of the sun (low on the horizon at sunrise and sunset, overhead at noon).

- identify the relative location of the sun (east in AM, west in PM)
- match pictures labeled morning, noon, and evening (or other times of day) to pictures of the sun in different locations

B. Students associate more hours of daylight with summer and fewer hours of daylight with winter.

- record data to compare whether the sun is visible when waking up and going to bed at the beginning of the school year to whether it is visible at those times in the winter
- match images of summer with more hours of daylight and winter with fewer hours of daylight
- discuss the length of the day relative to the sun's location (high in the sky or low on the horizon) when reading a book about day and night
- mark the location of the sun on a window at noon throughout the school year

C. Students recognize when the sun is present and when it is not.

- identify pictures showing daylight hours in which the sun is present (recognize that the sun is present in the sky even on cloudy days)
- compare pictures of daytime and nighttime
- indicate pictures showing daylight when reading a book

Prerequisite Skill: Students identify the sun and recognize that the sun provides light.

- sort pictures that show images of the sun from pictures that do not show images of the sun
- indicate pictures of the sun when reading a book

Prerequisite Skill: Students use directional words (east/west) and position words (high/low/overhead/horizon).

Prerequisite Skill: Students recognize different seasons and the months that correspond with each season.

Prerequisite Skill: Students use the terms greater than and less than to compare numbers 0–20.

Key Terms

bright, darkness, day, daylight, east, high, horizon, light, low, night, noon, overhead, patterns, season, sun, sunrise, sunset, west

Additional Resources or Links

- This is a video of the sun moving across the sky over a 6-hour period of one day.

  https://www.youtube.com/watch?v=UN2RDobXhbg

- This website has videos and still images showing the changing positions of the sun in the sky with additional support materials and activities.

  https://www.pbslearningmedia.org/resource/buac18-k2-sci-ess-sunposition/changing-position-of-the-sun-in-the-sky/#.XuqAwmpKh-U.

Cross-Content Standards

- Language Arts: Word Structure (5.V.1.b), Antonyms (5.V.2.c), Text Features (5.RI.4) and Relationship between Two Ideas (5.RI.7)
- Mathematics: Compare Numbers (5.N.2.b) and Bar Graphs (5.D.2.a)
- Life Skills: Daily Calendar Activities

THIS PAGE IS INTENTIONALLY BLANK

SC.5.13 Earth's Systems

SC.5.13.4.A

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. Assessment is limited to the interactions of two systems at a time.	Use models of natural Earth processes to identify ways that two systems (geosphere [land], biosphere [organisms], hydrosphere [water], atmosphere [air]) interact, resulting in observable changes.	Given a model of a natural Earth process, identify which two systems interact and one or more changes that are likely to occur.	Given a picture or model of an Earth system, identify one or more parts of that system.	Given a picture or model of an Earth system and two possible parts of that system, recognize a part of the system.

Standard Clarification

Students will use models to describe how parts of Earth's systems interact. For example, the atmosphere and hydrosphere interact through air temperature changes, which lead to the formation or melting of ice.

Target Activities for Access Point A

A. Students identify two natural Earth processes that interact.

- identify the hydrosphere (water) and geosphere (land) as the two Earth processes interacting when a river carves a channel
- identify the geosphere (land) and biosphere (animals) as the two Earth processes interacting when gophers dig holes in a field

A. Students identify one or more changes that occur when two Earth systems interact.

- identify changes that can occur when the hydrosphere and geosphere interact (water/ice will erode the land)
- identify changes that can occur when the geosphere and biosphere interact (animals move the soil and dig holes in the land)

Scaffolding Activities for Access Points B and C

B. Students identify one or more parts of an Earth system.

- match words (forest, trees, plants, people, birds) to the correct object in the biosphere
- name parts of a system when shown a picture of the hydrosphere (ocean, ice) or atmosphere (wind, air)

C. Students recognize a part of an Earth system.

- observe a picture/model of an Earth system and differentiate between something that is a part of the system from something that is not part of the system (hydrosphere/ocean: fish or tiger, atmosphere/sky: cloud or tree)

Prerequisite Skill: Students recognize an Earth system.

- match the names of Earth systems to pictures, categorize or sort pictures into the correct systems, or differentiate between land, water, sky, and organisms

Key Terms

air system (atmosphere), Earth systems, interact, land system (geosphere), model, natural, organism system (biosphere), system, water system (hydrosphere)

Additional Resources or Links

- This is a model showing Earth systems.

  https://lh6.googleusercontent.com/Fo7lGR5OqlQsRKoaDbVAWw7zVXt0-fTG7XdF14mZBr0sm1W_Xizo3m0hwNPrKM-qRmHjsvp6AWdWiUkEGgiGrH1JxMsohhM-FJK6Bkgt9ANkwjvs0j8-M6NP7Ur0xcl-HlNTG6eVqA

- This article contains video and images explaining slow processes and fast processes that change Earth.

  https://www.arcgis.com/apps/MapJournal/index.html?appid=6f9ada476bae4a2da205071e0133a6e7

- This is a website about how Earth's systems interact.

  https://www.csun.edu/science/books/sourcebook/chapters/8-organizing/files/earth-systems-interactions.html

- This is a video showing how Earth's systems interact.

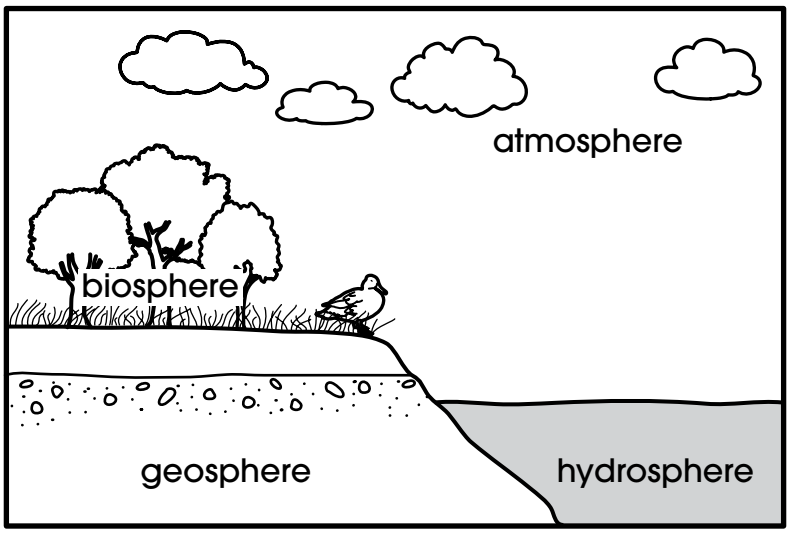
  https://www.youtube.com/watch?v=hXZPRocjXsU

- This is a video showing how Earth's systems interact.

  https://study.com/academy/lesson/interactions-of-earths-spheres-purpose-and-examples.html

Cross-Content Standards

- Language Arts: Context Clues (5.V.1.a), Relationship between Two Ideas (5.RI.7), and Describe Experiences or Events (5.W.3.b)



THIS PAGE IS INTENTIONALLY BLANK

SC.5.13.4.B

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. Assessment is limited to oceans, lakes, rivers, glaciers, groundwater, and polar ice caps but does not include the atmosphere.	Use graphs or charts to describe that most water on Earth is saltwater (about 97%) and is found in oceans, while fresh water (about 3%) is found in lakes, rivers, groundwater, and glaciers/ice.	Given a graph or chart, identify which type of water, saltwater or fresh water, is more abundant, and where each type of water is usually found (oceans vs. lakes, rivers, groundwater, and glaciers/ ice).	Given the location of a body of water (ocean, river, lake), identify whether it contains saltwater or fresh water.	Given a sample or picture of water and two other objects, recognize water.

Standard Clarification

Students will use charts and graphs to describe the abundance of different types of water (saltwater, fresh water) and where they are found.

Target Activities for Access Point A

A. Students use a model to identify that there is more saltwater than fresh water on Earth.

- interpret data presented in a graph to identify that there is more saltwater than fresh water on Earth

A. Students use a model to identify where saltwater and fresh water are found.

- observe models to identify that saltwater is found in the ocean
- observe models to identify that fresh water is found in rivers, lakes, and glaciers

Scaffolding Activities for Access Points B and C

B. Students identify fresh water and saltwater from a variety of water sources.

- select images of the ocean when asked to identify saltwater
- categorize pictures of bodies of water as either saltwater or fresh water

C. Students recognize water.

- select the picture that represents water when presented a set of objects such as a river, a boat, and a tree or a house, a lake, and a banana
- identify examples of water and water sources when reading a book
- differentiate water from other common liquids (water, milk, juice)

Prerequisite Skill: Students differentiate between saltwater and fresh water.

- mix salt with tap water to make saltwater
- observe the differences between a glass of water with salt added and without salt added

Key Terms

body of water, Earth, fresh water, glacier, lake, ocean, river, saltwater

Additional Resources or Links

- This is a model showing the amount of fresh water and ocean water.

  https://lh3.googleusercontent.com/dTLGw7dlp0FseuXPTyCbLur57H31wzpuCCUOqs9PVch_f5XQB4rzLYHL9e6AB0Qctts_cZ_fjGEnmt7zCl6HYjga4CIuWvvtfnpQZ5cs5IpzsFDCryw7kyEpXkox6iEGqTDbfZuviw

- This article contains models showing the distribution of water on Earth.

  https://www.google.com/url?sa=i&url=http%3A%2F%2Fwww.pacificwater.org%2Fpages.cfm%2F_water-services%2Fwater-demand-management%2Fwater-distribution%3Fprinterfriendly%3Dtrue&psig=AOvVaw1NhAlzBUz-dhrv_ZUSK5zY&ust=1591900272447000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCLiOtKPx9-kCFQAAAAAdAAAAABAN

- This is a model demonstrating the amount of available and unavailable fresh water compared to saltwater.

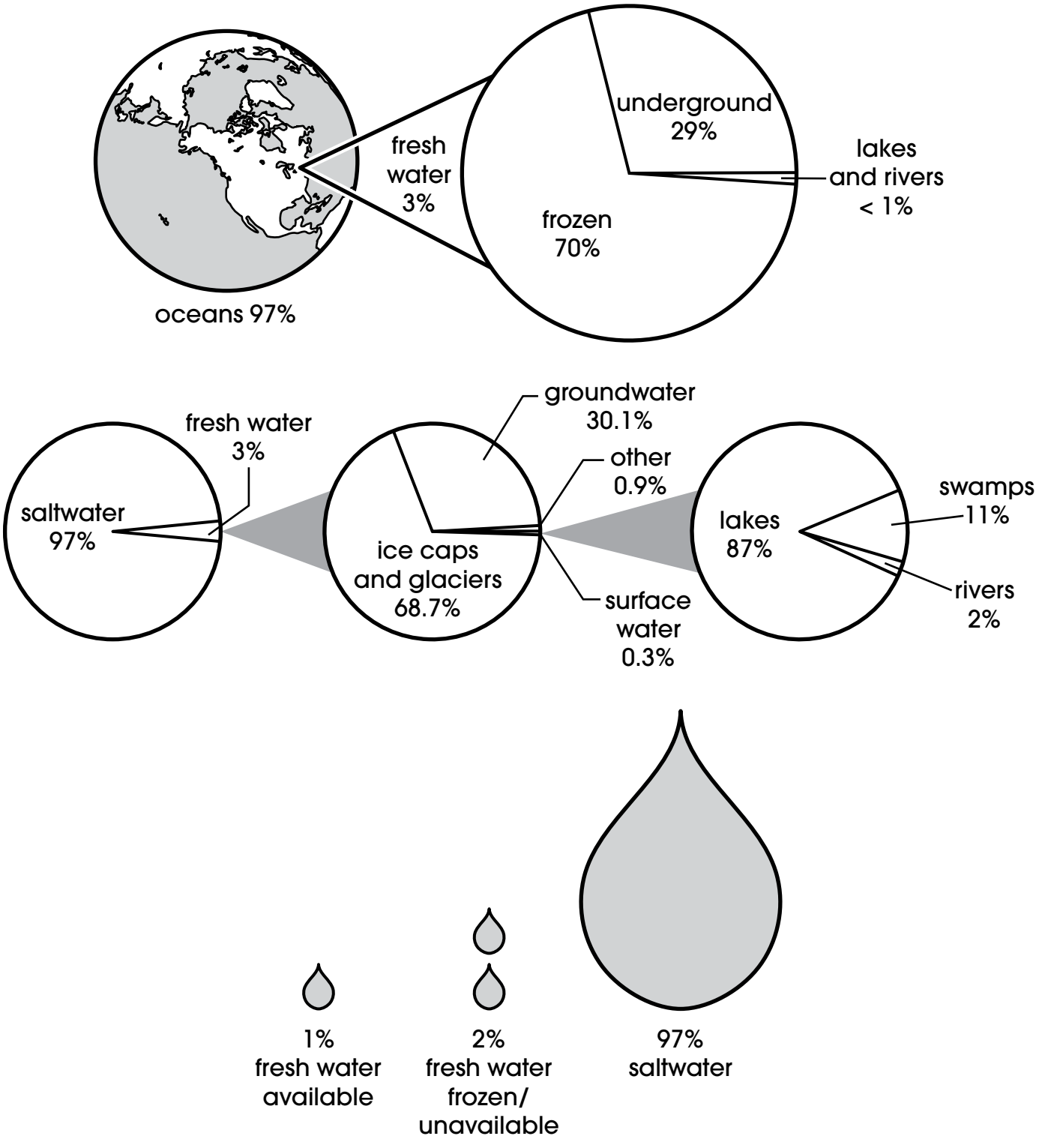
  https://lh3.googleusercontent.com/ApdbAtfivroOg25TgxxJ03R0iCt5UpC_Bd5ahSjtHrQgEudshgsHlHdfFPRKVtQ5vebvzkLlJzx0LAWbHIB25OGkFAIjpXIwAAzr0qVEi6MVpENl_vN3X3dGJJRdnPiTNa2i6nxJvA

- This is a collection of photos of saltwater and fresh water.

  https://www.needpix.com/photo/download/1527158/wetland-wetlands-marsh-nevada-clarkcounty-wetlands-free-pictures-free-photos-free-images

Cross-Content Standards

- Language Arts: Word Structure (5.V.1.b), Relationship between Two Ideas (5.RI.7), Text Features (5.RI.4), and Explicit Evidence (5.RI.6)
- Mathematics: Compare and Order Numbers (5.N.2.b)



THIS PAGE IS INTENTIONALLY BLANK

SC.5.13.4.C

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	Use information about Earth's resources, the environments in which they are found, and ways that resources and environments can be protected or conserved.	Use information about Earth's resources in the student's environment to identify one or more ways that a resource or its source can be conserved (reduce, reuse, recycle).	Given an Earth resource used by the student (e.g., water, electricity, paper, fossil fuels), identify one way to conserve it.	Recognize that Earth resources in the student's environment (e.g., water, metal, wood) are limited.

Standard Clarification

Students will identify ways Earth's resources can be conserved.

Target Activities for Access Point A

A. Students use information about Earth's resources to identify how a given resource can be conserved.

- create a poster showing ways to reuse or recycle paper
- watch a video on how plastic trash impacts our environment and create a list of ways to reduce plastic waste in the school (reusable containers instead of disposable plastic)
- read a story about droughts and list ways to save water
- list ways to use less gas and oil (driving less, using electric cars, carpooling)
- compare and contrast clothing worn in winter and summer and discuss conserving energy by wearing the appropriate clothing

Scaffolding Activities for Access Points B and C

B. Students identify ways to conserve a given resource they typically use.

- view a storyline of a child brushing teeth (putting toothpaste on toothbrush, turning on water, brushing teeth with water still on, spitting in sink, rinsing off toothbrush, turning off water, putting toothbrush away) and identify how the child could save water
- study a scenario about a student using a clean sheet of paper to write a note and identify alternatives that would save paper (write on both sides, use a marker board, use scratch paper, use a computer)
- study a picture of a room with a light on, a fan running, a television on, and no one in the room to identify how electricity could be conserved

C. Students recognize there is a limited supply of natural resources.

- discuss the use of renewable/unlimited natural resources (sunlight, wind energy, wave energy) to conserve limited resources (coal, wood, fossil fuels)
- sort pictures to indicate whether the resource in each picture is a limited or unlimited natural resource
- view images or videos of wetlands, forests, or lakes that have changed over time

Prerequisite Skill: Students recognize and differentiate between Earth's natural resources and man-made resources.

- watch a video differentiating natural resources from man-made resources
- sort pictures to indicate whether the resource in each picture is a natural resource or a man-made resource

Key Terms

conserve, environments, limited, natural resources, protected, recycle, reduce, resources, reuse, unlimited

Additional Resources or Links

- This is a video of a book about reusing and recycling.
  https://www.youtube.com/watch?v=5Kb5Y_YU9oo
- This is a video showing images of Sierra National Forest before and after a drought.
  https://www.youtube.com/watch?v=mlslfl2mIHA
- This is a teaching lesson on winter and summer, including the clothes to wear during each season.
  https://www.scholastic.com/teachers/lesson-plans/teaching-content/winter-vs-summer/
- This is a video on natural and manmade resources.
  https://www.youtube.com/watch?v=RV3eV23AF9g

Cross-Content Standards

- Language Arts: Relationship between Two Ideas (5.RI.7)

THIS PAGE IS INTENTIONALLY BLANK

SC.5.13.4.E

Standard/Indicator	Extension	Access Point A	Access Point B	Access Point C
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	Given a simple and relevant problem or need within the student's community, participate in designing a solution that meets specified criteria and constraints on materials, time, or cost.	Given a simple, relevant problem or need with one or more criteria and constraints, identify tools and/or materials that could be used to design a solution.	Given a common tool or material within the student's environment, identify ways that it can be used to solve a problem.	Given a simple scenario, recognize the function or use of a tool or material.

Standard Clarification

Students will identify tools and materials that could be used to design a solution and/or solve a problem under given criteria (what the solution must do) and constraints (limits such as budget, resources, or time).

Target Activities for Access Point A

A. Students identify tools and/or materials used to help design a solution when provided with a problem or need with criteria and constraints.

- identify materials that could be used to build a ramp
  - scenario: Joe is in a wheelchair. He gets to the library and there is one step to get into the building. When he's alone, he can't get his wheelchair up the step. His friends know wheelchairs can go up ramps, so they decide to make a ramp to place over the step. They want to use things they can find around their houses to make this ramp.
  - criteria: This ramp will allow a student in a wheelchair to get over the step without help when they are alone.
  - constraints: The permanence of the ramp, the cost, and the materials used to make the ramp (long-lasting, weather-resistant) are all constraints.
- identify materials that could be used to draw attention to an unsafe spot on the sidewalk
  - scenario: There is a bump in the sidewalk in front of the school. It is hard to see because the cement on both sides of the bump is the same color. If students don't see the bump, it may cause someone to trip and fall.
  - criteria: The solution must make the bump easier to see and reduce the chance that students will trip on the bump.
  - constraints: Materials must be available, affordable, non-toxic to people or the environment, and permanent.

Scaffolding Activities for Access Points B and C

B. Students identify ways common tools and materials can be used to solve problems.

- match a tool to a problem (an air pump is the best tool for a flat tire; a screwdriver and screw are the best tools to replace a missing screw on a chair; a spoon is the best tool to scoop up soup; a shovel is the best tool to dig a hole)
- match a material to a problem (thick cardboard, a piece of wood, or a stick are good materials to fix a wobbly table on uneven ground; tape or glue are good materials to fix a frayed shoelace end; tape is a good material to fix torn paper)

C. Students recognize what a given tool or material is used for.

- identify the function of a hammer (pound nails) and nails (hold boards together)
  - scenario: The ground is covered with snow. Some students see birds outside their classroom window. They decide to make a bird feeder so the birds will have food. They use boards, nails, and a hammer.

Prerequisite Skill: Students recognize common tools.

- sort images of objects to indicate whether each object is or is not a tool

Key Terms

affordable, constraint, criteria, design, environment, function, material, non-toxic, solution, tool

Additional Resources or Links

- This is an animated video on how to build a birdhouse.
  https://theawesomer.com/how-to-build-a-birdhouse-animated/568709/
- This is a video introducing common building tools.
  https://www.youtube.com/watch?v=h0QFkRqfW4k

Cross-Content Standards

- Language Arts: Author's Purpose (5.RI.3), Main Idea (5.RI.1), Explicit Evidence (5.RI.6), and Relationship between Two Ideas (5.RI.7)

Alternate Science Instructional Supports for NSCAS Science Extended Indicators Grade 5