



Course Description
K-2 Science
NGSS



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Kindergarten Course Description

K-PS2 Motion and Stability: Forces and Interactions

Topic 1: Pushes, Pulls, and Magnets

Description: [K-PS2-1] In this topic students will learn how pushes and pulls can change the motion of an object and recognize that magnets can exert force.

Instruction Module **Attractions:** In this Instruction Module, students are introduced to magnets. They recognize that magnets attract some objects such as refrigerator doors and paper clips that contain iron. They learn that magnets are of different shapes and sizes and have two ends which are usually colored differently; different colored ends (unlike poles) attract each other and similar colored ends (like poles) repel each other.

Instruction Module **Magnets - Push or Pull?:** In this Instruction Module, students recognize that force and motion are part of everyday life and magnets can exert force. They recognize that magnets have two poles and that opposite poles attract each other while similar poles repel each other. They learn that magnets can be used to push or pull objects.

Instruction Module **Using Magnets:** In this Instruction Module, students observe the use of magnets in everyday life. They learn about the different uses of magnets, where to find magnets, and how magnets work. They observe how magnets attract and repel each other.

Glossary **Attractions**
Magnets - Push or Pull?
Using Magnets
The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.

Interactivity **Magnets – Push or Pull?:** In this Interactivity, students identify objects that are attracted or "pulled" by magnets. They "use" a magnet to pick up the magnetic objects. Then, they use a magnet to attract and repel or push other magnets in order to "collect" them.

Magnetizing a Needle: In this interactivity, students learn how to make a magnet and identify the two poles through careful observation. Safety measures while doing an experiment is emphasized.



Quiz	Attractions Magnets - Push or Pull? Using Magnets
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Teacher Resources	Attractions Magnets - Push or Pull? Using Magnets
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Topic 2: How do Objects Move?

Description: [K-PS2-2] In this topic students will recognize the different ways in which objects can move, and learn how pushes and pulls can change the motion of an object.

Instruction Module	Place and Location: In this Instruction Module, students are introduced to the concept of position and that an object’s position can be described in relation to another object. Students learn to identify locations such as above, below, behind, beside, and in front of, in relation to other objects.
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Instruction Module	Moving Objects: In this Instruction Module, students are introduced to the different ways in which objects move. They observe objects that move straight, round and round, up and down, and in a zigzag manner. They compare movements that are fast with those that are slow.
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Instruction Module	How Do They Move?: In this Instruction Module, students observe various moving objects and identify how they are moving. They recognize the different ways in which objects can move such as, in a straight line, up and down, back and forth, round and round, and fast and slow. They learn to describe the change in the location of an object using words such as closer to, nearer to, and farther from.
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Instruction Module	On the Move: In this Instruction Module, students observe the changes in position of a moving object and recognize that a push or pull on an object at rest can make the object move. They learn to mark and record the distance an object moves. Students also learn and observe the different kinds of motion in objects, such as a cup rolling and a ruler sliding.
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Glossary	Place and Location Moving Objects How Do They Move? On the Move The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science
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	concepts presented in the Instruction Modules and Interactivities.
Interactivity	<p>Moving Animals: In this Interactivity students observe animals moving in different ways and identify the words that describe the movement of each animal.</p> <p>On the Move: In this interactivity, students observe and record the movement of different objects by tracing their motion on a white sheet of paper. This is done by allowing students to dip an object in paint, and then letting it slide down a ramp to trace a path on a white sheet of paper.</p>
Quiz	Place and Location Moving Objects How Do They Move? On the Move
Teacher Resources	Place and Location Moving Objects How Do They Move? On the Move

K-PS3 Energy

Topic 1: See, Feel, and Hear

Description: [K-PS3-1] In this topic students will learn about energy forms such as light, heat, and sound, and understand that these energy forms can be sensed by our sense organs.

Instruction Module	See, Feel, and Hear: In this Instruction Module, students are introduced to energy forms such as light, heat, and sound, Students recognize that these energy forms are observed through the senses of sight, touch, and hearing and identify some of the sources of these energy forms.
Glossaries	<p>See, Feel, and Hear</p> <p>The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.</p>
Quiz	See, Feel, and Hear
Teacher Resources	See, Feel, and Hear



K-LS1 From Molecules to Organisms: Structures and Processes

Topic 1: Needs of Plants and Animals

Description: [K-LS1-1] In this topic, students will learn to differentiate between living and nonliving things, compare the basic needs of all living things, and recognize the structures that help living things survive.

Instruction Module

Needs of Plants and Animals: In this Instruction Module, students recognize the difference between living things and nonliving things based on their basic needs or lack of needs. They are introduced to the concept of an offspring.

Instruction Module

Plants and Animals: In this Instruction Module, students learn that plants and animals have physical characteristics that help them survive in their environment. They learn to identify different parts of a plant such as the roots, stem and leaves and learn about their functions. They learn that physical features of plants such as leaf shape can be used to sort plants into different groups. They also learn that physical characteristics of animals such as body coverings can be used to sort animals into different groups.

Glossaries

Needs of Plants and Animals

Plants and Animals

The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.

Activities

Expository - The Parts of a Plant

Quiz

Needs of Plants and Animals
Plants and Animals

Teacher Resources

Needs of Plants and Animals
Plants and Animals

K-ESS2 Earth's Systems

Topic 1: Weather Conditions and Patterns

Description: [K-ESS2-1] In this topic students will learn to describe weather conditions such as sunny, cloudy, rainy, warm, and windy.



Instruction Module	Weather Information: In this Instruction Module, students will learn to describe weather and learn that weather information can be recorded by observing, measuring, and describing weather conditions such as hot or cold, clear or cloudy, calm or windy, and rainy or icy; they will recognize that air is all around us and moving air is wind.
Glossaries	Weather Information The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.
Interactivity	What to Wear?: In this interactivity students will demonstrate an understanding of how weather affects their daily lives by selecting appropriate clothing based on different weather conditions.
Quiz	Weather Information
Teacher Resources	Weather Information

K-ESS3 Earth and Human Activity

Topic 1: Living Things and Their Environment

Description: [K-ESS3-1] In this topic students will learn about the relationship between the needs of different plants or animals and the places they live in, and recognize the external characteristics of living things that help them survive in their environment.

Instruction Module	Animals and Their Environments: In this Instruction Module, students learn to identify the external features that help each animal survive in its environment. Students also learn that different parts of the world have different environments and the animal's features are suited to that specific environment.
Glossaries	Animals and Their Environments The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.
Interactivity	What Helps Me Survive?: In this Interactivity, students identify the external features that help an animal survive in its environment.
Activities	Expository - Entomologists-Scientists Who Study Insects



Quiz Animals and Their Environments

Teacher Resources Animals and Their Environments

Topic 2: Weather Conditions and Patterns

Description: [K-ESS3-2] In this topic students will learn to describe weather conditions such as sunny, cloudy, rainy, warm, and windy.

Instruction Module **Weather Information:** In this Instruction Module, students will learn to describe weather and learn that weather information can be recorded by observing, measuring, and describing weather conditions such as hot or cold, clear or cloudy, calm or windy, and rainy or icy; they will recognize that air is all around us and moving air is wind.

Glossaries **Weather Information**
The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.

Interactivity **What to Wear?:** In this interactivity students will demonstrate an understanding of how weather affects their daily lives by selecting appropriate clothing based on different weather conditions.

Quiz Weather Information

Teacher Resources Weather Information

Topic 3: Rocks, Soil, and Water

Description: [K-ESS3-3] In this topic students will learn about natural resources including rocks, soil, and water, and recognize how they are useful to humans.

Instruction Module **Describing Rocks:** In this Instruction Module, students observe that rocks come in different shapes, sizes, colors, and textures. By comparing the characteristics of different rocks, they learn to sort them into the various categories. Students also understand the different uses of rocks and soils by learning about the numerous ways in which rocks help us in our daily lives.



Instruction Module	Describing Water: In this Instruction Module, students observe and describe physical properties of water including color and clarity. They learn that water is found in different forms such as clouds, rain, snow and ice. They also identify natural sources of water such as lakes, rivers and oceans and classify them as freshwater and salt water. Students recognize that water is very useful and is used for a variety of purposes such as drinking, washing, cooking, cleaning and farming.
Instruction Module	Using Rocks, Soil, and Water: In this Instruction Module, students will learn to identify and compare the color, composition and the different layers of soil and sort components of soil such as sand, silt and clay based on size, and texture. They also learn to identify different sources of water such as lakes, streams, rivers and oceans. Identify useful products formed from rocks, soil and water.
Instruction Module	Natural Resources: In this Instruction Module, students learn that rocks are found everywhere and can be described and classified based on their physical properties such as size, texture, and color; They also learn to identify and compare the properties of natural sources of freshwater and saltwater, and distinguish between natural and manmade resources.
Glossaries	Describing Rocks Describing Water Using Rocks, Soil, and Water Natural Resources The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.
Interactivity	Using Rocks, Soil, and Water: In this interactivity, students Identify and group objects as water product, soil product and rock product. Get Resourceful!: In this interactivity students identify and classify resources as natural and man made resources.
Quiz	Describing Rocks Describing Water Using Rocks, Soil, and Water Natural Resources
Teacher Resources	Describing Rocks Describing Water Using Rocks, Soil, and Water Natural Resources



Grade 1 Course Description

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

Topic 1: Light, Heat, and Sound Energy

Description: [1-PS4-1; 1-PS4-2; 1-PS4-3] In this topic students will learn to identify forms of energy such as light, heat, and sound, and recognize their uses and effects on matter.

Instruction Module

Energy and Its Uses: In this Instruction Module, students learn about energy and its importance in everyday life. They recognize light energy, heat energy, and sound energy, and the uses of each of the three forms. They understand that while the different forms of energy cannot be touched, they can be experienced in many ways; light energy can be seen, heat energy can be felt, and sound energy can be heard.

Instruction Module

Effect of Energy on Matter: In this Instruction Module, students observe how increasing or decreasing amounts of light, heat, and sound energy affect various objects. They observe the effects of light energy on brightness, sound energy on loudness and softness, and investigate how the amount of heat energy can make some things melt or freeze.

Instruction Module

Energy Forms – Light and Heat: In this Instruction Module, students are introduced to heat and light as forms of energy. They learn that light energy helps us to see and plants use light energy during photosynthesis. They understand that light bends as it passes through transparent objects and is blocked by opaque objects. They also learn that heat or thermal energy is the energy of the moving particles of matter.

Glossaries

Energy and Its Uses
Effect of Energy on Matter
The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.

Interactivities

Energize!: In this interactivity students “energize” various objects in a toy house by identifying the type(s) of energy each of them uses or gives out.
Increasing Heat Energy: In this interactivity students investigate how increasing heat energy can affect objects. They heat various materials and record the time taken for each one to melt completely.



Quiz	Energy and Its Uses Effect of Energy on Matter
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Teacher Resources	Energy and Its Uses Effect of Energy on Matter
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1-LS1 From Molecules to Organisms: Structures and Processes

Topic 1: External features of Plants and Animals

Description: [1-LS-1] In this topics students will learn to identify the the various parts of plants and some unique features of animals that help them survive in their environment.

Instruction Module	Animals and Their Environments: In this Instruction Module, students learn that animals have unique external features, which help them survive in a particular environment. They learn to identify the external features that help each animal survive in its environment. Students also learn that different parts of the world have different environments and the animal’s features are suited to that specific environment.
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Instruction Module	Parts of a Plant: In this Instruction Module, students learn to identify the various parts of a plant, including the root, stem, leaf, flower, fruit, and seed. Students also learn how each plant part helps the plant by performing individual functions.
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Glossaries	Animals and Their Environments Parts of a Plant The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.
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Interactivities	What Helps Me Survive?: In this Interactivity, students identify the external features that help an animal survive in its environment. Backyard Bugs: In the interactivity, students learn the positions of the various plant parts by placing backyard bugs on the different parts of plants. Students also learn how each plant part helps the bugs in different ways, be it providing them with shelter or food.
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Activities	Expository - Entomologists-Scientists Who Study Insects Expository - The Parts of a Plant
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Quiz	Animals and Their Environments Parts of a Plant
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Teacher Resources Animals and Their Environments
Parts of a Plant

1-LS3 Heredity: Inheritance and Variation of Traits

Topic 1: Inherited Traits

Description: [1-LS3-1] In this topic students will learn that inherited traits are those traits that are passed on from parents to offspring.

Instruction Module **Inherited Traits of Animals and Plants:** In this Learning Object, students learn that offspring resemble their parents and grandparents because of inherited traits. Students learn that inherited traits are passed on from parents to their offspring. They observe and recognize examples of inherited traits in animals, plants, and humans.

Interactivities **Test Your Pair-enting Skills:** In this interactivity, students apply their knowledge of inherited traits of animals and plants to correctly identify the parent of given offspring based on inherited traits.

Quiz Inherited Traits

1-ESS1 Earth's Place in the Universe

Topic 1: The Sun, Moon, and Stars

Description: [1-ESS1-1; 1-ESS1-2] In this topic students will recognize the objects visible in the sky during the day and during night including the Sun, Moon, and stars, and recognize the cycle of seasons.

Instruction Module **Sky World:** In this Instruction Module, students identify the changes that occur in the sky through the day. They observe the changes that occur during sunset and sunrise. They also observe how the sky can change from clear to cloudy. They learn about stars and the phases of the Moon.

Instruction Module **Day and Night, and Seasons:** In this Instruction Module, students learn that there are different objects visible in the sky during the day and different objects visible at night. They observe the changing patterns of objects in the sky during the day and during the night, and recognize seasonal patterns.



Glossaries	<p>Sky World Day and Night, and Seasons</p> <p>The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.</p>
Interactivities	<p>Model-making: In this interactivity, students trace the apparent movement of the Sun during a single day. Students mark the position of the Sun through the day, with respect to a fixed point. What's the Season?: In this interactivity students identify the activities performed during the course of the day and the greetings that are associated with different times of the day. They identify and differentiate the activities associated with the different seasons.</p>
Activities	<p>Expository - Observing Objects in the Sky Expository - Day and Night, and Seasons</p>
Quiz	<p>Sky World Day and Night, and Seasons</p>
Teacher Resources	<p>Sky World Day and Night, and Seasons</p>

Grade 2 Course Description

2-PS1 Matter and its Interactions

Topic 1: Describing and Classifying Matter

Description: [2-PS1-1] In this topic students will learn that objects can be described, compared, and sorted by observable properties such as size, shape, mass, and texture, and recognize that matter can be solid, liquid, or gas.

Instruction Module

Describing Objects: In this Instruction Module, students learn that objects can be described, compared with each other, and sorted based on their size, shape, and mass. The students also learn that objects can change properties by heating and cooling. They can freeze, melt, and evaporate. They can be solid, liquid, or gas.

Instruction Module

Sorting and Changing Matter: In this Instruction Module, students learn to sort matter by recognizing properties such as size, mass, color, and texture. Students also observe the changes that occur in matter when heated or cooled: melting and freezing.



Instruction Module	Physical Properties of Matter: In this Instruction Module, students In recognize that all things are made of matter. They are introduced to the physical properties of matter including shape, relative mass, relative temperature, texture, flexibility, and whether a material is a solid, liquid, or gas. They learn that these physical properties help us to describe, identify, and classify matter.
Glossaries	<p>Describing Objects Sorting and Changing Matter Physical Properties of Matter</p> <p>The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.</p>
Interactivities	<p>Sort Them!: In this interactivity, students classify objects based on their physical properties of mass, size, shape, and color.</p> <p>Physical Properties of Matter: In this interactivity, student conduct a virtual experiment in which they compare and classify matter based on relative mass, temperature, and attraction to magnets.</p>
Quiz	<p>Describing Objects Sorting and Changing Matter Physical Properties of Matter</p>
Teacher Resources	<p>Describing Objects Sorting and Changing Matter Physical Properties of Matter</p>

Topic 2: Selecting Materials for a Purpose

Description: [2-PS1-2] In this topic students will be able to select suitable materials based on their physical properties and explain how when put together in a mixture, these materials may have functions that the parts could not do by themselves.

Instruction Module	Introduction to Mixtures: In this Instruction Module, students learn that materials with different physical properties physically combine to form a mixture. They also observe how different materials when put together, may have functions that the parts could not do by themselves. They learn to select the right materials for the right job based on the physical properties of the materials.
Glossaries	<p>Introduction to Mixtures</p> <p>The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.</p>



Interactivities

Introduction To Mixtures: In this interactivity, students use various materials with different physical properties to create a combination that serves a particular function. They test the properties of the various materials provided to select the right material.

Quiz

Introduction to Mixtures

Teacher Resources

Introduction to Mixtures

Topic 3: Changes in Matter

Description: [2-PS1-4] In this topic students will learn to recognize and describe changes in physical properties of matter caused by cutting, folding, or sanding and compare them with the changes caused by heating or cooling.

Instruction Module

Changes in Matter: In this instruction module, students are presented with examples to demonstrate that cutting, folding, sanding, freezing, or melting changes the physical properties of objects but does not change the matter that makes up the object. They observe and compare changes caused by heating and cooling. They recognize that heating can sometimes change the matter that the object is made of.

Glossaries

Changes in Matter

The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.

Interactivities

Changes in Matter: In this interactivity, students predict the changes that may be caused by heating and cooling different materials. Then, they place the materials in the oven and the freezer and observe the changes caused by heating and cooling.

Quiz

Changes in Matter

Teacher Resources

Changes in Matter

2-LS2 Ecosystems: Interactions, Energy, and Dynamics

Topic 1: Depending on Each Other

Description: [2-LS2-1; 2-LS2-2] In this topic students will learn to identify and describe the different parts of a plant and their functions and recognize how plants and animals depend on each other in order to survive.



Instruction Module	Parts of a Plant: In this Instruction Module, students learn to identify the various parts of a plant, including the root, stem, leaf, flower, fruit, and seed. Students also learn how each plant part helps the plant by performing individual functions.
Instruction Module	Depending on Each Other: In this Instruction Module, students learn about how living things in an environment depend on each other to meet their basic needs. They learn that animals depend on plants for food, air and shelter and plants depend on animals for spreading their seeds and sometimes for water and nutrients. They understand that plants convert energy from sunlight to a form that can be used by them and animals and that such an interdependence for energy can be depicted using diagrams called food chains.
Glossaries	Parts of a Plant Depending on Each Other The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.
Interactivities	Backyard Bugs: In the interactivity, students learn the positions of the various plant parts by placing backyard bugs on the different parts of plants. Students also learn how each plant part helps the bugs in different ways, be it providing them with shelter or food. Snap It Up!: In this interactivity, students observe and record different examples of interdependence among plants and animals in a park, forest, and pond environment.
Activities	Expository - Structure and Function Expository - Organisms and Environments
Quiz	Parts of a Plant Depending on Each Other
Teacher Resources	Parts of a Plant Depending on Each Other

2-LS4 Biological Evolution: Unity and Diversity

Topic 1: Living Things and Their Environment

Description: [2-LS4-1] In this topic, students will recognize that all organisms interact and depend on each other and their environment; they will learn that organisms have structures and behaviors that allow them to survive in their environment and meet their basic needs.



Instruction Module	Living Things and Their Environment: In this Instruction Module, students identify the basic needs that living things have for survival. They learn how changes in the environment affect behavior such as migration, hibernation, and dormancy of living things. Students also compare the different ways in which organisms depend on the environment and on other organisms to meet their basic needs. They learn how to draw food chains.
Instruction Module	Animal and Plant Adaptations: In this Instruction Module, students learn that adaptations are physical and behavioral features that animals and plants have developed over time to help them survive in their environments. They learn that physical adaptations in animals are body parts such as fins, wings, feet, teeth, claws, beaks and body coverings, and behavioral adaptations include hibernation, migration and living in communities. They learn that some of the physical adaptations in plants include stems, roots, leaves, vines, tendrils and flowers.
Glossaries	Living Things and Their Environment Animal and Plant Adaptations The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules and Interactivities.
Interactivities	Build the Energy Bar: In this interactivity, students will arrange organisms in the correct order in a given food chain. Animal and Plant Adaptations: In this interactivity, students apply their understanding of animal and plant adaptations to identify the adaptations in different animals and plants. They also sort the different animal and plant adaptations into physical and behavioral adaptations.
Activities	Expository - Mammals: Large and Small Expository - The Parts of a Plant
Quiz	Animal and Plant Adaptations Living Things and Their Environment
Teacher Resources	Animal and Plant Adaptations Living Things and Their Environment



2-ESS1 Earth's Place in the Universe

Topic 1: Earth's Ever Changing Surface

Description: [2-ESS1-1] In this topic students will learn how slow processes such as weathering and erosion of rocks and quick events such as volcanic explosions and earthquakes change the surface of Earth.

Instruction Module

Soil Formation: In this Instruction Module, students are introduced to the various components of soil and learn to differentiate between sand, silt, and clay based on particle size and texture. Students learn how soils are formed by weathering of rock and the decomposition of plant and animal remains.

Instruction Module

Earths Ever-Changing Surface: In this Instruction Module, students learn about the rapid changes in Earth's surface caused by volcanic eruptions, earthquakes, and landslides. They learn about tectonic plates and faults. They learn how plate movements can cause earthquakes. They learn how earthquakes can sometimes cause tsunamis and landslides. They observe and recognize the changes in Earth's surface cause by the movement of glaciers, such as U-shaped valleys and lakes.

Interactivities

Earths Ever-Changing Surface: In this interactivity student are presented with “before” and “after” pictures of landforms changed by earthquakes, volcanoes, and glaciers. The students identify the natural forces that changed them.

Quiz

Soil Formation
Earths Ever-Changing Surface

2-ESS2 Earth's Systems

Topic 1: Land and Water Bodies

Description: [2-ESS2-2; 2-ESS2-3] In this topic students will learn to identify, compare, and describe various landforms and water bodies.

Instruction Module

Landforms: In this Instruction Module, students are introduced to the different landforms on Earth, including mountains, hills, valleys, and plains. They learn about the landforms formed by water such as beaches, bays, deltas, caves, lakes, islands, archipelagos, and peninsulas.

Instruction Module

Nature and States of Water: In this Instruction Module, students are introduced to the three states of water. Students learn that water naturally exist in all three states. They observe and



recognize how water changes states as it moves from land to air and back to land during the process of the water cycle.

Interactivities

Jamie and the Jigsaw Puzzle: In this interactivity student complete a jigsaw puzzle by identifying landforms based on clues or descriptions.

Activities

Expository - Landforms

Quiz

Landforms