

Second Grade Science Curriculum

<u>Grade: 2</u>	<u>Topic: Animal Adventures</u>	<u>Time Frame: (3-6 Weeks)</u>
Essential Questions (topic essential question)	How many different kinds of animals are there? Why do frogs say “ribbit”? How could you get more birds to visit a bird feeder?	
Enduring Understandings	Students will understand that . . . Different types of animals live in different habitats. Environments affect animals living in each habitat	

Next Generation Science Standards
<p>2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.</p> <p>K-2- ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS 1-2 Develop a simple sketch, drawing or physical model to illustrate how the shape of an object helps its function as needed to solve a given problem.</p> <p>K-2-ETS -1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs</p>

<i>Texts and Digital/Print Resources</i>	<i>Performance Assessments</i>
<ul style="list-style-type: none"> ● Mystery Science ● Readworks Leveled passages ● Teacher generated activity sheets ● Multi-level ● BrainPop Jr. Worksheets ● Teacher Generated Worksheets 	<ul style="list-style-type: none"> ● Students evaluate and communicate information by sorting animals based on their traits and explaining their choices. Then, students sort the animals based on the traits scientists use to classify the animals as mammals, birds, reptiles, and invertebrates. Students determine which group ‘challenge animals’ belong to, based on their

	<p>characteristics.</p> <ul style="list-style-type: none"> • Students listen to a variety of frog calls, then analyze the sounds from two different habitats to determine which frogs are there. They then construct an argument from evidence about which habitat is more biodiverse based on the amount of different frog calls. • Students define a problem by stating which type of bird they want to design a bird feeder for, and what its needs are. Each student designs a solution by comparing multiple sketches and developing a model of a bird feeder that best meets the needs of the bird they want to attract. Students reflect on how to improve their prototype.
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<i>Science & Engineering Practices</i>	<i>Disciplinary Core Ideas</i>	<i>Crosscutting Concepts</i>
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<p>Asking Questions and Defining Problems</p> <p>Planning and Carrying Out Investigations</p> <p>Analyzing and Interpreting Data</p> <p>Constructing Explanations and Designing Solutions</p>	<p>LS4.5 Biodiversity and Humans</p>	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed <p>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. Simple tests can be designed to gather evidence to support or refute student ideas about causes.
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Activities	Technology Infusion
<ul style="list-style-type: none"> Biodiversity and classification: Animals sorting game Biodiversity and classification: Who's calling? Biodiversity and engineering: design a bird feeder 	<ul style="list-style-type: none"> Mystery Science videos and interactive activities BrainPop Jr. Chromebooks

Grade: 2	Topic: Material Magic	Time Frame: 6-9 Weeks
Essential Questions (topic essential question)	Why do we wear clothes? Can you really fry an egg on a hot sidewalk? Why are so many toys made out of plastic? What materials might be invented in the future? Could you build a house out of paper?	
Enduring Understandings	Students will understand that solids are a state of matter. Students will understand that liquids are a state of matter. Students will be able to identify the properties of solids (color, texture, hardness, flexibility, and absorbency). Students will understand that properties can be sorted according to properties. Students will understand that materials have distinct uses based on their properties and will be able to construct structures based on these principles. Students will understand that solids can change their properties through heat/temperature change and pressure.	

Next Generation Science Standards Performance Expectations
<p>2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p> <p>2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p> <p>2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</p> <p>2-PS1-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p> <p>2-PS1-4. Construct an argument with the evidence that some changes caused by heating or cooling can be reversed and some cannot.</p>

<i>Science & Engineering Practices</i>	<i>Disciplinary Core Ideas</i>	<i>Crosscutting Concepts</i>
<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-2) <p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2). <p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. <p>Engaging in Argument from Evidence</p> <ul style="list-style-type: none"> Construct an argument with evidence to support a claim (2-PS1-4). 	<p>PS1.A: Structure and Properties of Matter</p> <p>PS1.B: Chemical Reactions</p>	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed <p>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. Simple tests can be designed to gather evidence to support or refute student ideas about causes. <p>Energy and Matter</p> <ul style="list-style-type: none"> Objects may break into smaller pieces and be put together into larger pieces, or change shapes.

<i>Texts and Digital/Print Resources</i>	<i>Performance Assessments</i>
<ul style="list-style-type: none"> Teacher Generated Worksheets Science Journals Epic Books <ul style="list-style-type: none"> Investigating Matter Changing Matter 	<ul style="list-style-type: none"> Engineer a house out of paper Conduct an investigation to determine which types of candy melt in hot water to decide which are best to eat on a hot summer day.

<ul style="list-style-type: none"> ○ The Nature of Matter ○ Many Kinds of Matter ● Observable Properties of Matter Video https://www.youtube.com/watch?v=1wmtiGuh9RA ● 	
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Activities	Technology Infusion
<p>Students will classify objects according to properties (color, texture, hardness, flexibility, and absorbency).</p> <ul style="list-style-type: none"> ● Mad Hatter- Materials, Properties, and Engineering ● Feel the heat- Classify materials, insulators, properties ● Bouncy Glass Inventions- Inventions & Engineering 	<ul style="list-style-type: none"> ● Mystery Science ● Brain Pop ● Chromebooks

<u>Grade: 2</u>	<u>Topic:</u> Work of Water <u>Time Frame:</u> 6-9 Weeks
Essential Questions (topic essential question)	<p>If you floated down a river, where would you end up?</p> <p>Why is there sand at the beach?</p> <p>What's strong enough to make a canyon?</p> <p>How can you stop a landslide?</p>
Enduring Understandings	<p>Students will understand that . . .</p> <p>Natural Earth events happen quickly or slowly.</p> <p>There are many different types of landforms and water bodies on Earth.</p> <p>Water flows downhill and is very powerful.</p> <p>Humans can design and engineer structures to protect us from Earth events.</p>

Next Generation Science Standards Performance Expectations

2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
 2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
 2-ESS2-3. Obtain information to identify where water is found on Earth.
 K-2- ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
 K-2-ETS 1-2 Develop a simple sketch, drawing or physical model to illustrate how the shape of an object helps its function as needed to solve a given problem.
 K-2-ETS -1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs

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<i>Science & Engineering Practices</i>	<i>Disciplinary Core Ideas</i>	<i>Crosscutting Concepts</i>
Developing and Using Models Constructing Explanations and Designing Solutions Analyzing and Interpreting Data Obtaining, Evaluating and Communicating information	-ESS2.A Earth Materials and Systems -ESS2.B. Plate Tectonics and Large-Scale System Interactions -ESS2.C. The Roles of Water in Earth's Surface Processes -ETS1.C Optimizing the Design Solution	<ul style="list-style-type: none"> • Structure and Function • Cause and Effect • Stability and Change

<i>Texts and Digital/Print Resources</i>	<i>Performance Assessments</i>
<ul style="list-style-type: none"> • Mystery Science • Readworks Leveled passages • Epic Books • Teacher generated activity sheets 	<ul style="list-style-type: none"> • Students conduct an investigation to model how water can shape the land. • Students design and compare multiple solutions for preventing erosion.

<i>Activities</i>	<i>Technology Infusion</i>
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<ul style="list-style-type: none"> • Students model what happens to rocks in a river and construct an explanation for why we have sand at the beach. • Students map landforms locally and around the world • Students use maps to identify different forms of water on Earth. • Students create models of landforms and water bodies. 	SmartExchange Interactive lessons <ul style="list-style-type: none"> • Chromebooks • Videos • Raz-kids: multi-leveled books on topic • Youtube: Bill Nye the Science Guy
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Grade: 2	Topic: Plant Adventures	Time Frame: 6-9 Weeks
Essential Questions (topic essential question)	Why do trees grow so tall? Should you water a cactus? Where do plants grow best? Could a plant survive without light? How did a tree travel halfway around the world?	
Enduring Understandings	Students will understand that: -Plants rely on wind, water, and animals to spread their seeds. -Plants have needs in order to grow	

Next Generation Science Standards Performance Expectations
2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.* 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. K-2-ETS 1-2 Develop a simple sketch, drawing or physical model to illustrate how the shape of an object helps its function as needed to solve a given problem.

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
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<ul style="list-style-type: none"> • Planning and carrying out investigations • Developing and Using Models • Analyzing and Interpreting Data • Constructing Explanations and Designing Solutions • 	LS2.A LS4.D	Structure and function Cause and effect
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<i>Texts and Digital/Print Resources</i>	<i>Performance Assessments</i>
<ul style="list-style-type: none"> • Teacher Generated Worksheets • Science Journals • Mystery Science website • Epic books • 	<p>Ongoing daily assessment - Are students participating in class discussions and activities? Are students working cooperatively in groups? Are students understanding the vocabulary terms associated with the subject?</p> <p>-Students plan and conduct an investigation to compare growing seeds in light and dark conditions</p> <p>-Students design structures for pollination and seed dispersal</p>

Activities	Technology Infusion
<ul style="list-style-type: none"> • Fly your own seed - create models of seed dispersal • Grass Head • How a Cactus Stores Water • Game: Plant Survivor: Where do plants grow best? 	<ul style="list-style-type: none"> • Brain Pop Jr. - <u>Plants</u> • Raz-kids: multi-leveled books on topic • Youtube: <u>Bill Nye the Science Guy</u> • Chromebooks

