

**CORRELATION WITH AMPLIFY SCIENCE:  
World Wise Science Grade K-5**

**Physical Science**

Name and Summary	NGSS Performance Expectations Addressed	World Wise (titles link to and give examples of the NGSS performance expectations)
<p><b><u>Pushes and Pulls:</u></b></p> <p><b>Designing a Pinball Machine (pinball engineers)</b></p> <p>Students play the role of pinball machine engineers as they explore the effects of pushes and pulls on the motion of an object. They conduct tests in their own prototypes (models) of a pinball machine contributing to the design of a class pinball machine.</p>	<p>K-PS2-1: Pushes and Pulls K-PS2-2: Change Speed and Direction</p> <p>K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions</p>	<p><b>Grade K: D (6) * At the Park</b> <b>Grade K: B (2) * Going Fast</b> <b>Grade K: C (3) * Moving Things</b></p> <p><b>Available September 2020</b></p>
<p><b><u>Light and Sound:</u></b></p> <p><b>Puppet Theater Engineers</b></p> <p>In their role as light and sound engineers, students investigate cause and effect relationships to learn about the nature of light</p>	<p>1-PS4-1: Sound and Vibration 1-PS4-2: Seeing Requires Light 1-PS4-3: Light Interaction with Materials 1-PS4-4: Light and Sound for Communication</p> <p>K-2-ETS1-1: Defining the Problem</p>	<p><b>Grade 1: G (12) * Looking in Mirrors</b> <b>Grade 1: J (18) Shadows and Shade</b></p> <p><b>New editions available September 2020</b></p>

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<p>and sound. They apply what they learn to design shadow scenery and sound effects for a puppet show.</p>	<p>K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions</p>	
<p><b><u>Properties of Materials:</u></b></p> <p><b>Designing Glue: Glue Engineers</b></p> <p>As glue engineers, students use engineering design practices to create a glue for use at their school. They conduct tests that yield quantifiable results, graph their data, analyze and interpret results, and then use that evidence to iteratively design a series of glue mixtures, each one better than the one before.</p>	<p>2-PS1-1: Properties of Materials 2-PS1-2: Materials for Specific Purposes 2-PS1-3: Pieces Can be Made into New Objects 2-PS1-4: Changes Caused by Heating and Cooling</p> <p>K-2-ETS1-1: Defining Problems K-2-ETS1-3: Developing Possible Solutions</p>	<p>Grade 2: K (20) * Heating and Cooling Grade 2: M (28) * What is It? Grade 3: O (34) * Bicycles by Design</p>
<p><b><u>Balancing Forces:</u></b></p> <p><b>Investigating Floating Trains</b></p> <p>In their role as consulting scientists, students are challenged to figure out how a floating train works in order to explain it to the citizens of the fictional city of Faraday. They apply ideas about non-touching forces as well as balanced and</p>	<p>3-PS2-1: Balanced and Unbalanced Forces 3-PS2-2: Predicting Motion<sup>[SEP]</sup> 3-PS2-3: Non-Touching Forces 3-PS2-4: Solve Problem with Magnets</p>	<p>Grade 3: P (38) * Everything Moves</p>

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unbalanced forces.		
<p><b><u>Energy Conversions:</u></b></p> <p><b>Blackout in Ergstown</b></p> <p>Students play the role of systems engineers for Ergstown, a fictional town that experiences frequent blackouts. They explore reasons why an electrical system can fail, choose new energy sources and energy converters for the town, and use evidence to explain why their choices will make the town’s electrical system more reliable.</p>	<p>4-PS3-1: Relationship Between Speed and Energy</p> <p>4-PS3-2: Energy can be Transferred</p> <p>4-PS3-3: Collisions</p> <p>4-PS3-4: Design an Energy Converter</p> <p>4-ESS3-1: Energy and Fuels</p> <p>3-5-ETS1-1: Defining the Problem</p> <p>3-5-ETS1-2: Developing Possible Solutions</p>	Grade 4: S (40) * It’s All About Energy
<p><b><u>Waves, Energy, and Information:</u></b></p> <p><b>Investigating How Dolphins Communicate; Marine Scientists –waves (a pattern of motion) and how sound energy travels</b></p> <p>In their role as marine scientists, students work to figure out how mother dolphins communicate with their calves. They investigate how sound travels and learn about how to look for</p>	<p>4-PS3-2 Energy Can Be Transferred</p> <p>4-PS3-3: Collisions</p> <p>4-PS4-1: Waves</p> <p>4-PS4-3: Patterns to Transfer Information</p> <p>4-LS1-2: Info, Senses and the Brain</p> <p>4ESS3-2: Reduce Impacts of Earth Processes</p> <p>3-5-ETS1-1: Defining the Problem</p> <p>3-5-ETS1-2: Developing Possible Solutions</p>	<p>Grade 4: Q (40) * Awesome Oceans</p> <p>Grade 4: R (40) * From Me to You</p> <p>Grade 4: S (40) * How Animals Communicate</p> <p>Grade 4: S (40) * Living with the Tides</p> <p>Grade 4: S (40) * Our Bodies</p> <p>Grade 4: S (40) * Our Moving Earth</p> <p>Grade 4: Q (40) * Talented Animals</p>

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and to create patterns of communication.		
<p><b><u>Modeling Matter:</u></b></p> <p><b>The Chemistry of Food</b></p> <p>As food scientists working in a lab for a large food production company, students take on two work assignments, one related to food safety and one related to creation of a new food product. In so doing, they figure out that the properties of materials are related to the properties of the nanoparticles that make up those materials.</p>	<p>5-PS1-1: Matter is made of Particles 5-PS1-3: Properties of Materials 5-PS1-4: Mixing Substances</p>	

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## Earth and Space Science

Name and Summary	NGSS Performance Expectations Addressed	World Wise (titles link to and give examples of the NGSS performance expectations)
<p><b><u>Grade K: Sunlight and Weather</u></b></p> <p><b>Solving Playground Problems</b></p> <p>In their role as weather scientists, students look into why one fictional schoolyard is too cold in the morning, while another, which is nearby, is too hot in the afternoon. They use physical models and firsthand investigation to figure out the impact of sunlight on Earth’s surface.</p>	<p>K-PS3-1: Sunlight on Earth’s Surface K-PS3-2: Reducing Warming</p> <p>K-ESS2-1: Weather Patterns K-ESS3-2: Preparing for Severe Weather</p> <p>K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions</p>	<p><b>Grade K: C (4) * The Weather Changes</b> <b>Grade K: D (6) * A Storm is Coming</b> <b>Grade K: D (6) * The Sun is Hot</b></p> <p><b>Available September 2020</b></p>
<p><b><u>Grade 1: Spinning Earth</u></b></p> <p><b>Investigating Patterns in the Sky</b></p> <p>As emerging space scientists, students figure out how to</p>	<p>1-ESS1-1: Observable Patterns of Sky Objects 1-ESS1-2: Amount of Daylight</p>	<p><b>Grade 1: E (8) * In the Sky</b> <b>Grade 1: G (12) * It’s Time to Plant</b></p> <p><b>Available September 2020</b></p>

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<p>explain why it is never the same time of day for a grandmother who lives in Asia, as it is for her grandson in the United States when she calls him. Students record, organize and analyze observations of the Sun and other sky objects as they look for patterns and make sense of the cycle of daytime and nighttime.</p>		
<p><b><u>Grade 2: Changing Landforms</u></b></p> <p><b>The Disappearing Cliff</b></p> <p>Students play the role of Earth scientists, as they attempt to figure out what caused a rock cliff to change shape over time. They use models to investigate the erosion of rock and the formation of sand.</p>	<p>2-ESS1-1: Fast and Slow Earth Events 2-ESS2-1: Slowing the Erosion of Land Forms 2-ESS2-2: Landforms and Bodies of Water 2-ESS2-3: Water on Earth</p>	<p>Grade 2: K (20) * A River’s Journey Grade 2: L (24) * Deserts of the World Grade 2: M (28) * Disappearing Ice Grade 2: M (28) * Majestic Mountains Grade 2: M (28) * The Changing Shape of the Land</p>
<p><b><u>Grade 3: Weather and Climate</u></b></p> <p><b>Establishing an Orangutan Colony</b></p> <p>As weather scientists for a nature conservation group, students determine which of four fictional islands will be the</p>	<p>3-ESS2-1: Represent Weather Patterns 3-ESS2-2: Describe Climates 3-ESS3-1: Reducing Impact of Weather Hazards</p> <p>3-5-ETS1-2: Developing Possible Solutions</p>	<p>Grade 2: L (24) * Summer in Antarctica Grade 3: N (30) * The Weather Today Grade 3: N (30) * The Land Where I Live Grade 3: O (34) * The Coral Reef Grade 4: Q (40) * Wild, Wild Weather</p>

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<p>best location for an orangutan reserve. They analyze and interpret weather data in order to compare and construct arguments about the weather patterns for a particular location in the world over a given span of time.</p>		
<p><b><u>Grade 4: Earth’s Features</u></b></p> <p><b>Mystery in Desert Rocks Canyon</b></p> <p>Playing the role of geologists, students help the National Park Service to explain what a particular boney-looking rock is, how it formed, and how it came to be in its current location at the bottom of Desert Rocks National Park. Then they explain how the canyon where they are doing their research formed to park visitors.</p>	<p>4-ESS1-1: Landscape Changes            4-ESS2-1: Evidence of Weathering or Erosion            4-ESS2-2: Patterns of Earth’s Features            4-ESS3-1: Energy and Fuels            4-ESS3-2: Reduce Impacts of Earth Processes</p>	<p>Grade 4: Q (40) * Awesome Oceans            Grade 4: R (40) * Exploring Caves            Grade 4: S (40) * Our Moving Earth</p>
<p><b><u>Grade 5: Patterns of Earth and Sky</u></b></p> <p><b>Analyzing Stars on Ancient Artifacts</b></p>	<p>5-PS2-1: Gravity</p> <p>5-ESS1-1: Apparent Brightness of Stars            5-ESS1-2: Patterns of Daily and Seasonal Changes</p>	<p>Grade 5: V (50) * Earth, Sun and Moon            Grade 5: U (50) * Science for the People            Grade 5: V (50) * Time Detectives</p>

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<p>In their role as astronomers, students investigate an artifact found on an archeological dig that seems to show patterns in the daytime and nighttime sky. Using a computer simulation of stars, physical models, and a reference text, students figure out how the position of stars around the Earth, and the spin and orbit of the Earth cause us to see daily and yearly patterns of stars.</p>		
<p><b><u>Grade 5: The Earth System</u></b></p> <p><b>Investigating Water Shortages</b></p> <p>As water resource engineers, students figure out what caused a water shortage on the east side of a fictional island, East Ferris, and work to design a solution to the problem. Applying their knowledge of water distribution and analyzing the flow of water between the hydrosphere, atmosphere, and geosphere, students communicate the nature of the problem and possible solutions to the people of East Ferris</p>	<p>5-ESS2-1: Interaction of Spheres 5-ESS2-2: Distribution of Water on Earth 5-ESS3-1: Protecting Earth</p> <p>5-PS1-1: Matter is Made of Particles 5-PS1-2: Conservation of Matter 5-PS1-3: Properties of Materials 5-PS1-4: Mixing Substances</p> <p>3-5-ETS1-1: Defining Problems 3-5-ETS1-2: Developing Possible Solutions 3-5-ETS1-3: Improving Solutions</p>	<p>Grade 5: V (50) * How Water Shapes the Land Grade 5: V (50) * Climate Change Grade 5: V (50) * Deserts Grade 5: U (50) * Powerful Ideas: John Muir Grade 5: V (50) * Saving the Amazon Rainforest Grade 5: V (50) * The Earth, the Sun, and the Moon Grade 5: T (50) * Wandering Albatross Grade 5: U (50) * Wetlands</p>

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## Life Science

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<p><b><u>Grade K: Needs of Plants and Animals</u></b></p> <p><b>Milkweed and Monarchs</b></p> <p>Students take on the role of scientists in order to figure out why there are no monarch caterpillars in the Garden since the vegetables were planted. In so doing, they investigate how plants and animals get what they need to live and grow, and make a new plan for the community garden that provides for the needs of the monarch caterpillars in addition to vegetables for humans.</p>	<p>K-LS1-1: Survival Needs</p> <p>K-ESS2-2: Impacting Environment K-ESS3-1: Qualities of a Habitat K-ESS3-3: Reducing Impacts</p> <p>K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions</p>	<p><b>Grade K: C (3) * Food for All</b> <b>Grade K: A (1) * Plants in My Garden</b> <b>Grade K: C (4) * What Can They Make?</b> <b>Grade K: D (6) * What’s inside this egg?</b></p> <p><b>Available September 2020</b></p> <p>Grade 2: L (24) * Sharing Our Yard Grade 3: P (38) * Monarch Butterflies: The Long Migration (images)</p>
<p><b><u>Grade 1: Animal and Plant Defenses</u></b></p> <p><b>Spikes, Shells, and Camouflage</b></p> <p>Students play the role of marine scientists. In their role,</p>	<p>1-LS1-1: Mimicking Organisms’ Structures 1-LS1-2: Parents Promote Survival of Offspring 1-LS3-1: Young Organisms Resemble Parents</p>	<p><b>Grade 1: F (10) * Amazing Plants</b> <b>Grade 1: H (14) * Dangerous Plants</b></p> <p><b>New editions available September 2020</b></p> <p>Grade 2: K (20) * Killer Plants</p>

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<p>students apply their understanding about plant and animal defense structures to explain to concerned visitors to an aquarium how a sea turtle at the aquarium, can be released and will be able to defend herself and her offspring from predators in the ocean.</p>		<p>Grade 4: R (40) * Shells on their Backs</p>
<p><b><u>Grade 2: Plant and Animal Relationships</u></b></p> <p><b>Investigating Systems in a Bengali Forest</b></p> <p>In their role as plant scientists working at the Bengal Tiger Reserve, students work to figure out why there are no new Chalta trees growing in this part of the forest. Students investigate what the Chalta tree needs to survive, and collect and analyze qualitative and quantitative data to solve the mystery.</p>	<p>2-LS2-1: Sunlight and Water for Plants 2-LS2-2: Animals’ Role in Seed Dispersal 2-LS4-1: Diversity of Life in Different Habitats</p> <p>K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions</p>	<p>Grade 4: R (40) * Animal Architects Grade 2: M (28) * Animals of the African Grasslands Grade 2: K (20) * How Do Plants Grow Here? Grade 4: R (40) * Nature’s Rooming House Grade 3: O (24) * Plants the Key to Life Grade 2: M (28) * Silkworms Grade 2: K (20) * Why We Need Rainforests</p>
<p><b><u>Grade 3: Inheritance and Traits</u></b></p> <p><b>Variation in Wolves</b></p>	<p>3-LS1-1: Life Cycles and Life Stages 3-LS2-1: Animals’ Social Interactions 3-LS3-1: Traits are Inherited and Vary 3-LS3-2: Traits can be Influenced by</p>	<p>Grade 3: O (34) * Amazing Animal Survivors Grade 3: N (30) * Animal Lifetimes Grade 3: N (30) * Animal Parents Grade3: P (38) * Animals and Their</p>

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<p>Students play the role of wildlife biologists working in Greystone National Park, as they study two wolf packs and are challenged to figure out why an adoptive wolf in one of the packs, has the traits it does. Students investigate variation between and within different species, inherited and acquired traits, and conclude the unit by writing an explanation of the origin of the adoptive wolf’s traits for the visitors in Greystone National Park.</p>	<p>Environment</p>	<p>Ancestors Grade 3: Q (34) * Busy Highways Grade 3: P (38) * Monarch Butterflies: The Long Migration Grade 3: P (38) * The Animal Kingdom Grade 3: O (34) * The Coral Reef</p>
<p><b><u>Grade 3: Environments and Survival</u></b></p> <p><b>Snail Trait Biomimicry</b></p> <p>As engineers that specialize in biomimicry, designing structures that are modeled on organisms in the natural world, students investigate the adaptive traits of the Grove Snail population, and use what they learn to design a protective shell to transport endangered sea turtle eggs.</p>	<p>3-LS2-1: Animals’ Social Interactions 3-LS4-1: Fossils and Evidence of Environment 3-LS4-2: Adaptive and Non-Adaptive Traits 3-LS4-3: Survival Impact of Different Environments 3-LS4-4: Solutions to Environmental Changes</p> <p>3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions 3-5-ETS1-3: Improving Designs</p>	<p>Grade 3: O (34) * Amazing Animal Survivors Grade 4: R (40) * Animal Architects Grade3: N (30) * Animal Lifetimes Grade 3: N (30) * Animal Parents Grade 3: P (38) * Animals and their Ancestors Grade 3: Q (34) * Busy Highways Grade 3: N (30) * Caring for Animals Grade 3: O (34) * Coral Reef Grade 3: P (38) * Going, Going, Gone Grade 3: N (30) * Looking After Our World Grade3: O (34) * Monarch Butterflies: The Long Migration Grade 4: R (40) * Shells on their Backs</p>

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<p><b><u>Grade 4: Vision and Light</u></b></p> <p><b>Investigating Animal Eyes</b></p> <p>As wildlife biologists, students work to figure out why a local population of geckos has decreased since the construction of a new stadium. Students consider the bright lights of the stadium and use a computer simulation to investigate the relationship of light and vision, specifically the sensitivity of different animals’ eyes to light and make a recommendation for mitigating the situation.</p>	<p>4-PS4-2: Light is Necessary for Sight            4-LS1-1: Internal and External Structures            4-LS1-2: Patterns to Transfer Information            4-PS4-3: Information, Senses and the Brain</p> <p>3-5-ETS1-1: Defining the Problem            3-5-ETS1-2: Developing Possible Solutions            3-5-ETS1-3: Improving Designs</p>	<p>Grade 4: R (40) * Animal Architects            Grade 4: S (40) * Our Bodies            Grade 4: Q (40) * Talented Animals</p>
<p><b><u>Grade 5: Ecosystem Restoration</u></b></p> <p><b>Matter and Energy in a Rainforest</b></p> <p>Students engage as ecologists as they figure out why the plants and animals in a failing Costa Rican rainforest ecosystem aren’t growing and thriving. Growing a terrarium, using physical models, and investigating how matter and energy flow with a computer model, students solve the mystery and create a plan for rainforest <b>restoration</b>.</p>	<p>5-PS3-1: Use and Origin of Energy in Food            5-LS1-1: Plant Materials from Air and Water            5-LS2-1: Matter Flows            5-ESS3-1: Protecting Earth            5-PS1-1: Matter is Made of Particles</p> <p>3-5-ETS1-1: Defining the Problem            3-5-ETS1-2: Developing Possible Solutions</p>	<p>Grade 5: V (50) * Climate Change            Grade 5: V (50) * Deserts            Grade 5: U (50) * How Do Plants Survive?            Grade 5: U (50) * Powerful Ideas: John Muir            Grade 5: T (50) * Rock Snot, Cane Toads and Other Aliens            Grade 5: V (50) * Saving the Amazon Rainforest            Grade 5: U (50) * Science for the People            Grade 5: T (50) * Sharing the Environment            Grade 5: U (50) * The Salmon Stream            Grade 5: T (50) * The Wandering Albatross</p>

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		Grade 5: U (50) * Wetlands Grade 5: U (50) * Yellowstone: A Unique Ecosystem
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