CORRELATION WITH AMPLIFY SCIENCE:
ExploraMundos Science Grade K-5

Physical Science

Name and Summary	NGSS Performance Expectations Addressed	ExploraMundos (titles link to and give examples of the NGSS performance expectations)
Pushes and Pulls: **Designing a Pinball Machine (pinball engineers)** 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.	K-PS2-1: Pushes and Pulls K-PS2-2: Change Speed and Direction K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions	**Grade K: B (2) * Van muy rápido**
Light and Sound: **Puppet Theater Engineers** In their role as light and sound engineers, students investigate cause and effect relationships to learn about the nature of light	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 K-2-ETS1-1: Defining the Problem	**Grade 1: G (12) * Mírate en el espejo** **Grade 1: J (18) Sombras y sombrita**

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and sound. They apply what they learn to design shadow scenery and sound effects for a puppet show.	K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions	
Properties of Materials: **Designing Glue: Glue Engineers** 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.	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 K-2-ETS1-1: Defining Problems K-2-ETS1-3: Developing Possible Solutions	**Grade 2: K (20) * Calentar y enfriar** **Grade 2: M (28) * ¿Qué es??** **Grade 3: O (34) * La bicicleta: Un invento bien pensado**
Balancing Forces: **Investigating Floating Trains** 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	3-PS2-1: Balanced and Unbalanced Forces 3-PS2-2: Predicting Motion 3-PS2-3: Non-Touching Forces 3-PS2-4: Solve Problem with Magnets	**Grade 3: P (38) * Todo se mueve**

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unbalanced forces.		
Energy Conversions: **Blackout in Ergstown** 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.	4-PS3-1: Relationship Between Speed and Energy 4-PS3-2: Energy can be Transferred 4-PS3-3: Collisions 4-PS3-4: Design an Energy Converter 4-ESS3-1: Energy and Fuels 3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions	**Grade 4: S (40) * La importancia de la energía**
Waves, Energy, and Information: **Investigating How Dolphins Communicate; Marine Scientists –waves (a pattern of motion) and how sound energy travels** 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	4-PS3-2 Energy Can Be Transferred 4-PS3-3: Collisions 4-PS4-1: Waves 4-PS4-3: Patterns to Transfer Information 4-LS1-2: Info, Senses and the Brain 4ESS3-2: Reduce Impacts of Earth Processes 3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions	**Grade 4: Q (40) * Océanos increíbles** **Grade 4: R (40) * Tienes un mensaje** **Grade 4: S (40) * ¿Cómo se comunican los animales?** **Grade 4: S (40) * Convivir con las mareas** **Grade 4: S (40) * Nuestro cuerpo** **Grade 4: S (40) * Cuando la Tierra se mueve** **Grade 4: Q (40) * Animales talentosos**

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and to create patterns of communication.		
Modeling Matter: **The Chemistry of Food** 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.	5-PS1-1: Matter is made of Particles 5-PS1-3: Properties of Materials 5-PS1-4: Mixing Substances	

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Earth and Space Science

Name and Summary	NGSS Performance Expectations Addressed	ExploraMundos (titles link to and give examples of the NGSS performance expectations)
Grade K: Sunlight and Weather **Solving Playground Problems** 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.	K-PS3-1: Sunlight on Earth's Surface K-PS3-2: Reducing Warming K-ESS2-1: Weather Patterns K-ESS3-2: Preparing for Severe Weather K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions	**Grade K: C (4) * El tiempo cambia** **Grade K: D (6) * Viene una tormenta** **Grade K: D (6) * El calor del sol**
Grade 1: Spinning Earth **Investigating Patterns in the Sky** As emerging space scientists, students figure out how to	1-ESS1-1: Observable Patterns of Sky Objects 1-ESS1-2: Amount of Daylight	**Grade 1: E (8) * Mira el cielo**

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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.		
Grade 2: Changing Landforms **The Disappearing Cliff** 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.	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	Grade 2: K (20) * El viaje de un río Grade 2: L (24) * Desiertos del mundo Grade 2: M (28) * Cuando el hielo desaparece Grade 2: M (28) * Montañas majestuosas Grade 2: M (28) * Los terrenos cambian de forma
Grade 3: Weather and Climate **Establishing an Orangutan Colony** As weather scientists for a nature conservation group, students determine which of four fictional islands will be the	3-ESS2-1: Represent Weather Patterns 3-ESS2-2: Describe Climates 3-ESS3-1: Reducing Impact of Weather Hazards 3-5-ETS1-2: Developing Possible Solutions	Grade 2: L (24) * Verano en la Antártida Grade 3: N (30) * El estado del tiempo Grade 3: N (30) * El lugar donde vivo Grade 3: O (34) * Los arrecifes de coral Grade 4: Q (40) * Clima salvaje

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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.		
Grade 4: Earth's Features **Mystery in Desert Rocks Canyon** 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.	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	Grade 4: Q (40) * Océanos increíbles Grade 4: R (40) * Exploremos las cuevas Grade 4: S (40) * Cuando la Tierra se mueve
Grade 5: Patterns of Earth and Sky **Analyzing Stars on Ancient Artifacts**	5-PS2-1: Gravity 5-ESS1-1: Apparent Brightness of Stars 5-ESS1-2: Patterns of Daily and Seasonal Changes	Grade 5: V (50) * La Tierra, el Sol y la Luna Grade 5: U (50) * La ciencia al alcance de todos Grade 5: V (50) * Los detectives del tiempo

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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.		
Grade 5: The Earth System **Investigating Water Shortages** 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	5-ESS2-1: Interaction of Spheres 5-ESS2-2: Distribution of Water on Earth 5-ESS3-1: Protecting Earth 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 3-5-ETS1-1: Defining Problems 3-5-ETS1-2: Developing Possible Solutions 3-5-ETS1-3: Improving Solutions	Grade 5: V (50) * **Cuando el agua da forma a la tierra** Grade 5: V (50) * **El cambio climático** Grade 5: V (50) * **Los desiertos** Grade 5: U (50) * **Ideas que impactan: John Muir** Grade 5: V (50) * **Salvemos el río Amazonas** Grade 5: V (50) * **La Tierra, el Sol y la Luna** Grade 5: T (50) * **El albatros viajero** Grade 5: U (50) * **Los humedales**

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Life Science

Name and Summary	NGSS Performance Expectations Addressed	ExploraMundos (titles link to and give examples of the NGSS performance expectations)
Grade K: Needs of Plants and Animals **Milkweed and Monarchs** 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.	K-LS1-1: Survival Needs K-ESS2-2: Impacting Environment K-ESS3-1: Qualities of a Habitat K-ESS3-3: Reducing Impacts K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions	**Grade K: C (3) * Comida para todos** **Grade K: A (1) * Las plantas de mi huerta** **Grade K: C (4) * ¿Qué pueden hacer?** **Grade K: D (6) * ¿Qué hay dentro de estos huevos?** Grade 2: L (24) * **Animales que nos visitan** Grade 3: P (38) * **Mariposas monarca: La gran migración**
Grade 1: Animal and Plant Defenses **Spikes, Shells, and Camouflage** Students play the role of marine scientists. In their role,	1-LS1-1: Mimicking Organisms' Structures 1-LS1-2: Parents Promote Survival of Offspring 1-LS3-1: Young Organisms Resemble Parents	**Grade 1: F (10) * Plantas fascinantes** **Grade 1: H (14) * Plantas peligrosas** Grade 2: K (20) * **Plantas asesinas**

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		Grade 4: R (40) * Con un caparazón a cuestas
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.		
Grade 2: Plant and Animal Relationships **Investigating Systems in a Bengali Forest** 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.	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 K-2-ETS1-1: Defining the Problem K-2-ETS1-2: Developing Possible Solutions K-2-ETS1-3: Comparing Different Solutions	Grade 4: R (40) * **Animales arquitectos** Grade 2: M (28) * **Animales de las praderas africanas** Grade 2: K (20) * **¿Cómo crecen las plantas aquí?** Grade 4: R (40) * **El albergue de la naturaleza** Grade 3: O (34) * **Plantas: La clave de la vida** Grade 2: M (28) * **Gusanos de seda** Grade 2: K (20) * **¿Por qué necesitamos los bosques tropicales?**
Grade 3: Inheritance and Traits **Variation in Wolves**	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	Grade 3: O (34) * **Sobrevivientes increíbles del reino animal** Grade 3: N (30) * **Las etapas de la vida de los animals**

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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.	Environment	**Grade 3: N (30) *Los padres del mundo animal** **Grade3: P (38) * Los animales y sus ancestros** **Grade 3: Q (34) * Animales en tránsito** **Grade 3: P (38) * Mariposas monarca: La gran migración** **Grade 3: P (38) * El reino animal** **Grade 3: O (34) * Los arrecifes de coral**
Grade 3: Environments and Survival **Snail Trait Biomimicry** 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.	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 3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions 3-5-ETS1-3: Improving Designs	**Grade 3: O (34) * Sobrevivientes increíbles del reino animal** **Grade 4: R (40) * Animales arquitectos** **Grade3: N (30) * Las etapas de la vida de los animals** **Grade 3: N (30) * Los padres del mundo animal** **Grade 3: P (38) * Los animales y sus ancestros** **Grade 3: Q (34) * Animales en tránsito Grade 3: N (30) * Animales bien cuidados Grade 3: O (34) * Los arrecifes de coral Grade 3: P (38) * Luchar contra la extinción** **Grade 3: N (30) * Cuando cuidamos nuestro planeta** **Grade3: O (34) * Mariposas monarca: La gran migración** **Grade 4: R (40) * Con un caparazón a cuestas**

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Grade 4: <u>Vision and Light</u> **Investigating Animal Eyes** 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.	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 3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions 3-5-ETS1-3: Improving Designs	**Grade 4: R (40) * Animales arquitectos** **Grade 4: S (40) * Nuestro cuerpo Grade** **4: Q (40) * Animales talentosos**
Grade 5: <u>Ecosystem Restoration</u> **Matter and Energy in a Rainforest** 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 **restoration.**	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-PS1-1: Matter is Made of Particles 3-5-ETS1-1: Defining the Problem 3-5-ETS1-2: Developing Possible Solutions	**Grade 5: V (50) * El cambio climático** **Grade 5: V (50) * Los desiertos** **Grade 5: U (50) * ¿Cómo sobreviven las plantas?** **Grade 5: U (50) * Ideas que impactan: John Muir** **Grade 5: T (50) * El moco de roca,el sapo de caña y otros invasores** **Grade 5: V (50) * Salvemos el río Amazonas** **Grade 5: U (50) * La ciencia al alcance de todos** **Grade 5: T (50) * Un medioambiente compartido** **Grade 5: U (50) * Los ríos del salmón** **Grade 5: T (50) * El albatros viajero** **Grade 5: U (50) * Los humedales** **Grade 5: U (50) * Yellowstone: Un ecosistema único**

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