

**Gilford School District
Grade 2 - Science**

Geology (Earth Materials)		
Proficiencies	Content	Skills
What are rocks? What effect does weather have on the Earth? How are volcanoes and earthquakes made? How are earth materials used in the community? What are the layers of the Earth?	Properties of Rocks Properties of Soil Metamorphic Rock Igneous Rock Sedimentary Rocks Rock Cycle Magnetism Layers of the Earth Erosion *Accretion	Students will: identify, sort, and classify rocks according to their properties identify materials in different types of soils understand how rocks are formed (metamorphic, sedimentary, and igneous) create models of volcanoes animate the rock cycle on Kid Pix through technology Make a model of the layers of the earth using clay and label the parts and their purpose Identify which materials are attracted to magnets and explain why. Create a geology quest for other students to use (with Co-Seed assistance) for nature trail
Vertebrates		
Proficiencies	Content	Skills
What are vertebrates? What are the characteristics of fish? What are the characteristics of reptiles? What are the characteristics of Mammals? (review) What is the purpose of the skeletal system? What are the characteristics of Birds? (review)	*Study of bats as mammals Microbats vs. Megabats Echo-location/Concept of Sound and Vibrations characteristics and life cycle of mammals characteristics and life cycle of reptiles characteristics and life cycle of fish Venn diagrams Research Reports on a specific type of bat. Research report on a specific type of reptile. Research Report on a specific type of fish.	Students will: *Categorize bat species based on their physical characteristics as megabats (fruit eaters) or microbats (insect eaters) *Illustrate how bats can hear using echolocation. *Explain why bats are mammals. *Complete a Venn Diagram comparing bats to birds. Write an illustrated research report about a kind of bat, describing it's habitat, what it eats, what it looks like, and an interesting fact. *Understand that all vertebrates have a spinal column and a skeletal system on the inside of their bodies. *Explain how the ribs protect the inner organs. *Explain how the skeletal system helps the animal keep its shape and stand on its own. *List the characteristics of reptiles (most lay eggs, they are cold-blooded, and have scales or a hard shell) *Compare the difference between reptiles and amphibians or reptiles and fish using a Venn Diagram.

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	<p>Purpose of the skeletal system</p> <p>Definition of vertebrates</p>	<p>Create a bulletin board about reptiles to include the four main categories: examples of turtles, snakes, lizards, and crocodilians with facts about each reptile represented.</p> <p>List characteristics of fish(All fish live in water; all fish have backbones; all fish breathe through gills; all fish are cold-blooded; Most fish have eyes that stay open; Most fish have fins; Most fish have scales; Most fish lay eggs.)</p> <p>Complete an observational drawing of the classroom fish and label its parts.</p>
Human Growth and Nutrition		
Proficiencies	Content	Skills
<p>What factors are necessary for good health?</p> <p>How do we grow and change?</p> <p>What is the food pyramid?</p> <p>What do the different systems in my body do to help me be healthy?</p>	<p>5 a day Plan</p> <p>Importance of Rest</p> <p>Importance of exercise</p> <p>Review of Skeletal System</p> <p>Circulatory System</p> <p>Nervous System</p> <p>Vital Organs & Functions</p> <p>Respiratory System</p> <p>Change and growth over time</p> <p>sources of energy for humans</p>	<p>Students will:</p> <p>investigate the new food pyramid and compare it to the old food pyramid.</p> <p>make hypotheses about why the food pyramid was changed.</p> <p>explore the five-a-day food plan and graph how many fruit and vegetable servings they eat in one day.</p> <p>create a poster about the factors necessary for good health, to include good nutrition, plenty of rest, exercise, drink plenty of water, cleanliness (washing hands before eating or after going to the bathroom, brushing teeth, etc), appropriate dress for the weather, regular doctor visits</p> <p>recognize that different kinds of energy provides us quality of life</p>

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Habitat Review		
Proficiencies	Content	Skills
<p>What is a habitat?</p> <p>What environmental conditions are needed for organisms to survive?</p> <p>How do organisms adapt to changing environmental conditions?</p>	<p>Migration</p> <p>Hibernation</p> <p>Survival Needs</p> <p>polar habitats</p> <p>Penguins</p> <p>Impact of climate on environment and needs</p> <p>Plant and Animal Adaptations</p>	<p>Students will:</p> <p>understand the meaning of migration and identify groups of animals that migrate and why.</p> <p>understand the meaning of hibernation and identify true hibernators</p> <p>brainstorm a list of needs all organisms have to have in order to survive.</p> <p>create different habitat dioramas with evidence of animals in that habitat, survival conditions evident, and writing about how the animals adapt to the conditions of the weather in the habitat</p> <p>research different kinds of penguins, their characteristics, habitat, location, food, cool facts</p>
Continuation of Polar Habitats		
Proficiencies	Content	Skills
<p>What is a biome?</p> <p>How do organisms adapt to changing environmental conditions?</p> <p>What is the impact of climate on the environment and survival needs of the organisms that live there?</p>	<p>Biomes of North America (tundra, taiga, temperate-deciduous forests, grasslands, desert)</p> <p>Review of migration, hibernation, semi-active, active animals of New Hampshire</p> <p>Plant and animal survival needs and how they adapt to the climate</p> <p>Deciduous forests</p> <p>Coniferous forests</p> <p>temperate/moderate climate</p>	<p>Students will:</p> <p>define a biome as an ecological unit that has a general type of vegetation.</p> <p>Understand the relation of the food chain and the food webs to a biome.</p> <p>Create a map of North America identifying five different biomes, plant life, and animal life in each.</p> <p>discuss the plight of the Polar Bears with global warming and how their food supplies are being affected by climate changes.</p>

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Balance and Motion		
Proficiencies	Content	Skills
<p>What is balance?</p> <p>How does counterweight help with balance?</p> <p>What is the difference between linear motion and rotational motion?</p> <p>Where is the center of gravity?</p>	<p>Students will explore:</p> <p>gravity</p> <p>stable positions</p> <p>unstable positions</p> <p>equilibrium</p> <p>counterweight</p> <p>linear motion</p> <p>rotational motion</p> <p>create mobiles using at least three armatures.</p> <p>explore the work of Alexander Calder.</p> <p>use axles and disks ramps, slopes, rolling spheres and wheels</p>	<p>Students will:</p> <p>develop a growing curiosity in the motion of objects</p> <p>solve problems through trial and error</p> <p>develop persistence in tackling a problem</p> <p>Explore concepts of balance, counterweight, and stability.</p> <p>Observe systems that are unstable and modify them to reach equilibrium.</p> <p>discover different ways to produce rotational motion.</p> <p>construct and observe toys that spin.</p> <p>explore and describe some of the variables that influence the spinning of objects.</p> <p>observe and compare rolling systems with different-sized wheels.</p> <p>explore and describe the motion of rolling spheres.</p> <p>Acquire the vocabulary associated with balance and motion.</p> <p>gain experiences that relate one scientific idea to another (change and interaction.)</p>

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Plants		
Proficiencies	Content	Skills
How are plants and animals alike? different? What are the different parts of a plant and how do we use them? What do plants need to grow? What is photosynthesis? How are plants classified? Where do plants grow and how do they get there?	Students will explore and experiment with these concepts: chlorophyll Photosynthesis seed dispersal roots, seeds, stems, leaves, flowers germination climate and habitat pollen pollinators Georgia O'Keefe graphs identification of spring flowers: Jack-in-the-pulpit, Canadian flowers, Star Flowers, etc. oxygen and carbon dioxide	Students will: make a hypothesis about germination of plants, create an experiment, collect data, draw a conclusion, share their discoveries identify and sort vegetables into different parts of plants that we eat Create posters explaining the process of photosynthesis do observational drawings of different kinds of plants for classification in nature journals explore and paint in the style of Georgia O'Keefe explain what effect climate has on plants identify pollinators in the process of plant reproduction and the making of seeds identify plants by leaves, and flowers on the nature trail and record results in nature journal
Ocean Unit		
Proficiencies	Content	Skills
What are invertebrates? How is life alike and different at different depths of the ocean? What animals live in the sea?	diatoms and zoo plankton food chains Homer Winslow Seascapes ocean depths: sunlight zone or photic zone, twilight or euphotic zone, sunless or abyssal zone characteristics of mollusks: slimy sliders: snails, clams, chitons, slugs, sea hares, nudibranchs characteristics of cnidarians: jellyfish, stings its prey, anemone	Students will: explain the parts of the ocean food chain and its impact on survival recognize simile and metaphor in writing and write poetry and stories using sensory images accurately measure to the nearest inch classify animals according to their characteristics as Echinoderms, Cnidarians, Wiggly Worms, Crustaceans, Mollusks correctly identify the three depths of the ocean and what animals live in each zone.

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	<p>characteristics of echinoderms: star fish, sea urchin, sand dollar, sea cucumber (start out like baby stars)</p> <p>characteristics of crustaceans (aquatic arthropods) - shed skin, exoskeleton (shell), lobster, crab, shrimp, water fleas, barnacles</p> <p>impact of salt in water</p> <p>characteristics of fish: have gills and fins, cold-blooded, most covered with scales, most lay eggs, live in the water</p>	<p>paint in the style of Homer Winslow - looking carefully at the many colors of the ocean seascapes and sky.</p>
Continuation of Ocean Unit		
Proficiencies	Content	Skills
<p>How does the ocean help to sustain life on earth?</p>	<p>marine vertebrates and mammals</p> <p>characteristics of whales, dolphins, porpoises</p> <p>characteristics of manatees and understanding of endangered species</p> <p>characteristics of different oceans around the world</p> <p>sea turtles</p>	<p>Students will:</p> <p>research different whales, create a chart showing characteristics and relative sizes (to scale)</p> <p>identify the differences between whales, dolphins, and porpoises</p> <p>explain why the manatees are endangered and come up with solutions to problem</p> <p>research different oceans around the world and label their characteristics (alike/different)</p> <p>understand the relationship between predator and prey with the baby sea turtle game</p>
Introduction to Simple Machines		
Proficiencies	Content	Skills
<p>What is a machine?</p> <p>What is work?</p> <p>How can machines help you do work?</p>	<p>axis</p> <p>fulcrum</p> <p>inclined planes</p> <p>pulleys</p> <p>wedges</p> <p>wheels</p> <p>definition of work</p> <p>gears</p> <p>levers</p> <p>definition of machine</p>	<p>Students will:</p> <p>build an air powered vehicle using "Links" kit</p> <p>define, classify, and sort simple machines by their parts (inclined planes, levers, wedges, gears, pulleys)</p> <p>experiment with simple machines to see how they make work easier</p> <p>understand that a machine is a tool that helps you do work</p> <p>understand that work requires movement and force</p>