

**Gilford School District**  
**Grade 5 - Science**

Life Science - Ocean Unit	
Content	Skills
similarities and differences in the nature	Create examples of food chains and webs in several types of ecosystems, e.g. deciduous forest, fresh water, desert, etc.
interdependence between all living things and the environment	Demonstrate a basic knowledge of the process of photosynthesis and its importance for all life forms
environmental factors affect all living systems	Identify and describe the basic requirements for sustaining life, e.g. plants and animals need food for energy and growth
individuals	Describe and give examples of the various types of interactions that occur among organisms (e.g. predator-prey, symbiotic, producer-consumer-decomposer, host-parasite) to demonstrate how organisms compete or cooperate with each other to gain food, resources or space
community	Identify and describe examples of New Hampshire animals and plants that live together in one ecosystem, e.g. forest, seashore, lake, river, stream
biomes	Identify common materials that cycle through the environment, e.g. carbon, water, carbon dioxide, oxygen
biosphere	Explore through models, experiments, and observations how matter and energy interact in any ecosystem
species to species interactions	Describe how organisms can acquire energy directly or indirectly from the energy of the sun
food chains/webs	describe how energy is transferred in an ecosystem through food webs, and explain the roles and relationships between producers, consumers and decomposers.
	Students will recognize and understand the wide variety of similarities and differences that exist among objects and events in the natural world.
types of ecosystems (deciduous forest, ocean, desert, lake...)	Students will display a sense of curiosity and wonder about the natural world, and demonstrate an increasing awareness of the interdependence between all living things and the environment
photosynthesis	Students will demonstrate an increasing ability to understand how environmental factors affect all living systems (i.e. individuals, community, biome, the biosphere) as well as species to species interactions.
basic requirements of all living things	identify structures and characteristics that allow for survival of organisms, populations, species
interactions among organisms	identify factors that influence the number and kinds of organisms an ecosystem can support
predator-prey, symbiotic, producer-consumer-decomposer, host-parasite	describe resources available and the effect that has on an ecosystem populations
	understand that differences in temperature, availability of water and composition of the soil affect an ecosystem
NH ecosystems	recognize the balance needed between predators and prey in an ecosystem and the potential threat of competition from other organisms
	Define a population as all individuals of a species that exist together at a given place and time
water cycle	explain that all populations living together are the community, and, along with the physical factors with which they interact, compose an ecosystem
oxygen/carbon dioxide cycle	recognize that plankton, although microscopic, are vital to our survival

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<p>producers/consumers/decomposers organisms population species plankton ecosystems/biomes</p>	<p>explain that most microorganisms do not cause disease identify ways in which microorganisms are beneficial to the environment</p>
<b>Diversity and Adaptation</b>	
<b>Content</b>	<b>Skills</b>
<p>cells single celled and multicellular organisms  cell division and growth  cells function is similar in all organisms  regeneration environment and heredity  genes, DNA, genetic traits biodiversity major body structures - skeleton, heart, lungs structure - function classification</p>	<p>regognize that the basic building block of all living things is the cell realize and verbalize genetic traits in themselves that are evident in a parent or grandparent Students will discuss DNA and how every person's genetic makeup is different. identify the reasons there is greater biodiversity in the rainforest and less biodiversity in the desert  Know that all living things are composed of cells, from just one to many millions, whose details are usually visible only through a microscope  Know that most organisms are single cells, but other organisms (including humans) are multicellular.  Know that cells repeatedly divide to make more cells for growth and repair. Explain that the way in which cells function is similar in all organisms compare and contrast animal and plant cells from pictures memorize that all plant cells have some chloryphyl (green stuff) build models of microscopic plankton and identify them as plants or animals understand that while most plants and animals can regenerate to heal, very few can regenerate limbs, etc. (Starfish) Identify major body structures of some common organisms (e.g., when shown a picture of the human skeleton, identify, by common name, the major bones in their body relate the structure of body parts to function [e.g., when presented with teeth (or models of teeth) from various animals, make inferences concerning what the animals eat] identify ways in which living things can be grouped and organized</p>

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Diversity and Adaptation	
Content	Skills
evolution	Classify a variety of organisms based on their characteristics, and use this scheme as a tool to organize information about the diversity of life forms Describe/identify random differences between individuals of the same species of plant or animal, e.g. students can examine parts of plants of the same species and recognize variations, and can construct graphs and charts showing the variations Describe/identify similarities and differences among multiple offspring of same parents, and between parents and offspring
genetic variation	Collect data on inherited characteristics and use the data to explain how traits are passed from generation to generation
specialization	Identify major body structures of some common organisms, e.g. when shown a picture of the human skeleton students can identify, by common name, the major bones in their body
adaptation	Relate the structure of body parts to function, e.g. when presented with teeth (or models of teeth) from various animals, students can make inferences concerning what the animal eats
natural selection	Conduct an investigation which illustrates how the environment affects the viability of plants or animals within that environment
diversity of life forms	Create examples of food chains and webs in several types of ecosystems, e.g. deciduous forest, fresh water, desert, etc.
Classification of organisms based on their characteristics	Explore through models, experiments, and observations how matter and energy interact in any ecosystem
random differences between individuals of the same species of plant or animal	Students will demonstrate an increasing ability to recognize patterns and products of evolution, including genetic variation, specialization, adaptation, and natural selection.
differences among multiple offspring of same parents	
inherited traits	
major body structures of some common organisms	
human skeleton/major bones	
structure function relationship of teeth, etc.	
environmental effects on viability of organisms	
food chains and webs in several types of ecosystems	
deciduous forest	
energy and matter in an ecosystem	

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Solar system	
Content	Skills
Solar system	Students will be able to list the planets in order from the sun.
planets	recognize and describe how the regular and predictable motions of the Earth explains day and night, the seasons and the year recognize and be able to tell the conditions that allow life to exist which are unique to the planet Earth
seasons	recognize that all of the known planets are different and be able to explain some of those differences
moon	recognize that all the planets are the same in many ways - be able to list several ways all planets are alike
rotation/revolution	recognize how the tilt of the Earth's axis and the Earth's revolution around the Sun affect seasons and weather patterns in different parts of Earth Identify and describe seasonal, daylight and weather patterns
Earth Sciences	
Content	Skills
water	Explain the processes that cause cycling of water into and out of the atmosphere and their connections to our planet's weather patterns. Students will be able to explain the properties that make water an essential component of the Earth's system. Understand the solvency properties of water as important to the survival of living things.
geological changes	Water remains liquid at most temperatures and returns to liquid as it cycles through our world.
renewable and nonrenewable resources	understand that the Earth and Earth materials have developed over long periods of time, through constant change processes and are still changing (slowly)
fossils	discuss the big bang theory
natural disasters	differentiate between renewable and nonrenewable resources
weathering	discuss the need to and possible methods of conserving nonrenewable and renewable resources
erosion	understand fossils as important evidence of changes in life forms and geologic conditions over time
deposition	identify connections between fossil evidence and geological events, such as movement of tectonic plates (fossils of similar animals contribute to the Pangaea theory) and other geological events
meanders in rivers and creeks	recognize that changes occur in many ways, sometimes steady and repetitive, sometimes irregular and sudden
soil properties	recognize that nothing happens in isolation explain how some changes to the Earth's surface happen abruptly, as with a natural disaster  recognize that some changes happen slowly - caused by weathering, erosion, deposition, waves, water, wind and ice

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	<p>recognize that vibrations in materials set up wavelike disturbances that spread away from the source, as with earthquakes</p> <p>discuss different ways scientists predict and classify earthquakes and other natural disasters</p> <p>recognize that, because of tectonic plates and other geological factors, some areas of the world are more likely to endure natural disasters</p> <p>explain that soil is formed from combinations of weathered rock and decomposed plant and animal remains, and that it contains living organisms</p> <p>discuss properties of soil/dirt/sand/gravel which make it better for drainage, farming, etc. and other factors, such as bacteria, fungi and worms, which influence its texture, fertility, and resistance to erosion</p> <p>describe the properties of soil, such as color, texture, capacity to retain water, and its ability to support plant life</p>
<b>Atmosphere, Climate, Weather</b>	
<b>Content</b>	<b>Skills</b>
<p>local and regional weather conditions</p> <p>weather patterns</p> <p>clouds</p> <p>atmosphere</p> <p>climate</p> <p>weather</p> <p>meteorologist</p> <p>wind - moving air</p> <p>global warming</p>	<p>Students will compare and contrast the forecasts from different sources and discuss accuracy.</p> <p>Students will be able to describe and make predictions about local and regional weather conditions using observation and data collection methods.</p> <p>Identify weather patterns by tracking weather related events, such as hurricanes, winds, snowstorms.</p> <p>demonstrate understanding of how clouds affect weather and climate, including precipitation, reflecting light from the sun and retaining heat energy emitted from the Earth's surface</p> <p>differentiate between weather, what is happening now, and climate, the pattern of weather over time</p> <p>weather measuring instruments - barometer, anemometer, hygrometer, thermometer, rain guage, weather vane, Doppler radar</p> <p>explain some properties of the different layers of the Earth's atmosphere</p> <p>understand that our atmosphere creates the conditions that make it possible for us to live on the planet Earth</p> <p>make and use simple weather measuring instruments and compare their accuracy to more sophisticated instruments used by meteorologists</p> <p>understand that properties of air keep it in constant motion - winds</p>

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Matter and Properties of Matter	
Content	Skills
<p>atoms- structure</p> <p>properties of substances - that are useful in identification of the substance</p> <p>properties - density, acidity, corrosiveness, strength, stretchability, melting point, or solubility</p> <p>States of matter - solid, liquid and gas</p> <p>Physical and chemical properties</p> <p>elements</p> <p>Identify elements as substances that contain only one kind of atom and explain that elements do not break down by normal laboratory reactions</p>	<p>Explore through models, experiments and observations how matter and energy interact in any ecosystem.</p> <p>Perform an experiment to demonstrate that matter exists in different states that are interchangeable (e.g., melting ice cubes, boiling water).</p> <p>Perform an experiment to demonstrate that matter exists in different states that are interchangeable (e.g., melting ice cubes, boiling water).</p> <p>~ Identify and describe each state of matter, including plasma, in terms of the arrangement and motion of its particulate units.</p> <p>Recognize that all matter is composed of minute particles called atoms, and explain that all substances are composed of atoms, each arranged into different groupings to form different molecules</p> <p>recognize that over one hundred elements exist, and identify the periodic table as a tool for organizing them</p>
State Report	
Content	Skills
<p>weather conditions in your state</p> <p>natural disasters in your state</p> <p>renewable and nonrenewable resources</p> <p>landforms</p>	<p>Describe and make predictions about local and regional weather conditions using observation and data collection methods.</p> <p>Identify weather patterns by tracking weather related events, such as hurricanes and other natural disasters.</p> <p>Differentiate between renewable and nonrenewable resources in your state</p> <p>Describe and define the different landform found in your state</p> <p>Identify and distinguish between various landforms, using a map and/or digital images.</p>

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Energy	
Content	Skills
energy sound heat energy electric energy	identify energy as a property of many substances  understand that energy is necessary for change to occur in matter discuss that energy can be stored, transferred and transformed, but cannot be destroyed explain that the pitch of a sound is dependent on the frequency of the vibration producing it recognize that vibration causes sound discuss different speeds, wavelengths of sounds and the reasons for them recognize that heat is usually a by-product when one form of energy is changed to another  create an electromagnet using a battery  recognize that electric currents can produce magnetic forces and magnets can cause electric currents  discuss how a battery changes chemical energy into electrical energy have a guest speaker demonstrate how to produce a magnetic force with an electric current, such as an electromagnet, and how to produce an electric current with a magnet, such as a generator
Simple Machines	
Content	Skills
Gravitational forces affect matter  For every action there is an equal and opposite reaction.  Force objects in motion  simple machines	Students will demonstrate an increasing ability to understand the relationships among different types and forms of energy Students will increase understanding of forces and the concept of conservation of energy.  Students will recognize simple machines and their function in making our daily lives easier. Students will discuss and experiment with the six simple machines: inclined plane, wedge, screw, lever, wheel and axle and pulley. Students will observe and discuss combinations of these simple machines result in complex machines.  recognize that force is required to cause an object to undergo a change in direction or speed. Students will observe and describe objects in motion.

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Cars	
Content	Skills
electric circuit	follow directions given in an assembly manual
model building	hypothesize and test a variety of factors on the speed of an object
effects of a variety of factors on the speed of an object	demonstrate the ability to build a model by building a working model car
cars and pollution - environmental issues	apply a variety of scientific formulas to finished cars to gather data about cars
electricity safety	
forms of energy	
potential and kinetic energy	