

E elementary
S science
P program



The Elementary Science Program Correlation Guide

The Elementary Science Program Correlation Guide shows the relationship between the Monroe 2–Orleans BOCES Elementary Science Program (ESP) units and the New York State *Elementary Science Core Curriculum Grades K-4* and the *Intermediate Level Science Core Curriculum Grades 5-8*. The state documents were written to help instruction and curriculum design by listing the major understandings for the performance indicators of each key idea in the science portion of the state *Learning Standards for Mathematics, Science, and Technology*. The ESP Correlation Guide is a tool for district curriculum planners engaged in development of a comprehensive science program.

The Elementary Science Program provides materials and learning experiences which can be used to develop many of the major understandings listed in the core curriculum guides. The ESP revises and updates its materials on a continuous basis to help students meet specific learning standards established by the New York State Education Department. For additional assistance with planning science curriculum, please contact the ESP. This document is also available as a PDF file from the ESP website at www.espsciencetime.org/teachers/index.htm.

●585-352-1140

●1-800-832-8011

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Major Understandings*	
1.1a	Natural cycles and patterns include: ...rotation, revolution, length of daylight varies with seasons, weather changing day to day and through seasons, changing appearance of the Moon through its cycle.
1.1b	Humans organize time into units based on natural motions of the Earth: second, minute, hour, week, month.
1.1c	The sun and other stars appear to move in a recognizable pattern both daily and seasonally.
2.1a	Weather is the condition of the outside air at a particular moment.
2.1b	Weather can be described and measured by: temperature, wind speed and direction, form and amount of precipitation, general sky conditions (cloudy, sunny, partly cloudy).
2.1c	Water is recycled by natural processes on Earth: evaporation, condensation, precipitation, runoff, groundwater ...
2.1d	Erosion and deposition result from the interaction among air, water, and land ...
2.1e	Extreme natural events ...may have positive or negative impacts on living things.
3.1a	Matter takes up space and has mass. Two objects cannot occupy the same place at the same time.
3.1b	Matter has properties (colors, hardness, odor, sound, taste, etc.) that can be observed through the senses.
3.1c	Objects have properties that can be observed, described, and/or measured: length, width, volume, size, shape, mass or weight, temperature, texture, flexibility, reflectiveness of light.
3.1d	Measurements can be made with standard metric units and nonstandard units.
3.1e	The material(s) an object is made up of determine some specific properties of the object. Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, graduated cylinders.
3.1f	Objects and/or materials can be sorted or classified according to their properties.
3.1g	Some properties of an object are dependent on the conditions of the present surroundings in which the object exists....
3.2a	Matter exists in three states: solids, liquids, gases....
3.2b	Temperature can affect the state of matter of a substance.
3.2c	Changes in the properties or materials of objects can be observed and described.
4.1a	Energy exists in various forms: heat, electric, sound, chemical, mechanical, light.
4.1b	Energy can be transferred from one place to another.
4.1c	Some materials transfer energy better than others (heat and electricity).
4.1d	Energy and matter interact...
4.1e	Electricity travels in a closed circuit.
4.1f	Heat can be released in many ways, for example, by burning, rubbing (friction), or combining one substance with another.
4.1g	Interactions with forms of energy can be either helpful or harmful.
4.2a	Everyday events involve one form of energy being changed to another....
4.2b	Humans utilize interactions between matter and energy....
5.1a	The position of an object can be described by locating it relative to another object or the background....
5.1b	The position or direction of motion of an object can be changed by pushing or pulling.
5.1c	The force of gravity pulls objects toward the center of Earth.
5.1d	The amount of change in the motion of an object is affected by friction.
5.1e	Magnetism is a force that may attract or repel certain materials.
5.1f	Mechanical energy may cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, inclined planes.
5.2a	The forces of gravity and magnetism can affect objects through gases, liquids, and solids.
5.2b	The force of magnetism on objects decreases as distance increases.

*some Major Understandings have been edited to save space.

Major Understandings	K				1			2					3					4									
	Classroom Plants	Senses	Sunshine Shadows Silhouettes	Waterplay	Earthworms	From Seed to Plant	Properties	Eggs to Toads	First Look at Soil	Interactions	Measuring	Plant & Animal Life Cycles	Weather	Buoyancy	Butterflies	Pollination	Sky Calendar	Sound	Structures	Systems & Simple Machines	Birds and Their Adaptations	Crayfish	Design Technology	Electrical Circuits	Magnets	Mystery Matter	
1.1a												●					●										
1.1b												●					●										
1.1c			●									●					●										
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3.1d	●	●		●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●
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Major Understandings*	
1.1a	Animals need air, water, and food in order to live and thrive.
1.1b	Plants require air, water, nutrients, and light in order to live and thrive.
1.1c	Nonliving things do not live and thrive.
1.1d	Nonliving things can be human-created or naturally occurring.
1.2a	Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.
2.1a	Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).
2.1b	Some characteristics result from an individual's interactions with the environment and cannot be inherited by the next generation.
2.2a	Plants and animals closely resemble their parents and other individuals in their species.
2.2b	Plants and animals can transfer specific traits to their offspring when they reproduce.
3.1a	Each animal has different structures that serve different functions in growth, survival, and reproduction...
3.1b	Each plant has different structures that serve different functions in growth, survival, and reproduction...
3.1c	In order to survive in their environment, plants and animals must be adapted to that environment....
3.2a	Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.
3.2b	All individuals have variations, and because of these variations individuals of a species may have an advantage in surviving and reproducing.
4.1a	Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction...and..death.
4.1b	Each kind of plant goes through its own stages of growth and development that may include seed, young plant, mature plant.
4.1c	The length of time from beginning of development to death of the plant is called its life span.
4.1d	Life cycles of some plants include changes from seed to mature plant.
4.1e	Each generation of animals goes through changes in form from young to adult. This completed sequence of changes....is called a life cycle....
4.1f	Each kind of animal goes through its own stages of growth and development during its life span.
4.1g	The length of time from an animal's birth to its death is called its life span. Life spans of different animals vary.
4.2a	Growth is the process by which plants and animals increase in size.
4.2b	Food supplies the energy and materials necessary for growth and repair.
5.1a	All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.
5.1b	An organism's external physical features can enable it to carry out life functions in its particular environment.
5.2a	Plants respond to changes in their environment....
5.2b	Animals respond to changes in their environment....
5.2c	Senses can provide essential information...to animals about their environment.
5.2d	Some animals, including humans, move from place to place to meet their needs.
5.2e	Particular animal characteristics are influenced by changing environmental conditions including...
5.2f	Some animal behaviors are influenced by environmental conditions....
5.2g	The health, growth, and development of organisms are affected by environmental conditions such as...
5.3a	Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health.
5.3b	Good health habits include hand washing and personal cleanliness; avoiding harmful substances; eating a balanced diet; engaging in exercise.
6.1a	Green plants are producers because they provide the basic food supply for themselves and animals.
6.1b	All animals depend on plants. Some animals (predators) eat other animals (prey).
6.1c	Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.
6.1d	Decomposers are living things that play a vital role in recycling nutrients.
6.1e	An organism's pattern of behavior is related to the nature of that organism's environment...
6.1f	When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.
6.2a	Plants manufacture food by utilizing air, water, and energy from the Sun.
6.2b	The Sun's energy is transferred on Earth from plants to animals through the food chain.
6.2c	Heat energy from the Sun powers the water cycle (see Physical Science Key Idea 2).
7.1a	Humans depend on their natural and constructed environments.
7.1b	Over time humans have changed their environment by cultivating crops and raising animals, creating shelter,...
7.1c	Humans, as individuals or communities, change environments in ways that can be either helpful or harmful...

*some Major Understandings have been edited to save space.

Major Understandings	K				1			2					3					4							
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1.1a					●			●				●	●							●	●				
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Major Understandings*

1.1a	Earth's Sun is an average-sized star. The Sun is more than a million times greater in volume than Earth.
1.1b	Other stars are like the Sun but are so far away that they look like points of light. Distances between stars are vast...
1.1c	The Sun and the planets that revolve around it are the major bodies in the solar system...Earth's orbit is nearly circular.
1.1d	Gravity is the force that keeps planets in orbit around the Sun and the Moon in orbit around the Earth.
1.1e	Most objects in the solar system have a regular and predictable motion. These motions explain such phenomena as a day, a year, phases of the Moon, eclipses, tides, meteor showers, and comets.
1.1f	The latitude/longitude coordinate system and our system of time are based on celestial observations.
1.1g	Moons are seen by reflected light. Our Moon orbits Earth, while Earth orbits the Sun. The moon's phases are the result of seeing different portions of the lighted area of the Moon's surface. The phases repeat in a cyclic pattern in about one month.
1.1h	The apparent motions of the Sun, Moon, Planets, and stars across the sky can be explained by Earth's rotation and revolution. Earth's rotation causes the length of one day to be approx. 24 hrs. Rotation causes the Sun and Moon to appear to rise along the eastern horizon and set along the western horizon. Earth's revolution around the Sun defines the length of the yr.as 365 ¼ days.
1.1i	The tilt of Earth's axis of rotation and the revolution around the Sun cause seasons on Earth.
1.1j	The shape of Earth, the other planets, and stars is nearly spherical.
2.1a	Nearly all the atmosphere is confined to a thin shell surrounding Earth. The atmosphere is a mixture of gases,,
2.1b	As altitude increases, air pressure decreases.
2.1c	The rock at Earth's surface forms a nearly continuous shell around Earth called the lithosphere.
2.1d	The majority of the lithosphere is covered by a relatively thin layer of water called the hydrosphere.
2.1e	Rocks are composed of minerals. Only a few rock-forming minerals make up most of the rocks of Earth.
2.1f	Fossils are usually found in sedimentary rocks. Fossils can be used to study past climates and environments.
2.1g	The dynamic processes that wear away Earth's surface include weathering and erosion.
2.1h	The process of weathering breaks down rocks to form sediment. Soil consists of sediment, organic material, water, and air.
2.1i	Erosion is the transport of sediment. Gravity is the ...force behind erosion. Gravity can act... through water, wind, and glaciers.
2.1j	Water circulates through the atmosphere, lithosphere, and hydrosphere in what is known as the water cycle.
2.2a	The interior of Earth is hot. Heat flow and movement of material within Earth cause sections of Earth's crust to move. This may result in earthquakes, volcanic eruption, and the creation of mountains and ocean basins.
2.2b	Analysis of earthquake wave data leads to the conclusion that there are layers (crust, mantle, outer and inner core) within Earth.
2.2c	Folded, tilted, faulted, and displaced rock layers suggest past crustal movement.
2.2d	Continents fitting together like puzzle parts and fossil correcations provided initial evidence that continents were once together.
2.2e	The theory of Plate Tectonics explains how the "solid" lithosphere consists of a series of plates that "float" on the...molten mantle.
2.2f	Plates may collide, move apart, or slide past one another. Resulting in volcanic activity, mountain building, and earthquakes.
2.2g	Rocks are classified according to their method of formation. The three classes of rocks are sedimentary, metamorphic, and igneous.
2.2h	The rock cycle model shows how types of rock or rock material may be transformed from one type of rock to another.
2.2i	Weather describes the conditions of the atmosphere at a given location for a short period of time.
2.2j	Climate is the characteristic weather that prevails from season to season and year to year.
2.2k	The uneven heating of Earth's surface is the cause of weather.
2.2l	Air masses form when air remains nearly stationary and takes on the conditions from that location. Weather conditions at a location are determined primarily by temperature, humidity, and pressure of air masses over that location.
2.2m	Most local weather conditions changes are caused by movement of air masses.
2.2n	The movement of air masses is determined by prevailing winds and upper air currents.
2.2o	Fronts are boundaries between air masses. Precipitation is likely to occur at these boundaries.
2.2p	High-pressure usally brings fair weather, low-pressure cloudy, unstable conditions. Air masses usually move west to east in US.
2.2q	Hazardous weather conditions include thunderstorms, tornadoes, hurricanes, ice storms, and blizzards.
2.2r	Substances enter the atmosphere naturally and from human activity...These substances can affect weather, climate, and living things.
3.1a	Substances have characteristic properties; such as, color, odor, phase, density, solubility, hardness, etc.
3.1b	Solubility can be affected by the nature of the solute and solvent, temperature, and pressure....
3.1c	The motion of particles helps to explain the phases of matter as well as changes from one phase to another....
3.1d	Gases have neither a determined shape nor a definite volume. Gases assume the shape and volume of a closed container.
3.1e	A liquid has a definite volume, but takes the shape of a container.
3.1f	A solid has a definite shape and volume. Particles resist a change in position.

*some Major Understandings have been edited to save space.

Major Understandings*	
3.1g	Characteristic properties can be used to identify materials, and separate a mixture.... into its components...Iron can be removed from a mixture with a magnet. An insoluble substance can be separated from a soluble one by filtration, settling, and evaporation.
3.1h	Density can be described as the amount of matter that is in a given amount of space.
3.1i	Buoyancy is determined by comparative densities.
3.2a	During a physical change a substance keeps its chemical composition and properties. Physical changes include freezing, melting....
3.2b	Mixtures are physical combinations of materials and can be separated by physical means.
3.2c	In a chemical change, substances react in characteristic ways to form new substances with different physical & chemical properties.
3.2d	Substances are often placed in categories if they react in similar ways. Ex: metals, nonmetals, noble gases.
3.2e	The Law of Conservation of Mass states that during a chemical reaction matter cannot be created or destroyed....
3.3a	All matter is made up of atoms. Atoms are far too small to see with a light microscope.
3.3b	Atoms and molecules are perpetually in motion. The greater the temperature, the greater the motion.
3.3c	Atoms may join together in well-defined molecules or may be arranged in regular geometric patterns.
3.3d	Interactions among atoms and/or molecules result in chemical reactions.
3.3e	The atoms of any one element are different from the atoms of other elements.
3.3f	There are more than 100 elements. Elements combine in a multitude of ways to produce compounds....
3.3g	The periodic table is one useful model for classifying elements. The periodic table can be used to predict properties of elements.
4.1a	The sun is a major source of energy for Earth. Other sources include nuclear and geothermal energy.
4.1b	Fossil fuels contain stored solar energy and are considered nonrenewable resources. They are a major source of energy in the US....
4.1c	Most activities...involve one form of energy being transformed into another...Heat is almost always a product of energy transformations.
4.1d	Different forms of energy include heat, light, electrical, mechanical, sound, nuclear, and chemical....
4.1e	Energy can be kinetic energy, which is the energy of motion, or potential energy, which depends on relative position.
4.2a	Heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature.
4.2b	Heat can be transferred through solids (conduction), through space (radiation), and in liquids or gases (convection).
4.2c	During a phase change, heat energy is absorbed or released....
4.2d	Most substances expand when heated and contract when cooled. Water is an exception, expanding when changing to ice.
4.2e	Temperature affects the solubility of some substances in water.
4.3a	In chemical reactions, energy is transferred into or out of a system.
4.4a	Different forms of electromagnetic energy have different wavelengths. Ex: microwaves, infrared, visible light, ultraviolet, x-rays, and gamma rays.
4.4b	Light passes through some materials, sometimes refracting in the process. Materials absorb and reflect light, and may transmit light. To see an object, light from that object, emitted by or reflected from it, must enter the eye.
4.4c	Vibrations in materials set up wave-like disturbances that spread away from the source. Ex: sound waves. Vibrational waves move at different speeds in different materials. Sound cannot travel in a vacuum.
4.4d	Electrical energy can be produced from a variety of energy sources and can be transformed into almost any other form of energy.
4.4e	Electrical circuits provide a means of transferring electrical energy.
4.4f	Without touching them, material that has been electrically charged attracts uncharged material, and may attract or repel charged material.
4.4g	Without direct contact, a magnet attracts certain materials and attracts or repels other magnets. The force is greatest at the poles.
4.5a	Energy cannot be created or destroyed, but only changed from one form into another.
4.5b	Energy can change from one form to another, although in the process some energy is always converted to heat....
5.1a	The motion of an object is always judged with respect to some other object or point.
5.1b	The motion of an object can be described by its position, direction of motion, and speed.
5.1c	An object's motion is the result of the combined effect of all the forces acting on the object. A moving object that is not subjected to a force will continue to move at a constant speed in a straight line. An object at rest will remain at rest.
5.1d	Force is directly related to an object's mass and acceleration. The greater the force, the greater the change in motion.
5.1e	For every action there is an equal and opposite reaction.
5.2a	Every object exerts gravitational force on every other object. The force depends on how much mass the objects have & how far apart they are.
5.2b	Electric currents and magnets can exert a force on each other.
5.2c	Machines transfer mechanical energy from one object to another.
5.2d	Friction is a force that opposes motion.
5.2e	A machine can be made more efficient by reducing friction. Friction can be reduced by lubrication or waxing surfaces.
5.2f	Machines can change the direction or amount of force, or the distance or speed of force required to do work.
5.2g	Simple machines include: lever, pulley, wheel and axle, inclined plane. A complex machine is a combination of simple machines.

*some Major Understandings have been edited to save space.

Elementary Science Program Units

Major Understandings	5					6					5-8			
	Electromagnetism	Meet the Creatures	Plant Responses	Rocks and Minerals	Soil	Forces in Space	Light	Looking at Liquids	Pond Life	Rocketry	Simple Machines	Astronomy	Ecosystems and Habitats	Renewable Energy
1.1a												●		
1.1b												●		
1.1c												●		
1.1d						●						●		
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3.1i								●						

The Physical Setting

Major Understandings	5					6					5-8			
	Electromagnetism	Meet the Creatures	Plant Responses	Rocks and Minerals	Soil	Forces in Space	Light	Looking at Liquids	Pond Life	Rocketry	Simple Machines	Astronomy	Ecosystems and Habitats	Renewable Energy
3.2a														
3.2b					●									
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4.1a														●
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4.1c	●													●
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Major Understandings*

1.1a	Living things are composed of cells. Cells provide structure and carry on major functions to sustain life. Cells are usually microscopic in size.
1.1b	The way in which cells function is similar in all living things. Cells grow and divide, producing more cells. Cells take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs.
1.1c	Most cells have cell membranes, genetic material, and cytoplasm. Some cells have a cell wall and/or chloroplasts. Many cells have a nucleus.
1.1d	Some organisms are single cells; others, including humans, are multicellular.
1.1e	Cells are organized for more effective functioning in multicellular organisms. Levels of organization for structure and function of a multicellular organism include cells, tissues, organs, and organ systems.
1.1f	Many plants have roots, stems, leaves, and reproductive structures. These organized groups of tissues are responsible for a plant's life activities.
1.1g	Multicellular animals often have similar organs and specialized systems for carrying out major life activities.
1.1h	Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classification systems are arranged from general (kingdom) to specific (species).
1.2a	Each system is composed of organs and tissues which perform specific functions and interact with each other....
1.2b	Tissues, organs, and organ systems help to provide all cells with nutrients, oxygen, and waste removal.
1.2c	The digestive system consists of organs that are responsible for the mechanical and chemical breakdown of food....
1.2d	During respiration, cells use oxygen to release the energy stored in food. The respiratory system supplies oxygen and removes carbon dioxide.
1.2e	The excretory system function in the disposal of dissolved waste molecules, elimination of liquid and gaseous wastes, and removal of excess heat.
1.2f	The circulatory system moves substances to and from cells, where they are needed or produced, responding to changing demands.
1.2g	Locomotion, necessary to escape danger, obtain food and shelter, and reproduce, is accomplished by the interaction of the skeletal and muscular systems, and coordinated by the nervous system.
1.2h	The nervous and endocrine systems interact to control and coordinate the body's responses to changes in the environment, and to regulate growth, development, and reproduction. Hormones are chemicals produced by the endocrine system; hormones regulate many body functions.
1.2i	The male and female reproductive systems are responsible for producing sex cells necessary for the production of offspring.
1.2j	Disease breaks down the structures or functions of an organism. Some diseases are the result of failures of the system. Other diseases are the result of damage by infection from other organisms (germ theory). Specialized cells protect the body from infectious disease....
2.1a	Hereditary information is contained in genes. Genes are composed of DNA that makes up the chromosomes of cells.
2.1b	Each gene carries a single unit of information. A single inherited trait of an individual can be determined by one pair or by many pairs of genes. A human cell contains thousands of different genes.
2.1c	Each human cell contains a copy of all the genes needed to produce a human being.
2.1d	In asexual reproduction, all the genes come from a single parent. Asexually produced offspring are genetically identical to the parent.
2.1e	In sexual reproduction typically half of the genes come from each parent. Sexually produced offspring are not identical to either parent.
2.2a	In all organisms, genetic traits are passed on from generation to generation.
2.2b	Some genes are dominant and some are recessive. Some traits are inherited by mechanisms other than dominance and recessiveness.
2.2c	The probability of traits being expressed can be determined using models of genetic inheritance...Ex: pedigree charts and Punnett squares.
3.1a	The processes of sexual reproduction and mutation have given rise to a variety of traits within a species.
3.1b	Changes in environmental conditions can affect the survival of individual organisms with a particular trait. Small differences between parents and offspring can accumulate in successive generations so that descendants are very different from their ancestors. Individual organisms with certain traits are more likely to survive and have offspring than individuals without those traits.
3.1c	Human activities such as selective breeding and advances in genetic engineering may affect the variations of species.
3.2a	In all environments, organisms with similar needs may compete with one another for resources.
3.2b	Extinction of species occurs when the environment changes and the adaptive characteristics of a species are insufficient to permit its survival...
3.2c	Many thousands of layers of sedimentary rock provide evidence for the long history of Earth and for the long history of changing lifeforms whose remains are found in the rocks. Recently deposited rock layers are more likely to contain fossils resembling existing species.
3.2d	Although the time needed for change in a species is usually great, some species of insects and bacteria have undergone change in a few years.
4.1a	Some organisms reproduce asexually, others reproduce sexually. Some organisms can reproduce both sexually and asexually.
4.1b	There are many methods of asexual reproduction, including division of a cell...
4.1c	Methods of sexual reproduction depend upon the species. All methods involve the merging of sex cells to begin the development of a new individual. In many species, including plants and humans, eggs and sperm are produced.
4.1d	Fertilization and/or development in organisms may be internal or external.
4.2a	The male sex cell is the sperm. The female sex cell is the egg. The fertilization of an egg by a sperm results in a fertilized egg.
4.2b	In sexual reproduction, sperm and egg each carry one-half of the genetic information for the new individual. Therefore, the fertilized egg contains genetic information from each parent.

*some Major Understandings have been edited to save space.

Major Understandings*

4.3a	Multicellular organisms exhibit complex changes in development, which begin after fertilization....
4.3b	In humans, the fertilized egg grows into tissue which develops into organs and organ systems before birth.
4.3c	Various body structures and functions change as an organism goes through its life cycle.
4.3d	Patterns of development vary among animals. In some species the young resemble the adult, in others they do not. Some insects and amphibians undergo metamorphosis as they mature.
4.3e	Patterns of development vary among plants. In seed-bearing plants, seeds, contain stored food for early development. Their later development into adulthood is characterized by varying patterns of growth from species to species.
4.3f	As an individual organism ages, various body structures and functions change.
4.4a	In multicellular organisms, cell division is responsible for growth, maintenance, and repair. In some one-celled organisms, cell division is a method of asexual reproduction.
4.4b	In one type of cell division, chromosomes are duplicated and then separated into two identical and complete sets to be passed to each of two cells....
4.4c	Another type of cell division accounts for the production of egg and sperm cells in sexually reproducing organisms....
4.4d	Cancers are a result of abnormal cell division.
5.1a	Animals and plants have a great variety of body plans and internal structures that contribute to their ability to maintain a balanced condition.
5.1b	An organism's overall body plan and its environment determine the way that the organism carries out the life processes.
5.1c	All organisms require energy to survive. The amount of energy needed and the method for obtaining it vary among cells...
5.1d	The methods for obtaining nutrients vary among organisms. Producers, such as green plants, use light energy to make their food. Consumers, such as animals, take in energy-rich foods.
5.1e	Herbivores obtain energy from plants. Carnivores obtain energy from animals. Omnivores obtain energy from both plants and animals. Decomposers, such as bacteria and fungi, obtain energy by consuming wastes and/or dead organisms.
5.1f	Regulation of an organism's internal environment involves sensing the internal environment and changing physiological activities to keep conditions within the range required for survival....
5.1g	The survival of an organism depends on its ability to sense and respond to its external environment.
5.2a	Food provides molecules that serve as fuel and building material for all organisms.....
5.2b	Foods contain a variety of substances, which include carbohydrates, fats, vitamins, proteins, minerals, and water....
5.2c	Metabolism is the sum of all chemical reactions in an organism. Metabolism can be influenced by hormones, exercise, diet, and aging...
5.2d	Energy in foods is measured in Calories. The total caloric value of each type of food varies. The number of Calories a person requires varies...
5.2e	In order to maintain a balanced state, all organisms have a minimum daily intake of each type of nutrient based on species, size, age, sex....
5.2f	Contraction of infectious disease, and personal behaviors such as use of toxic substances and dietary habits, may interfere with one's equilibrium....
6.1a	Energy flows through ecosystems in one direction, usually from the Sun, through producers to consumers and then to decomposers. This process may be visualized with food chains or energy pyramids.
6.1b	Food webs identify feeding relationships among producers, consumers, and decomposers in an ecosystem.
6.1c	Matter is transferred from one organism to another and between organisms and their physical environment. Water, nitrogen, carbon dioxide, and oxygen are examples of substances cycled between the living and nonliving environment.
6.2a	Photosynthesis is carried on by green plants and other organisms containing chlorophyll. In this process, the Sun's energy is converted into and stored as chemical energy in the form of sugar. The quantity of sugar molecules increases in green plants during photosynthesis in... sunlight.
6.2b	The major source of atmospheric oxygen is photosynthesis. CO ₂ is removed from the atmosphere and oxygen is released during photosynthesis.
6.2c	Green plants are the producers of food which is used directly or indirectly by consumers.
7.1a	A population consists of all individuals of a species that are found together at a given place and time. Populations living in one place form a community. The community and the physical factors with which it interacts compose an ecosystem.
7.1b	Given adequate resources and no disease or predators, populations increase. Lack of resources, habitat destruction, and other factors such as predation and climate limit the growth of certain populations in the ecosystem.
7.1c	In all environments, organisms interact with one another in many ways. Relationships among organisms may be competitive, harmful, or beneficial. Some species have adapted to be dependent upon each other with the result that neither could survive without the other.
7.1d	Some microorganisms are essential to the survival of other living things.
7.1e	The environment may contain dangerous levels of substances (pollutants) that are harmful to organisms. Therefore, the good health of environments and individuals requires the monitoring of soil, air, and water, and taking steps to keep them safe.
7.2a	In ecosystems, balance is the result of interactions between community members and their environment.
7.2b	The environment may be altered through the activities of organisms. Alterations are sometimes abrupt. Some species may replace others over time, resulting in long-term gradual changes (ecological succession).
7.2c	Overpopulation by any species impacts the environment due to the increased use of resources. Human activities can bring about environmental degradation through resource acquisition, urban growth, land-use decisions, waste disposal, etc.
7.2d	Since the Industrial Revolution, human activities have resulted in major pollution of air, water, and soil. Pollution has cumulative ecological effects. such as acid rain, global warming, or ozone depletion. The survival of organisms on Earth depends on conservation and protection of resources.

*some Major Understandings have been edited to save space.

Elementary Science Program Units

	5				6				5-8				
	Electromagnetism	Meet the Creatures	Plant Responses	Rocks and Minerals	Soil	Forces in Space	Light	Looking at Liquids	Pond Life	Rocketry	Simple Machines	Astronomy	Ecosystems and Habitats
1.1a									●				
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The Living Environment

	5				6				5-8					
	Electromagnetism	Meet the Creatures	Plant Responses	Rocks and Minerals	Soil	Forces in Space	Light	Looking at Liquids	Pond Life	Rocketry	Simple Machines	Astronomy	Ecosystems and Habitats	Renewable Energy
4.4a														
4.4b														
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6.2b													●	●
6.2c			●						●				●	
7.1a									●				●	
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	Elementary					Intermediate		
Elementary Science Program Units	K	1	2	3	4	5	6	5-8
The Living Environment	Classroom Plants	Earthworms From Seed To Plant	Eggs to Toads Plant and Animal Life Cycles	Butterflies Pollination	Birds and Their Adaptations Crayfish	Meet the Creatures Plant Responses	Pond Life	Ecosystems and Habitats
The Physical Setting	Senses Sunshine, Shadows, & Silhouettes Waterplay	Properties	First Look At Soil Interactions Measuring Weather	Buoyancy Sky Calendar Sound Structures Systems & Simple Machines	Design Technology Electrical Circuits Magnets Mystery Matter	Electromagnetism Rocks & Minerals Soil	Forces in Space Light Looking at Liquids Rocketry Simple Machines	Astronomy Renewable Energy

Monroe2–Orleans BOCES
38 Turner Drive
Spencerport, NY 14559
585-352-1140 or 800-832-8011
www.espsciencetime.org