

English Language Proficiency Framework
Connections
for
Science

Grades K-8

Spring 2009

English Language Proficiency Framework

Strands	Content Standards
Nature of Science	
1. Characteristics and Processes of Science	Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.
Life Science	
2. Living Systems: Characteristics, Structure, and Function	Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
3. Life Cycles, Reproduction, and Heredity	Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
4. Populations and Ecosystems	Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.
Physical Science	
5. Matter: Properties and Changes	Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
6. Motion and Forces	Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
7. Energy and Transfer of Energy	Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.
Earth and Space Science	
8. Earth Systems	Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
9. Earth's History: Changes in Earth and Sky	Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
10. Objects in the Universe	Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

*Each grade level continues to address earlier Student Learning Expectations.

A minimum of 20% of instructional time in science must be spent in inquiry and conducting hands-on investigations. Equipment, training, and grant information are available through the Arkansas Centers for Mathematics and Science Education.

Grades K-2

Strand 1: Nature of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.NS.1.K-2.1 Communicate observations and results from scientific investigations	Record observations pictorially with support (e.g., temperature, mass, length, volume)	Sequence observations using a series of pictures	Communicate observations using simple, complete sentences or graphic organizers	Communicate observations and results from scientific investigations (e.g., science journal)	Communicate observations and results from scientific investigations (e.g., write lab report)	NS.1.K.1 NS.1.K.2 NS.1.K.3 NS.1.K.6 NS.1.1.1 NS.1.1.2 NS.1.1.3 NS.1.1.5 NS.1.1.6 NS.1.2.1 NS.1.2.2 NS.1.2.3
ELPS.NS.1.K-2.2 Identify tools used during scientific investigation	Point to actual tools or pictures of scientific tools	Identify orally the actual tools or pictures of scientific tools (e.g., say thermometer when shown thermometer)	Match science tools to their function (e.g., ruler measures length, balance measures mass)	Identify tools used during scientific investigation (e.g., use short sentences or phrases to describe the function of a balance)	Identify tools used during scientific investigation (e.g., class presentation, slide show)	NS.1.K.4 NS.1.K.5 NS.1.K.7 NS.1.1.4 NS.1.1.7 NS.1.2.4 NS.1.2.7
ELPS.NS.1.K-2.3 Identify vocabulary related to safety equipment and procedures in science	Identify pictures of safety equipment used in science classrooms (e.g., point to equipment being used appropriately)	Sort pictures of safe and unsafe lab activities (e.g., cards labeled safe and unsafe; verbalize safe or unsafe)	Identify unsafe lab activities (e.g., small group or whole group discussion using short, complete sentences)	Identify vocabulary related to safety equipment and procedures in science (e.g., sentence strips stating lab safety rules, posters, pictures)	Identify vocabulary related to safety equipment and procedures in science	NS.1.K.8 NS.1.K.9 NS.1.1.8 NS.1.1.9 NS.1.2.8

Vocabulary: balance, hand lens, length, magnification, magnifier, observation, prediction, ruler, safety, science, size, teamwork, temperature, thermometer, length, mass, volume, scientific investigation, experiment, data

Grades K-2

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.K-2.1 Classify organisms into major groups according to characteristics	Sort pictures and/or posters of organisms according to like and unlike	Sort organisms according to characteristics (e.g. T-chart sorting animals and plants)	Classify organisms into major groups according to characteristics (e.g., chart, T-chart, Venn diagram)	Classify organisms into major groups according to characteristics with support (e.g., describe characteristics of organisms based on illustrations using a word wall)	Classify organisms into major groups according to characteristics (e.g., independently describe characteristics of organisms based on illustrations)	LS.2.K.1 LS.2.K.2 LS.2.K.3 LS.2.1.1 LS.2.1.2 LS.2.2.2 LS.2.2.4
ELPS.LS.2.K-2.2 Identify basic needs of organisms	Identify basic needs for life using pictures (e.g., food, water shelter, air, space)	Illustrate requirements for life (e.g., food, water shelter, air, space)	Match visuals representing basic needs of organisms to a short description (e.g., sentence strips, word wall, teacher reads description)	Identify basic needs of organisms (e.g., describe examples of basic needs for life using a word wall or independently in a journal)	Identify basic needs of organisms (e.g., produce a brochure on taking care of a pet or plant)	LS.2.K.4 LS.2.2.3

Grades K-2

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ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.K-2.3 Identify major human body and plant structures and their functions	Point to human body parts and/or plant parts on a visual	Match major human body and/or plant parts to the appropriate vocabulary (e.g., word wall words with human body and plant structures)	Label major human body and/or plant structures using teacher support (e.g., word wall, human or plant models)	Label illustration of human body and plant structures and their functions (e.g., sentence strips)	Identify major human body and plant structures and their functions (e.g., draw and label diagram structures and their functions using complete sentences)	LS.2.1.3 LS.2.1.4 LS.2.2.5 LS.2.2.6
ELPS.LS.2.K-2.4 Name the five senses and their functions	Identify sensory organs (e.g., point to nose, ear, tongue, eyes, skin)	Name sensory organs used during teacher-directed activity (e.g., taste salt, taste sugar, smell flowers)	Label sensory organs with their appropriate function (e.g., nose to smell, tongue to taste, fingertips to touch)	Illustrate self-generated examples of the five senses (e.g., draw sense organs and label function using sentence strips or word cards)	Name the five senses and their functions (e.g., chart, journal, foldable, poster, skit)	LS.2.K.5 LS.2.K.6

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ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.K-2.5 Recognize vocabulary related to oral hygiene	Identify vocabulary related to proper oral hygiene (e.g., point to tooth, toothpaste, toothbrush, floss)	Label basic objects used for oral hygiene (e.g., teeth, toothpaste, toothbrush, floss)	Match words to proper hygiene techniques (e.g., brush teeth, apply toothpaste, rinse toothbrush, floss daily)	Recognize vocabulary related to oral hygiene (e.g. role play, total physical response)	Recognize vocabulary related to oral hygiene (e.g., describe to class proper oral hygiene)	LS.2.K.7 LS.2.K.8
ELPS.LS.2.K-2.6 Identify stages of development and life cycles of plants and animals	Illustrate daily observations of a plant or animal life cycles using words or pictures from word wall	Sequence labeled pictures of plant or animal life cycles (e.g., egg, larva, pupa, adult)	Sequence life cycles of plants or animals, using sentence strips	Identify stages of development and life cycles of plants and animals (e.g., write simple lab report on plant growth lab)	Identify stages of development and life cycles of plants and animals (e.g., write a complete lab report on metamorphosis of frog or butterfly)	LS.3.K.1 LS.3.K.2 LS.3.1.1 LS.3.1.2 LS.3.2.1 LS.3.2.2

Grades K-2

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ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.K-2.7 Identify traits of living, endangered, and extinct species and their habitats	Sort pictures of animals and plants that are living and extinct species	Label pictures of living and extinct species	Identify various factors in a habitat that may endanger species or lead to extinction (e.g., use sentence strips to describe habitat change)	Identify various factors in a habitat that may endanger species or lead to extinction (e.g., create diorama, model habitat, or go on field trip and write a simple report on the project)	Identify traits of living, endangered, and extinct species and their habitats (e.g., create a descriptive poster of the possible causes for the extinction of dinosaurs)	LS.4.K.1 LS.4.1.1 LS.4.2.1 LS.4.2.2

Vocabulary: living, nonliving, plant, animal, food, water, light, air, space, herbivore, carnivore, mammal, birds, fish, omnivore, nutrient, temperature, flowering plant, conifers, five senses, teeth, toothpaste, toothbrush, floss, heart, lungs, brain, stomach, muscles, bones, leaves, stems, flowers, roots, skeletal system, complete metamorphosis, incomplete metamorphosis, embryo, development, extinct, endangered species, Arkansas, habitat

Grades K-2

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.PS.3.K-2.1 Use vocabulary related to properties of and changes in matter	Sort familiar objects based on physical properties (e.g., size, color, shape)	Label familiar objects according to physical properties (e.g., size, shape, color) and/or states of matter (e.g., liquid, solid)	Create a graphic organizer comparing the characteristics of objects according to physical properties (size, shape, color) and/or states of matter (liquid, solid)	Incorporate key vocabulary into an oral or written presentation (e.g., comparing physical properties or comparing states of matter)	Use vocabulary related to properties of and changes in matter (e.g., write a report on how water changes states)	PS.5.K PS.5.1.1 PS.5.2.1 PS.5.1.2
ELPS.PS.3.K-2.2 Use vocabulary related to motion and forces	Demonstrate spatial relationships and/or the force of gravity using physical representation (e.g. straight line, zigzag, back and forth, dropping a ball)	Identify key vocabulary related to motion and forces through playing games (e.g. charades in which one student acts out the term and the other student names the term)	Role play motion and forces found in children’s literature (e.g., Dr. Suess, Bernstein Bears)	Illustrate the vocabulary related to motion and forces (e.g., create storyboard, slide show)	Use vocabulary related to motion and forces (e.g., write about everyday occurrences, "I put my shoes <u>under</u> my bed")	PS.6.K.1 PS.6.K.2 PS.6.K.3 PS.6.1.1 PS.6.1.2 PS.6.2.1

Grades K-2

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
<p>ELPS.PS.3.K-2.3 Use vocabulary related to energy and transfer of energy</p> <ul style="list-style-type: none"> • light • heat • electricity • magnetism 	Identify examples of light, heat, electricity, and magnetism (e.g., point to examples in classroom or outside)	Name examples of light, heat, electricity, and magnetism (e.g., teacher shows example and student names using appropriate vocabulary)	Identify sources of light, heat, electricity, and magnetism in everyday life (e.g., oven, air conditioner, natural light, fireflies, refrigerator magnets)	Chart personal use of light, heat, electricity and magnetism (e.g., for one-three days record use of light switches, video games, computers, ceiling fan, refrigerator)	Use vocabulary related to energy and transfer of energy <ul style="list-style-type: none"> • light • heat • electricity • magnetism (e.g., journal personal and community use of energy for one-three days)	PS.7.K.1 PS.7.K.2 PS.7.K.4 PS.7.K.5 PS.7.K.6 PS.7.1.1 PS.7.1.2 PS.7.1.3 PS.7.1.4 PS.7.1.5 PS.7.1.6 PS.7.1.7 PS.7.2.1 PS.7.2.2 PS.7.2.3

Vocabulary: over, under, left, right, straight, zigzag, back and forth, round and round, fast, slow, gravity, mass, weight, force, motion, light, natural, artificial, transparent, opaque, heat, temperature, hot, cold, Celsius scale, electricity, conserve, magnet, non-magnet, shape, static electricity, attraction, repulsion, sound

Grades K-2

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth’s systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth’s structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth’s history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.K-2.1 Illustrate vocabulary related to the use of natural resources	Identify visuals of earth, land, and water (e.g., point to examples on a globe or map)	Match vocabulary to related visuals (e.g., landforms, natural resources)	Illustrate vocabulary related to the use of natural resources (e.g., draw, paint, or cut-out pictures, and describe using sentence strips)	Illustrate vocabulary related to the features of land and natural resources in cooperative groups (e.g., create poster, slide show, diorama, or puzzle and include a description of the project using simple sentences)	Illustrate vocabulary related to the use of natural resources (e.g., create poster, slide show, diorama, puzzle)	ESS.8.K.1 ESS.8.1.1 ESS.8.2.1 ESS.8.2.2 ESS.8.2.3 ESS.8.K.2 ESS.8.1.2 ESS.8.2.4

Grades K-2

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth’s systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth’s structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth’s history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.K-2.2 Identify various types of weather and related severe weather safety procedures	Chart daily weather patterns with visuals (e.g., sun, raindrop, cloud, wind blowing)	Role play weather related vocabulary (e.g., itchy-bitsy spider)	Match weather visuals to related vocabulary words (e.g., sun, rain, cloud, wind)	Identify with support daily weather patterns and or severe weather conditions (e.g., cooperative groups, class discussion)	Identify various types of weather and related severe weather safety procedures (e.g., write or discuss a weekly weather report using collected weather data)	ESS.8.K.5 ESS.8.K.6 ESS.8.K.7 ESS.8.1.3 ESS.8.1.4 ESS.8.1.5 ESS.8.1.6 ESS.8.2.5 ESS.8.2.6 ESS.8.2.7 ESS.8.2.8 ESS.8.2.9
ELPS.ESS.4.K-2.3 Illustrate the solar system through the application of vocabulary words	Identify features of the solar system using visuals (e.g., moon, star, planet)	Match vocabulary to appropriate visuals representing features of the solar system (e.g., moon, star, planet)	Match vocabulary to appropriate visuals representing features of the solar system (e.g., moon phases, sequence of the planets)	Illustrate features of the solar system using sentence strips (e.g., moon phases, sequence of the planets)	Illustrate the solar system through the application of vocabulary words (e.g., oral presentation, slide show presentation, book talk, describe created model)	ESS.10.K.1 ESS.10.1.1 ESS.10.2.1 ESS.10.2.2 ESS.10.2.3

Vocabulary: land, water, natural, man-made, recycled, resource, chart, weather, four seasons, safety, severe weather, Celsius thermometer, cumulus, stratus, cirrus, cloud, sun, moon, stars, birds, planes, planet, moon phases, full, half, crescent, new

Grades 3-5

Strand 1: Nature of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.NS.1.3-5.1 Communicate observations and results from scientific investigations	Identify pictorial representations of vocabulary related to scientific investigation (e.g., hypothesis, variable, data)	Identify vocabulary related to observations (e.g., T-chart, pictographs, Venn diagram, bar or line graph, frequency table)	Illustrate observations, in simple words or phrases, that apply to scientific investigations (e.g., verbalize or write about the appropriate investigation)	Illustrate results of scientific investigation using short, complete sentences with support (e.g., science journal, sentence strips, word to word dictionary)	Communicate observations and results from scientific investigations (e.g., oral presentation, slide show, video simulated news report, documentary)	NS.1.3.1 NS.1.3.2 NS.1.3.3 NS.1.3.4 NS.1.3.5 NS.1.3.6 NS.1.3.7 NS.1.4.1 NS.1.4.2 NS.1.4.3 NS.1.4.4 NS.1.4.5 NS.1.4.6 NS.1.4.7 NS.1.4.8 NS.1.4.9 NS.1.4.10 NS.1.5.1 NS.1.5.2 NS.1.5.3 NS.1.5.4 NS.1.5.5 NS.1.5.6 NS.1.5.7 NS.1.5.8 NS.1.5.9

Grades 3-5

Strand 1: Nature of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.NS.1.3-5.2 Identify vocabulary related to measurement tools in science	Point to the instrument related to a particular type of measurement (e.g., ruler, scale, clock, thermometer, calculator)	Identify orally vocabulary related to measurement tools used in science	Match measuring tools to their function (e.g., a ruler measures length, a balance measures mass)	Identify the function of measuring tools using short sentences or phrases	Identify vocabulary related to measurement in science (e.g., class presentation, slide show)	NS.1.3.5 NS.1.3.8 NS.1.4.6 NS.1.4.13 NS.1.5.3
ELPS.NS.1.3-5.3 Identify vocabulary related to safety equipment and procedures in science	Identify pictures of safety equipment used in science classrooms (e.g., point to equipment being used appropriately)	Sort pictures of safe and unsafe lab activities (e.g., cards labeled safe and unsafe; verbalize safe or unsafe)	Identify unsafe lab activities (e.g., small group or whole group discussion using short, complete sentences	Identify vocabulary related to safety equipment and procedures in science (e.g., sentence strips stating lab safety rules, posters, or pictures)	Identify vocabulary related to safety equipment and procedures in science (e.g., create a slide presentation on lab safety)	NS.1.4.14

Vocabulary: Fire extinguisher, apron, gloves, Graphic organizers, T-chart, pictographs, Venn diagram, bar graphs, frequency tables, line graphs, stem and leaf plots, theory, scientific investigation, lab study, field study, length, mass, temperature, time, International System of Units (SI), empirical evidence, hypothesis, observation, variable, data pattern, trend, conclusion, quality, balance, hand lens, microscope, ruler, thermometer, calculator, computer, replication, sample size, control, standardized variables, mean, median, mode

Grades 3-5

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.3-5.1 Classify animals as vertebrate or invertebrates	Sort pictures and/or posters of animals according to like and unlike	Label animals as vertebrates or invertebrates	Classify animals as vertebrates or invertebrates using a graphic organizer	Classify animals as vertebrates or invertebrates independently with the use of a word wall	Classify animals as vertebrates or invertebrates (e.g., create poster or slide show and present to class)	LS.2.3.1. LS.2.41 LS.2.4.2
ELPS.LS.2.3-5.2 Identify the structure and function of human organ systems	Identify organs within a body system using visuals with support (e.g. point to stomach in visual of digestive system)	Identify organ systems, using pictures with support (e.g., label digestive and circulatory systems)	Match organ and organ system with appropriate vocabulary using sentence strips	Identify the structure and function of human organ systems (e.g., participate in class or small group discussion)	Identify the structure and function of human organ systems (e.g., create poster describing the functions of one or more body systems)	LS.2.3.2 LS.2.4.3

Grades 3-5

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ELPS.LS.2.3-5.3 Identify animal and plant cell structures and cellular processes	Point to plant and animal cell structures with teacher support (e.g., cell wall, cell membrane, nucleus, chloroplast, cytoplasm)	Label diagram of plant and animal cells, using a word bank	Match plant and/or animal cell structures with their function (e.g., use sentence strips)	Identify animal and plant cell structures and cellular processes (e.g., label model of plant and animal cells with the appropriate functions and cell processes)	Identify animal and plant cell structures and cellular processes (e.g., slide show, lab report or journal)	LS.2.5.1 LS.2.5.2 LS.2.5.3 LS.2.5.4 LS.2.5.5 LS.2.5.6 LS.2.5.7 LS.2.5.8 LS.2.5.9 LS.2.5.10
ELPS.LS.2.3-5.4 Illustrate scientific breakthroughs and life science careers	Identify scientific breakthroughs or life science careers (e.g., point to pictures representing various careers)	Label pictures of scientific careers or breakthroughs in life science	Illustrate a career or scientific breakthrough in life science using words from a word wall (e.g., Hooke's discovery of the cell)	Illustrate a career or scientific breakthrough in life science (e.g., write a short report on a chosen career using simple, complete sentences)	Illustrate scientific breakthroughs and life science careers (e.g., present report on William Harvey's discovery that blood circulates)	LS.2.5.11

Vocabulary: vertebrate, invertebrate, mammal, bird, fish, amphibian, reptile, mollusk, segmented worm, arthropod, body system, respiratory, muscular, digestive, circulatory, nervous, adaption, interdependence, ecosystem, cell theory, organism, cell wall, cell membrane, nucleus, cytoplasm, chloroplast, pigment, photosynthesis, cellular respiration, career, scientist, population, community, biosphere, terrestrial, aquatic, overgrazing, overpopulation, natural disaster, nonnative species, human impact, urban development, limiting factors, nitrogen cycle, carbon cycle, carbon dioxide-oxygen cycle, conservation of mass, food web, predator, prey, parasitism, producer, consumer, decomposer, scavenger, parasitism, mutualism, commensalism

Grades 3-5

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	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.3-5.5 Identify vocabulary related to reproduction and life cycles in plants and animals	Identify examples of incomplete metamorphosis, complete metamorphosis, and/or embryonic development (e.g., point at visual representations)	Label stages of incomplete metamorphosis, complete metamorphosis, and/or embryonic development using appropriate vocabulary from a word wall	Match description of the processes of incomplete metamorphosis, complete metamorphosis, and/or embryonic development to an appropriate visual with teacher support	Identify vocabulary related to reproduction and life cycles in plants and animals (e.g., write a short lab report on the dissection of a chicken egg)	Identify vocabulary related to reproduction and life cycles in plants and animals (e.g., create descriptive poster comparing complete and incomplete metamorphosis)	LS.3.3.3
ELPS.LS.2.3-5.6 Identify adaptations of plants and animals	Sort pictures of plants and animals according to the correct environment (e.g., polar bears are found in the arctic; sharks are found in the ocean)	Label adaptations of various plants and animals (e.g., snowshoe hare has white fur, cacti have waxy epidermis)	Match various adaptations of plants and animals to the appropriate environment (e.g., Venus Flytrap found in growing in boggy soil, cacti found in desert)	Identify adaptations of plants and animals (e.g., using short, simple sentences describe how a chosen plant or animal is adapted to its environment)	Identify adaptations of plants and animals (e.g., create an imaginary plant or animal and describe how they are adapted to their environment using complete sentences)	LS.4.4.1

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ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.3-5.7 Illustrate the interdependence of organisms in an ecosystem using appropriate vocabulary	Identify various relationships between organisms within an ecosystem using visuals (e.g., point to examples of predators, prey, producers, consumers)	Label the role of various organisms within an ecosystem on a visual representation using a word bank (e.g., parasite, scavenger, decomposer)	Match pictures of various organisms to a short description of their relationship in an ecosystem, using sentence strips (e.g., parasites harm the host, predators eat prey)	Illustrate a food web describing the flow of energy using short, complete sentences	Illustrate the interdependence of organisms in an ecosystem using appropriate vocabulary (e.g., create a presentation describing the role of each organism in a food web)	LS.4.4.2 LS.4.5.5 LS.4.5.6 LS.4.5.7 LS.4.5.8 LS.4.5.9 LS.4.5.10 LS.4.5.11 LS.4.5.12 LS.4.5.13 LS.4.5.14 LS.4.5.15 LS.4.5.16 LS.4.5.17

Vocabulary: vertebrate, invertebrate, mammal, bird, fish, amphibian, reptile, mollusk, segmented worm, arthropod, body system, respiratory, muscular, digestive, circulatory, nervous, adaption, interdependence, ecosystem, cell theory, organism, cell wall, cell membrane, nucleus, cytoplasm, chloroplast, pigment, photosynthesis, cellular respiration, career, scientist, population, community, biosphere, terrestrial, aquatic, overgrazing, overpopulation, natural disaster, nonnative species, human impact, urban development, limiting factors, nitrogen cycle, carbon cycle, carbon dioxide-oxygen cycle, conservation of mass, food web, predator, prey, parasitism, producer, consumer, decomposer, scavenger, parasitism, mutualism, commensalism

Grades 3-5

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.PS.3.3-5.1 Use vocabulary related to properties of and changes in matter	Sort familiar objects based on physical properties (e.g., texture, magnetism,)	Group and label familiar objects according to physical properties of matter (e.g., texture, magnetism) and/or kinetic energy of matter (e.g., contraction, expansion)	Create a graphic organizer comparing the characteristics of objects according to physical properties (e.g., texture, magnetism) and/or states of matter (e.g., liquid, solid, gas, plasma)	Use appropriate vocabulary related to properties of matter (e.g., compare texture, magnetism) and/or states of matter (e.g., liquid, solid, gas, plasma) in an oral or written presentation	Use vocabulary related to properties of and changes in matter (e.g., participate in class discussion, write lab description)	PS.5.3.1 PS.5.3.2 PS.5.3.3 PS.5.3.4 PS.5.4.1 PS.5.4.2 PS.5.4.3 PS.5.5.1 PS.5.5.2 PS.5.5.4 PS.5.5.5 PS.5.5.6 PS.5.5.7 PS.5.5.8 PS.5.5.9 PS.5.5.10

Grades 3-5

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.PS.3.3-5.2 Use vocabulary related to motion and forces	Illustrate vocabulary related to motion and forces (e.g., draw picture of boy pushing toy car with arrows showing directions of force and motion)	Name motion and/or force represented in demonstration or visual (e.g., simple and compound machines, Newton's Laws, magnetic fields)	Identify examples of force and motion orally or using a word wall (e.g., amplitude, frequency, lever, pulley, inclined plane, potential and kinetic energy)	Perform a self-created song using vocabulary related to motion and forces.	Use vocabulary related to motion and forces (e.g., use everyday examples: a door is a lever; a car parked on a hill has potential energy)	PS.6.3.1 PS.6.3.2 PS.6.3.3 PS.6.4.1 PS.6.4.2 PS.6.5.1 PS.6.5.2 PS.6.5.3 PS.6.5.4 PS.6.5.5 PS.6.5.6 PS.6.5.7

Grades 3-5

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.PS.3.3-5.3 Use vocabulary related to energy and transfer of energy including light, heat, electricity, and magnetism	Match vocabulary related to light, heat, electricity and magnetism to a visual representation (e.g., reflect to a mirror, metal to conductor, transparent to clear glass)	Name examples of energy or transfer of energy represented in demonstration or visual	Illustrate examples of vocabulary related to energy and transfer of energy (e.g., diagram and explain what happens when light strikes a mirror using sentence strips)	Compare vocabulary related to energy and transfer of energy (e.g., foldable comparing transparent to opaque, Venn diagram comparing conductors and insulators)	Use vocabulary related to energy and transfer of energy including light, heat, electricity, and magnetism (e.g., science journal, lab write-up from lab comparing conductors and insulators)	PS.7.3.1 PS.7.3.2 PS.7.3.3 PS.7.3.4 PS.7.3.5 PS.7.3.6 PS.7.4.1 PS.7.4.2 PS.7.4.3 PS.7.5.1 PS.7.5.2 PS.7.5.3 PS.7.5.4 PS.7.5.5 PS.7.5.6 PS.7.5.7

Vocabulary: physical change, mass, solid, liquid, classify, chemical change, gases, wave motion, amplitude, frequency, pitch, tension, force, direction, reflect, refract, absorb, hydroelectric, coal, oil, natural gas, nuclear, solar, wind, conductors, insulators, simple circuit, touch/stroke method, atom, matter, physical property, length, mass, area, perimeter, texture, taste, odor, color, elasticity, heat, plasma, potential energy, kinetic energy, molecule, expansion, contraction, careers, simple machine, lever, pulley, inclined plane, ramp, wedge, screw, wheel and axle, transmission, scattering, light energy

Grades 3-5

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.3-5.1 Identify rocks, minerals, and natural resources	Identify rocks, minerals, and natural resources using nonverbal communication (e.g., pictures of rocks, soil, wood, salt)	Label examples of rocks, minerals, and natural resources (e.g., rocks, wood, soil, salt, water)	Sort rocks, minerals, or other natural resources by using short description of major characteristics (e.g., sentence strips)	Identify rocks, minerals, and natural resources (e.g., place hand in box, feel of item and describe orally or in writing)	Identify rocks, minerals, and natural resources (e.g., classify rocks based on physical properties and describe using short, complete sentences)	ESS.8.3.1 ESS.8.3.2 ESS.8.3.3 ESS.8.3.4 ESS.8.3.5 ESS.8.3.6 ESS.8.3.7 ESS.8.4.1 ESS.8.4.2 ESS.8.4.3 ESS.8.4.4 ESS.8.4.5 ESS.8.4.6 ESS.8.5.1 ESS.8.5.2 ESS.8.5.3 ESS.8.5.4 ESS.8.5.5 ESS.8.5.6 ESS.8.5.7 ESS.8.5.8 ESS.8.5.9 ESS.8.5.10

Grades 3-5

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.3-5.2 Illustrate the rock cycle	Identify vocabulary related to the rock cycle using nonverbal communication (e.g., point to soil, metamorphic, igneous, or sedimentary rock)	Match appropriate terms to the steps of the rock cycle (e.g., soil, metamorphic, igneous, sedimentary rock)	Identify characteristics of the rock cycle with support (e.g., describe rocks using sentence strips)	Illustrate the rock cycle in cooperative groups (e.g., create a descriptive poster of the 3 rock types)	Illustrate the rock cycle (e.g., present report or slide show on the rock cycle)	ESS.8.5.11 ESS.8.5.12 ESS.8.5.13
ELPS.ESS.4.3-5.3 Identify fossils and evidence of earth's history	Match pictures of fossils to the living form of the organism (e.g., leaf, fish, whale, horse)	Label picture of fossils with the name of the original organism (e.g., leaf, fish, whale, horse)	Label a timeline depicting the formation of a fossil (e.g., leaf, fish, whale, horse)	Identify fossils and evidence of earth's history (e.g., create a plaster mold of a fossil and use appropriate vocabulary to describe the process)	Identify fossils and evidence of earth's history (e.g., create a class presentation on fossils using appropriate vocabulary)	ESS.9.5.1 ESS.9.5.2 ESS.9.5.3

Grades 3-5

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.3-5.4 Identify various types of weather, weather-related natural disasters, and severe weather safety procedures	Identify pictures of weather, weather instruments, and severe weather procedures (e.g., point to the thermometer, point to the lightning)	Label pictures related to changes in weather over a specific period of time (e.g., label vocabulary on weather chart, poster, or graph)	Match weather vocabulary to the appropriate weather instrument (e.g., use short phrases to describe function of weather instruments)	Identify various types of weather, weather-related natural disasters, and severe weather safety procedures (e.g., weather journal, poster, presentation, graphic organizer)	Identify various types of weather, weather-related natural disasters, and severe weather safety procedures (e.g., present weather forecast to class, write about guest weatherman)	ESS.8.3.8 ESS.8.3.9 ESS.8.3.10 ESS.9.3.1 ESS.8.4.7 ESS.8.4.8 ESS.8.4.9 ESS.8.4.10 ESS.9.4.1

Grades 3-5

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth’s systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth’s structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth’s history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.3-5.5 Illustrate the solar system and galaxies	Identify parts of the solar system (e.g., point to a planet, star, or moon)	Label parts of the solar system using simple vocabulary (e.g., use posted flags to identify the Earth, moon, and planets)	Role play the revolution of the planets around the sun and the rotation of the Earth on its axis using appropriate vocabulary	Illustrate the solar system and galaxies (e.g., create and label a model of the solar system or galaxy)	Illustrate the solar system and galaxies (e.g., using complete sentences explain how the solar system relates to an illustration or model)	ESS.10.3.1 ESS.10.3.2 ESS.10.3.3 ESS.10.5.1 ESS.10.5.2 ESS.10.5.3 ESS.10.5.4 ESS.10.5.5 ESS.10.5.6

Vocabulary: rock, mineral, fossil, soils, texture, pattern, metamorphic, igneous, sedimentary, physical properties, hardness, color, streak, luster, bauxite, novaculite, quartz crystal, diamond, bromine, crust, mantle, inner core, outer core, Ozark Plateau, Ouachita Mountains, Crowley’s Ridge, Mississippi Alluvial Plain, Delta, Coastal Plain, Arkansas River Valley, natural resources, renewable, nonrenewable, water pollution, economy, farming, timber, tourism, hunting, fishing, mining, clear cutting, dredging, precipitation, evaporation, condensation, severe weather, natural disaster, barometer, weather vane, anemometer, erosion, glaciation, weathering, earthquakes, volcano, planet, orbit, rotation, day/night cycle, silicon, oxygen, iron, sodium, chlorine, calcium, carbon, hydrogen, aluminum, crystal, acid test, fluorescence, halite, feldspar, sulfur, quartz, diamonds, gypsum, calcite, talc, hematite, gold, silver, bauxite, quartz, galena, sedimentary, igneous, metamorphic, sedimentation, rock cycle, density, atmosphere, orbital path, surface, composition,

Grades 6-8

Strand 1: Nature of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.NS.1.6-8.1 Communicate observations, processes, and results related to scientific investigations	Identify pictorial representations of vocabulary related to a scientific investigation (e.g., mean, median, mode, range, data table)	Label processes related to scientific investigations (e.g., T-chart, pictographs, Venn diagram, bar or line graph, frequency table)	Illustrate observations in simple words or phrases that apply to scientific investigations (e.g., verbalize or write about an appropriate investigation)	Illustrate results of scientific investigation using short, complete sentences with support (e.g., science journal, sentence strips, word to word dictionary)	Communicate observations, processes, and results related to scientific investigations (e.g., oral presentation, slide show, video simulated news report or documentary)	NS.1.6.1 NS.1.6.2 NS.1.6.3 NS.1.6.4 NS.1.6.5 NS.1.6.6 NS.1.7.1 NS.1.7.2 NS.1.7.3 NS.1.7.4 NS.1.7.5 NS.1.7.6 NS.1.8.1 NS.1.8.2 NS.1.8.3 NS.1.8.4 NS.1.8.5 NS.1.8.6 NS.1.8.7 NS.1.8.8

Grades 6-8

Strand 1: Nature of Science

Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.NS.1.6-8.2 Identify vocabulary related to safety equipment and procedures in science	Identify pictures of safety equipment used in science classrooms (e.g., point to equipment being used appropriately)	Sort pictures of safe and unsafe lab activities (e.g., cards labeled safe and unsafe; verbalize safe or unsafe)	Identify unsafe lab activities (e.g., small group or whole group discussion using short, complete sentences)	Identify vocabulary related to safety equipment and procedures in science (e.g., sentence strips stating lab safety rules, posters, or pictures)	Identify vocabulary related to safety equipment and procedures in science (e.g., create a slide presentation on lab safety)	NS.1.6.5 NS.1.6.6 NS.1.7.5 NS.1.7.6 NS.1.8.6 NS.1.8.7 NS.1.8.8 NS.1.8.9 NS.1.8.10 NS.1.8.11
ELPS.NS.1.6-8.3 Identify vocabulary related to the formation of hypotheses, theories, and laws	Identify visual representations of theories and laws (e.g., law of gravity, theory of evolution, Big Bang Theory, Newton's laws of motion)	Label visual representations of hypotheses, theories, and laws (e.g., law of gravity, theory of evolution, Big Bang Theory, Newton's laws of motion)	Illustrate vocabulary related to the formation of hypotheses, theories, and laws (e.g., graphic organizers, sentence strips, role play)	Use vocabulary related to the formation of hypotheses, theories, and laws (e.g., in a cooperative group describe the formation of major theories and laws using short, complete sentences)	Identify vocabulary related to the formation of hypotheses, theories, and laws (e.g., independently conduct a scientific investigation and report the findings in a lab report)	NS.1.6.7 NS.1.6.8 NS.1.6.9 NS.1.7.7 NS.1.7.8 NS.1.7.9 NS.1.8.9 NS.1.8.10 NS.1.8.11

Vocabulary: Fire extinguisher, apron, gloves, eyewash station, chemical shower, hypothesis, replication, sample size, control, variable, independent variable, dependent variable, replication, theory, data, mean, median, mode, range, data table, bar graph, circle graph, line graph, stem and leaf plot, Venn Diagram, histogram, line of best fit, peer review, inference, modification, fact, opinion

Grades 6-8

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.6-8.1 Identify unicellular organisms	Identify pictures of unicellular organisms (e.g., point to pictures of bacteria and protists)	Label pictures of various unicellular organisms as prokaryotic or eukaryotic (e.g., bacteria as prokaryotic, amoeba as eukaryotic)	Classify various unicellular organisms using a word wall or sentence strips	Identify unicellular organisms (e.g., describe various unicellular organisms found in a drop of pond water)	Identify unicellular organisms (e.g., create a report or slide show on various types of bacteria and/or protists)	LS.2.8.2 LS.2.8.3 LS.2.8.4 LS.2.8.7

Grades 6-8

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.6-8.2 Illustrate hierarchical relationships of cells, tissues, organs, organ systems, and multi-cellular organisms	Identify pictures of cells, tissues, organs, and organ systems using visuals	Sequence pictures of cells, tissues, organs, organ systems, and multi-cellular organisms in hierarchical order with support	Label pictures of cells, tissues, organs, organ systems, and multi-cellular organisms in hierarchical order with word bank	Illustrate hierarchical relationships of cells, tissues, organs, organ systems, and multi-cellular organisms (e.g., in cooperative groups, observe or create a human anatomy model and label and describe examples of cells, tissues, organs, and organ systems using short, complete sentences)	Illustrate hierarchical relationships of cells, tissues, organs, organ systems, and multi-cellular organisms (e.g., independently create a descriptive poster illustrating the hierarchical relationship)	LS.2.6.2 LS.2.7.1 LS.2.8.1

Grades 6-8

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.6-8.3 Identify structure and function of human and plant systems	Identify plant and/or human systems (e.g., point to system using pictures)	Label plant and/or human systems using a word bank	Label the major function of human and/or plant systems with word bank or sentence strips	Identify structure and function of human and plant systems (e.g., in cooperative groups, observe or create a human or plant anatomy model and describe the function of each system using short, complete sentences)	Identify structure and function of human and plant systems (e.g., independently create a descriptive poster illustrating the functions of human or plant systems)	LS.2.6.3 LS.2.6.4 LS.2.7.2 LS.2.7.3 LS.2.7.4 LS.2.7.5 LS.2.6.5 LS.2.6.6 LS.2.6.7 LS.2.6.8 LS.2.7.8 LS.2.7.9 LS.2.8.6 LS.2.8.8

Grades 6-8

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.6-8.4 Identify scientific breakthroughs and life science careers	Identify scientific breakthroughs or life science careers (e.g., point to pictures representing various careers)	Label pictures of scientific careers or breakthroughs in life science (e.g., veterinarian, doctor, ecologist)	Illustrate a career or scientific breakthrough in life science using words from a word wall (e.g., in-vitro fertilization, selective breeding techniques)	Illustrate a career or scientific breakthrough in life science (e.g., write a short report on a chosen career using simple, complete sentences)	Identify scientific breakthroughs and life science careers (e.g., present report on adaptations in Darwin’s finches)	LS.2.6.8 LS.2.7.10 LS.2.8.9 LS.3.6.8 LS.3.7.11 LS.3.8.11 LS.3.8.17
ELPS.LS.2.6-8.5 Identify inherited characteristics	Illustrate common traits using pictures of related people or animals (e.g., point common hair or eye colors; common color patterns in animals)	Classify common traits as dominant or recessive using visuals (e.g., tall trait in pea plants is dominant; short trait in pea plants is recessive)	Label dominant and recessive traits using a simple Punnett square	Identify inherited characteristics (e.g., construct a simple Punnett square and describe the genotype and phenotype of each parent using short, complete sentences)	Identify inherited characteristics (e.g., predict the outcome of a simple genetic cross verbally or in writing)	LS.3.6.1 LS.3.6.2 LS.3.6.3 LS.3.8.1 LS.3.8.2 LS.3.8.3 LS.3.8.4 LS.3.8.5 LS.3.8.6 LS.3.8.8 LS.3.8.10

Grades 6-8

Strand 2: Life Science

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.6-8.6 Illustrate asexual and sexual reproduction in plants and vertebrates	Sort visuals of organisms based on whether they reproduce asexual or sexual	Identify examples of asexual and sexual reproduction using a word wall	Classify examples of asexual and sexual reproduction using a graphic organizer	Illustrate asexual and sexual reproduction in plants and vertebrates (e.g., describe the function of each of the major parts of a flower using short, complete sentences)	Illustrate asexual and sexual reproduction in plants and vertebrates (e.g., draw the development of a chicken embryo and describe using appropriate vocabulary)	LS.3.7.1 LS.3.7.2 LS.3.7.3 LS.3.7.4 LS.3.7.5 LS.3.7.8 LS.3.7.9 LS.3.7.10 LS.3.8.9
ELPS.LS.2.6-8.7 Identify behavioral and structural adaptations	Match an adaptation to a particular animal using visuals	Label structural adaptations of animals and plants (e.g., teeth, thorns, wings, beaks)	Label examples of innate and learned behavior using sentence strips or word wall (e.g., imprinting, using tools, web spinning)	Classify animals according to behavioral adaptations using short, complete sentences (e.g., migration, hibernation, estivation)	Identify behavioral and structural adaptations (e.g., create a class or group presentation on the adaptations of organisms in a chosen habitat)	LS.3.7.12 LS.3.8.13 LS.3.8.14 LS.3.8.15 LS.3.8.16

Grades 6-8

Strand 2: Life Science Living Systems

Students shall demonstrate and apply knowledge of the structure and function of organisms and living systems.

- Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology
- Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.LS.2.6-8.8 Illustrate the process of evolution	Identify evidence of evolution using visuals (e.g., fossil record, adaptations)	Label processes related to evolution using visuals (e.g., diversity of species, natural selection, extinction, fossil record)	Sequence the process of evolution using sentence strips	Illustrate the process of evolution (e.g., create a visual depicting natural selection and describe using short, complete sentence)	Illustrate the process of evolution (e.g., create a class or group presentation on the evolution of a species)	LS.3.7.12 LS.3.8.13 LS3.8.14 LS.3.8.15 LS.3.8.16

Vocabulary: cell, tissue, muscle, blood, skin, xylem, phloem, organ, heart, lung, kidney, eye, ear, skin, teeth, organ system, vertebrate, angiosperm, protist, bacteria, unicellular, multi-cellular, dichotomous key, leaves, roots, stems, flowers, oxygen, waste removal, body system, nervous, digestive, circulatory, respiratory, excretory, integumentary, skeletal, muscular, endocrine, reproductive, eukaryotic, prokaryotic, taxa, selective breeding, adaptations, fertilization, genetic, sperm cell, egg cell, sexual reproduction, embryo, gene, dominant trait, recessive trait, Punnett square, genotype, phenotype, asexual reproduction, chromosome, body cell, sex cell, hibernation, estivation, tropism, territorial behavior, migration, imprinting, innate behavior, learned behavior, homeostasis, evolution, natural selection, extinction, mimicry, fossil record, competition

Grades 6-8

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.PS.3.6-8.1 Use vocabulary related to properties of and changes in matter	Match vocabulary related to matter to an appropriate visual in cooperative groups or pairs (e.g., physical change to melting ice)	Label groups of matter according to physical and chemical properties or atomic structure	Sort characteristics of matter a (e.g., create a graphic organizer comparing physical and chemical properties or physical and chemical changes or atomic structures of elements)	Use vocabulary related to properties of and changes in matter (e.g., create an oral or written presentation comparing physical and chemical properties or physical and chemical changes or atomic structures of elements)	Use vocabulary related to properties of and changes in matter (e.g., write a complete lab report)	PS.5.6.1 PS.5.6.2 PS.5.6.3 PS.5.6.4 PS.5.6.4 PS.5.6.5 PS.5.6.6 PS.5.6.7 PS.5.6.8 PS.5.6.9 PS.5.6.10 PS.5.7.1 PS.5.7.2 PS.5.7.3 PS.5.7.4 PS.5.7.4 PS.5.7.5 PS.5.7.6 PS.5.7.7 PS.5.7.8 PS.5.7.9 PS.5.6.10

						PS.5.8.1 PS.5.8.2 PS.5.8.3 PS.5.8.4 PS.5.8.4 PS.5.8.5
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Grades 6-8

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.PS.3.6-8.2 Use vocabulary related to motion and forces	Illustrate motion and forces by creating a foldable depicting vocabulary (e.g., simple and compound machines, Newton's Laws, magnetic forces)	Label examples of motion and/or force represented in a demonstration or visual (e.g., simple and compound machines, Newton's Laws, magnetic forces)	Identify examples of force and motion orally (e.g., simple and compound machines, Newton's Laws, magnetic forces)	Create an oral or written presentation using vocabulary related to motion and force (e.g., song, story, puppet show, video, commercial, skit, slide show)	Use vocabulary related to motion and forces (e.g., real-life situations: amusement parks, simple and compound machines that are part of a school bus)	PS.6.6.1 PS.6.6.2 PS.6.6.3 PS.6.6.4 PS.6.6.4 PS.6.6.5 PS.6.6.6 PS.6.6.7 PS.6.6.8 PS.6.6.9 PS.6.6.10 PS.6.7.1 PS.6.7.2 PS.6.7.3 PS.6.7.4 PS.6.7.5 PS.6.7.6 PS.6.8.1 PS.6.8.2 PS.6.8.3 PS.6.8.4 PS.6.8.5

Grades 6-8

Strand 3: Physical Science

Students shall demonstrate and apply knowledge of the properties of matter, the relationship between force and motion, and the transfer of energy.

- Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
<p>ELPS.PS.3.6-8.3</p> <p>Use vocabulary related to energy and transfer of energy</p> <ul style="list-style-type: none"> • light • heat • electricity • magnetism 	<p>Match vocabulary to appropriate visuals in cooperative groups or pairs (e.g., sun is solar energy, fireflies convert chemical energy into light energy)</p>	<p>Name examples of energy represented in a demonstration or visual (e.g., pictures of alternative energy sources)</p>	<p>Identify orally examples of energy and transfer of energy (e.g., hair dryer uses electrical energy that is converted to heat energy)</p>	<p>Use vocabulary related to energy and transfer of energy</p> <ul style="list-style-type: none"> • light • heat • electricity • magnetism <p>(e.g., create a foldable comparing chemical, mechanical, electromagnetic, thermal, and nuclear energy)</p>	<p>Use vocabulary related to energy and transfer of energy</p> <ul style="list-style-type: none"> • light • heat • electricity • magnetism <p>(e.g., science journal, lab write-up from lab comparing series and parallel circuits)</p>	<p>PS.7.6.1</p> <p>PS.7.6.2</p> <p>PS.7.6.3</p> <p>PS.7.6.4</p> <p>PS.7.6.5</p> <p>PS.7.7.1</p> <p>PS.7.7.2</p> <p>PS.7.7.3</p> <p>PS.7.7.4</p> <p>PS.7.7.5</p> <p>PS.7.7.1</p> <p>PS.7.7.2</p> <p>PS.7.7.3</p> <p>PS.7.7.4</p> <p>PS.7.7.5</p> <p>PS.7.8.1</p> <p>PS.7.8.2</p> <p>PS.7.8.3</p> <p>PS.7.8.4</p> <p>PS.7.8.5</p> <p>PS.7.8.6</p> <p>PS.7.8.7</p> <p>PS.7.8.8</p> <p>PS.7.8.9</p> <p>PS.7.8.10</p>

						PS.7.8.11 PS.7.8.12 PS.7.8.13 PS.7.8.14
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Vocabulary: chemical properties, physical properties, density, SI units, density column, element, compound, carbon dioxide, salt, iron oxide, ammonia, sodium, hydrogen, oxygen, atomic theory, atom, proton, neutron, electron, atomic model, endothermic, exothermic, reactivity, conservation of matter, mixtures, evaporation, filtration, chromatography, settling, solute, solvent, solution, solubility rates, solubility graphs, simple machine, compound machine, force, newton, gravitational force, magnetic force, friction, weight, mass, Newton's three laws, compression, tension, weathering, erosion, lines of force, electromagnet, electricity, magnetism, speed, thermal, nuclear, electrical energy, mechanical energy, light energy, chemical energy, natural resources, fossil fuels, solar energy, geothermal energy, hydroelectric power, biomass, potential energy, kinetic energy, alternative energy sources, circuit, series circuit, parallel circuit, open series, closed series, wave, wavelength, frequency, amplitude, longitudinal, transverse, conduction, convection, radiation, seismic wave, sound wave, water wave, electromagnetic wave, reflection, refraction, absorption, electromagnetic spectrum, microwave energy, radio

Grades 6-8

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.6-8.1 Illustrate the Earth's structure and the effects of internal forces	Illustrate layers of the earth, volcanoes, mountains, and earthquakes with visual support	Match vocabulary to illustrations of the layers of the earth, volcanoes, mountains, and earthquakes with visual support (e.g., word games)	Model the layers of the earth, volcanoes, mountains, and earthquakes while expressing short phrases pertaining to each	Illustrate the Earth's structure and the effects of internal forces (e.g., labeled poster showing formation of volcanoes)	Illustrate the Earth's structure and the effects of internal forces (e.g., slide show showing cause of earthquakes, process of mountain building, or formation of volcanoes)	ESS.8.6.1 ESS.8.6.2 ESS.8.6.3 ESS.8.6.4 ESS.8.6.5 ESS.8.6.6 ESS.8.6.7 ESS.8.6.8 ESS.8.6.9 ESS.8.6.10 ESS.8.6.11 ESS.8.6.12 ESS.8.6.13 ESS.8.6.14 ESS.8.6.15

Grades 6-8

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.6-8.2 Identify characteristics of the atmosphere and weather patterns	Identify vocabulary words from a text related to properties of the atmosphere and weather with visual support (e.g., point to word, use word to word dictionary)	Verbalize single words that describe the atmosphere and weather patterns	Interview classmates in a group setting to discuss the atmosphere and weather patterns	Identify characteristics of the atmosphere and weather patterns using simple sentences (e.g., create a song, story, or rap)	Identify characteristics of the atmosphere and weather patterns (e.g., research weather patterns and write a report or create a slide show)	ESS.8.7.1 ESS.8.7.2 ESS.8.7.3 ESS.8.7.4 ESS.8.7.5 ESS.8.7.6 ESS.8.7.7 ESS.8.7.8 ESS.8.7.9 ESS.8.7.10 ESS.8.7.11 ESS.8.7.12 ESS.8.7.13 ESS.8.7.14 ESS.8.7.15

Grades 6-8

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.6-8.3 Identify effects of external forces such as global warming, ocean currents, erosion, and weathering	Match vocabulary words to visuals of the effects of external forces such as global warming, ocean currents, erosion, and weathering (e.g., word wall)	Identify effects of external forces such as global warming, ocean currents, erosion, and weathering with visual support (e.g., pictures, textbook)	Identify effects of external forces such as global warming, ocean currents, erosion, and weathering (e.g., sentence strips matched to visual, word to word dictionary)	Identify effects of external forces such as global warming, ocean currents, erosion, and weathering in cooperative groups (e.g., label surface features on a topographical map)	Identify effects of external forces such as global warming, ocean currents, erosion, and weathering (e.g., present speech, slide show, or report)	ESS.8.8.1 ESS.8.8.2 ESS.8.8.3 ESS.8.8.4 ESS.8.8.5 ESS.8.8.6 ESS.8.8.7 ESS.8.8.8 ESS.8.8.9 ESS.8.8.10 ESS.8.8.11

Grades 6-8

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.6-8.4 Illustrate the water cycle, greenhouse effect, and soil profiles	Identify vocabulary related to the water cycle, greenhouse effect or soil profiles using visuals	Match vocabulary words related to visuals of the water cycle, greenhouse effect or soil profiles	Illustrate the water cycle, greenhouse effect, and soil profiles (e.g., label the steps of the water cycle, label a diagram of showing the greenhouse effect, label soil profiles)	Illustrate the water cycle, greenhouse effect, and soil profiles (e.g., draw the water cycle and describe each step using short sentences)	Illustrate the water cycle, greenhouse effect, and soil profiles (e.g., present report, slide presentation, transparency overlay, or poster)	ESS.8.7.16 ESS.8.7.17 ESS.8.7.18 ESS.8.7.19 ESS.8.7.20 ESS.8.7.21 ESS.8.8.12 ESS.8.8.13 ESS.8.8.14 ESS.8.8.15 ESS.8.8.16 ESS.8.8.17 ESS.8.8.18 ESS.8.8.19 ESS.8.8.20

Grades 6-8

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.6-8.5 Identify vocabulary related to the processes that have changed Earth's surface	Identify appropriate vocabulary to visuals (e.g., point to rock layers, volcano, erosion, compass, weathering)	Match appropriate vocabulary to visual representations (e.g., point to rock layers, erosion, compass, weathering)	Label diagram of processes that have changed Earth's surface using short phrases from a word bank (e.g., volcano, earthquake, weathering, faulting)	Identify vocabulary related to the processes that have changed Earth's surface using short sentences (e.g., create and play games such as Clue, What am I?, riddles)	Identify vocabulary related to the processes that have changed Earth's surface (e.g., create songs, slide show presentations, schoolhouse rock rhymes)	ESS.9.6.1 ESS.9.6.2 ESS.9.6.3 ESS.9.7.1 ESS.9.7.2 ESS.9.7.3 ESS.9.7.4 ESS.9.7.5 ESS.9.8.1 ESS.9.8.2 ESS.9.8.3 ESS.9.8.4

Grades 6-8

Strand 4: Earth and Space Science

Students shall demonstrate and apply knowledge of Earth's systems and history as well as objects in the universe.

- Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology.
- Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.

ELP Student Learning Expectation	Student Proficiency Levels					Science SLE Connections
	Level 1	Level 2	Level 3	Level 4	Level 5	
ELPS.ESS.4.6-8.6 Illustrate the solar system and galaxies	Identify the cause of day and night using visuals	Illustrate the cause of planetary years (e.g., label a model of the solar system using appropriate vocabulary)	Illustrate the effect of the moon on tides using a word wall or sentence strips (e.g., draw and label examples of high tides, low tides, spring tides, and neap tides)	Illustrate the solar system and galaxies (e.g., create a model of the solar system and describe the characteristics of each planet using short, complete sentences)	Illustrate the solar system and galaxies (e.g., using complete sentences compare the terms galaxy and universe)	ESS.10.6.1 ESS.10.6.2 ESS.10.6.3 ESS.10.6.4 ESS.10.6.5 ESS.10.6.6 ESS.10.6.7 ESS.10.6.8 ESS.10.6.9 ESS.10.7.1 ESS.10.7.2 ESS.10.7.3 ESS.10.7.4 ESS.10.7.5 ESS.10.7.6 ESS.10.8.1 ESS.10.8.1 ESS.10.8.2 ESS.10.8.3 ESS.10.8.4 ESS.10.8.5 ESS.10.8.6 ESS.10.8.7 ESS.10.8.8 ESS.10.8.9

Vocabulary: crust, mantle, inner core, outer core, convection lithosphere, volcano, eruption, climate, atmosphere, Coriolis effect, jet stream, solar energy, humidity, air pressure, global warming, weather, temperature, ocean, Gulf Stream, Atlantic Currents, California Current, landform, mountain, plateaus, plains, constructive force, destructive force, deposition, erosion, weathering, crustal deformation, trench, island, Ozark Plateau, Crater of Diamonds, Ouachita Mountains, New Madrid Fault, anemometer, barometer, sling psychrometer, thermometer, weather chart, canyon, delta, valleys, swamps, Gulf Coastal Plain, Arkansas River Valley, Mississippi Alluvial Plain, delta, Crowley's Ridge, earthquake, tsunami, flood, thunderstorm, tornadoes, hurricanes, cyclone, typhoon, drought, acid precipitation, topographic, Mediterranean-Trans-Asiatic, Circum-Pacific, seismograph, Richter scale, mid-ocean ridge, Earth's axis, acid precipitation, gravity, water cycle, ground water, cloud formation, greenhouse, effect, global warming, meteor, organic, inorganic, soil profile, nutrient, nitrogen, phosphorus, potassium, soil permeability, fossil record, rock sequencing, coastline, plate tectonics, compass, North pole, South pole, magnetic reversal, molten, uplift, igneous intrusion, folding, faulting, sedimentary rock, law of superposition, law of cross-cutting, astronomer, solar system comet, day, night, planetary year, season, rotation, revolution, tide, spring tide, neap tide, galaxy, universe

Glossary for K-8 Science Curriculum Framework

Absorption	When white light wave passes through a substance the energy of certain colors may be taken in by the substance and converted to a different form of energy
Acid precipitation	Rain or snow produced when gases, released by burning fossil fuels, mix with water in the air
Adaptation	Any structure or behavior that helps an organism survive in its environment; develops in a population over a long period of time
Amplitude	The distance between a wave's midpoint and its crest or trough
Anemometer	A device used to measure wind speed
Angiosperm	A flowering plant with seeds enclosed in a fruit such as an apple
Asexual reproduction	A type of reproduction in which a new organism is produced from one parent
Atmosphere	The mixture of gases, solids, and liquids that surrounds a celestial body
Atom	Smallest unit of matter that cannot be broken down by chemical means
Axis	The imaginary line through Earth's center from the North Pole to the South Pole
Barometer	An instrument for measuring air pressure
Biomass	Organic material from plants or animals that is used to produce energy
Biosphere	All parts of Earth where life exists
Carbon cycle	The flow of carbon through Earth's ecosystems
Carbon dioxide-oxygen cycle	The flow of carbon dioxide and oxygen through Earth's ecosystems
Carnivore	An animal that feeds on other animals
Carrying capacity	The largest number of individuals that an environment can support over time
Cell	The smallest unit of an organism that can perform life functions
Cellular respiration	The process by which cells break down organic molecules to release energy required for cell processes
Cell theory	The major theory that the cell is the basic unit of life; organisms are made up of one or more cells; and all cells come from other living cells
Chemical change	Any change where one or more of the original materials changes into other materials
Chemical property	Characteristic of a substance that allows it to change to a new substance
Cirrus	A cloud that is thin, feathery, and high in the sky, usually associated with sunny weather
Clay	A sedimentary material with grains smaller than 0.002 mm in diameter
Climate	Average of weather conditions in a given area over a period of years
Closed Circuit	Circuit having a complete path for current flow
Comet	A ball of ice, rock, and frozen gases that orbits the sun
Commensalism	A symbiotic relationship that benefits one partner but not the other
Communication	An exchange of information from one organism to another

Community	All of the populations of different species that live in the same place at the same time and interact with each other
Compound machines	Combination of two or more simple machines
Compound	Pure substance produced when two or more elements combine and whose properties are different from the elements from which it is formed
Compression	Process of being pressed together
Cumulus	A cloud that looks like puffy white cotton, usually associated with fair weather
Conductors	Materials that transfer energy from one particle to another
Conifer	A tree that produces seeds in cones and has needle-like leaves
Conservation of matter (mass)	Law that states that matter is neither created nor destroyed, only changed in form
Consumer	Organism that cannot make its own food
Control	In an experiment, the standard for comparison
Convection	Transfer of thermal energy through liquid and gases
Complete metamorphosis	Complete reorganization of the tissues of an animal during its life cycle from egg to larva to pupa to adult, usually involving the addition of legs and wings
Coriolis effect	Force that changes the direction of solids, liquids, and gases to the right in the northern hemisphere and to the left in the southern hemisphere as a result of earth's rotation
Crustal deformation	Alteration of Earth's crust by forces applied by the movement of the tectonic plates
Decomposer	Organisms that break down and absorb nutrients from dead organisms
Density	The amount of mass in a given volume ($D=m/v$)
Dependent variable	Factor being measured in an experiment, found on the vertical or Y-axis on a graph
Deposition	The dropping of sediment from wind or water
Dichotomous key	System used for identifying plants, animals, rocks, or minerals that is made up of a series of paired descriptions to choose between
Dominant trait	Form of a trait that masks another form of the same trait
Earthquake	A sudden movement of Earth's crust caused by the release of stress accumulated along geologic fault lines or by volcanic activity
Ecosystem	Populations interacting with the living and non-living parts of the environment
Egg	The female sex cell
Electricity	The interaction of electric charges
Electromagnet	A temporary magnet made by passing electric current through a wire coiled around an iron bar
Elements	A pure substance that is made of only one kind of atom
Embryo	Fertilized egg that has begun to divide
Embryonic development	The growth of a fertilized egg from a single cell to multi-cells

Empirical evidence	Data that can be detected, observed, or measured
Endothermic	A chemical reaction in which more energy is taken in than given off
Energy	The capacity to cause change and do work
Environment	The surroundings and conditions in which an organism lives
Erosion	Transportation of soil and rock by wind, water, gravity, and ice
Estivation	An adaptation for survival in hot, dry weather during which an animal becomes inactive and all body processes slow down
Eukaryote	Cell with a nucleus
Evaporation	To change from a liquid into a gas
Exothermic	A chemical reaction in which more energy is given off than is taken in
Experimental design	The design of a suitable experiment to test a hypothesis
Extinction	The dying out of an entire species
Fault	A crack in Earth's crust along which rock moves
Field force	A force applied without physical contact
Field study	Planned small or large group activities that provide opportunities for students to practice skills in a variety of settings other than an actual classroom; conducting scientific investigations in a natural setting
Force	Any push or pull that tends to produce a change in the speed or direction of motion of an object
Fossil	The preserved remains or traces of an organism that lived in the past
Fossil fuels	Fuel such as coal, natural gas, or oil that formed underground millions of years ago from decaying organic matter
Frequency	The number of complete waves that pass a given point in a given amount of time
Friction	A force that opposes motion whenever two surfaces rub against each other
Galaxy	A large system of stars moving together through space
Gene	A section of DNA that controls specific cell activities and characteristics of every organism
Geothermal energy	Heat energy below Earth's surface
Glaciation	Any change in the landscape caused by glacial movement
Global warming	An increase in Earth's temperature caused by gases in the atmosphere that trap heat
Gravity	The force of attraction that exists between any two objects
Greenhouse effect	The natural heating process caused when gases trap heat in the atmosphere
Habitat	The place in an ecosystem where an organism lives
Heat	The transfer of thermal energy
Herbivore	An animal that eats only plants
Hibernation	An adaptation for winter survival during which an animal becomes inactive and all body processes slow down
Homeostasis	The process by which an organism's internal environment is kept stable in spite of changes in the external environment

Humidity	Water vapor in the air
Humus	Material in the soil that formed from decayed plant and animal matter
Hydroelectric	Production of electricity by flowing water
Hypothesis	Explanation for a question or a problem that can be formally tested
Igneous	Rock formed by the solidification of magma or lava
Igneous intrusion	A body of solidified magma intruded into rock layers
Imprinting	A process in which newly hatched birds or newborn mammals learn to follow the first object they see
Incomplete metamorphosis	The life cycle of an animal, such as the grasshopper, whose form does not change substantially through its life stages from egg to nymph to adult
Independent variable	The one factor changed in an experiment; represented on the horizontal or X-axis of a graph
Innate behavior	Behavior that an organism is born with and does not have to learn
Inorganic	Not alive and none of its components have ever been alive
Insulators	Materials that prevent the transfer of energy
Invertebrate	An animal without a backbone
Jet stream	Narrow belt of strong winds near the top of the troposphere
Kinetic energy	Energy of motion
Lab activities	Inquiry-based scientific investigations
Law	A descriptive generalization about how some aspect of the natural world behaves under stated circumstances, often stated in the form of a mathematical equation
Law of conservation of momentum	The rule that, in the absence of outside forces, the total momentum of objects in an interaction does not change
Learned behavior	Behavior that an organism is not born with and must acquire
Light minute	The distance that light travels in one minute
Light year	The distance that light travels in one year
Limiting factor	Any living or non-living factor that restricts the number of individuals in a population
Lithosphere	The crust and the rigid upper mantle that is broken into plates
Living	Anything that is or has ever been alive
Longitudinal wave	A wave in which the particles vibrate parallel to the direction of wave motion
Lunar eclipse	A darkening of the moon when passed through Earth's shadow
Magnetic reversal	Earth's magnetic field reverses and the poles switch places
Magnetism	The force associated with some motion of electrical charges or by the field of force produced by a magnet
Mass	A measure of the amount of matter in an object (K-4 uses weight interchangeably)
Matter	Anything that has mass and occupies space
Metal	An element that conducts heat and electricity

Metamorphic	Rock formed by the effect of heat, pressure, and chemical action on other rocks
Meteor	A rock from space that is burning up in the atmosphere (commonly referred to as a falling star)
Microwave energy	A wavelength of energy in the electromagnetic spectrum
Migration	The instinctive seasonal movement of animals
Mimicry	The structural adaptation involved in some species where one species resembles another
Mixture	The combination of two or more substances that have not chemically combined
Molecule	The combination of atoms chemically bonded together
Moon phase	A change in appearance of the moon as it revolves around Earth
Mutualism	A symbiotic relationship that benefits both partners
Natural resources	Minerals, fossil fuels, trees, and other valuable materials that occur naturally
Natural selection	The idea that those organisms best adapted to their environment will be the ones most likely to survive and reproduce
Neap tide	During the first and last quarter moon phases, the tides are not as high or not as low as a normal tide
Newton	The metric unit for forces (Newton)
Non-living	Anything that is not now or never has been alive
Nuclear energy	The potential energy stored in the nucleus of an atom
Nucleus	The control center of the cell
Nutrients	The substance in food that produces energy and materials for life activities
Omnivore	An animal that eats both plants and animals
Opaque	Does not allow light to pass through
Open circuit	A break in the conductive path so that no current flows
Orbit	The path an object follows as it revolves around another object
Organ	Structures made up of different types of tissues that work together to do a certain job
Organ system	System made up of different types of organs to do a certain job
Organic	Anything that is or has ever been alive
Organism	A living thing
Parallel circuit	A circuit that provides more than one path for the electrical current to follow
Parasitism	A symbiotic relationship in which one organism benefits and the other is harmed
Periodic table	Organizational chart of the elements
Phloem	Tubes that move food in plants
Physical property	Characteristic that can be observed or measured
Pitch	How high or low a sound is
Planetary year	The length of time it takes a planet to orbit the sun
Plate tectonics	Theory which states that pieces of Earth's crust are moving around on the mantle
Population	All the members of one species in a particular area

Potential energy	Stored energy
Precipitation	Any form of water that falls to the earth
Predator	Any animal that hunts and kills other animals for food
Prey	An animal that a predator feeds upon
Producer	An organism that makes its own food
Prokaryote	Organism without a nucleus
Proton	Positively charged particle in an atom's nucleus
Punnett Square	A tool that can show how genes combine
Radiation	Transfer of thermal energy as waves
Reactivity	The ability of a substance to go through a chemical change
Recessive trait	Physical characteristic resulting when no dominant gene is present
Reflect/reflection	Change in the direction of a light ray as it bounces off an object
Refract/refraction	A bending of a light ray when it passes at an angle from one transparent substance into another transparent substance in which its speed is different (such as when it passes through air into water)
Reproduction	The production of offspring by an organism
Richter scale	A scale that measures the amount of energy released by an earthquake
Sand	A sedimentary material finer than a granule and courser than silt, with grains between 0.06 mm and 2.0 mm in diameter
Scatter plot	A graph with one point for each item being measured
Scavenger	An animal that feeds on the bodies of dead organisms
Sedimentary rocks	Rock formed in layers from sediment
Seismograph	Instrument which detects and records earthquakes
Selective breeding	The process of selecting a few organisms with desired traits to serve as parents of the next generation
Series circuit	Having only one path for electrons to flow
Sexual reproduction	The joining of a male sperm cell and a female egg cell
SI units	International System of Units metric system
Silt	A sedimentary material consisting of very fine particles intermediate in size between sand and clay with grains between 0.002 mm and 0.05 mm in diameter
Simple machine	Machine that works with only one motion
Sling psychrometer	Instrument used to measure relative humidity
Soil profile	Layers of soil in an area
Solar eclipse	An alignment of the sun, moon, and Earth where the moon blocks the sun from Earth's view
Solar energy	Radiant energy that comes from the sun

Solar system	A star that is orbited by a group of planets, comets, and other objects
Solubility rate	Speed at which a substance dissolves
Solute	A substance that is dissolved
Solution	A mixture in which the particles of each substance are mixed evenly
Solvent	A substance that dissolves other materials
Species	A group of similar organisms whose members successfully reproduce among themselves
Speed	The distance that an object moves in a certain period of time $s = \frac{d}{t}$
Sperm	The male sex cell
Spring tide	During the full moon and new moon phases, high tides are higher and lower than normal
Stability	The condition where a substance does not go through chemical changes easily
Stratus	A long, layered cloud
Structural adaptation	Adaptation that involves body parts or color
Temperature	Measure of the average motion of the particles in a substance (heat)
Tension	A stress created by pulling
Territorial behavior	Activities associated with the defense of an area
Theory	A unifying explanation that has the ability to explain what has been observed; predict what has not yet been observed; be tested further by experimentation; be modified as required by the acquisition of new data; be modified only with compelling empirical evidence, verification, and peer review; be supported by sufficient empirical evidence to make abandonment unlikely
Thermometer	Instrument used to measure temperature
Tissues	Group of similar cells that work together
Translucent	Describes matter that allows, some, but not all, of the light that hits it to pass through, and that scatters some light
Transparent	The ability of light to pass through without refraction
Transverse wave	A wave in which the particles vibrate at right angles to the direction of the wave
Tropism	The response of a plant to something in its environment
Variable	Measurable factor, characteristic, or attribute of an individual or a system
Vertebrate	Animals with a backbone
Water cycle	The movement of water through Earth's ecosystems
Wavelength	Distance between any point on one wave to a corresponding point on the next wave, such as crest to crest or trough to trough
Weathering	The breakdown of a material into smaller and smaller pieces by mechanical or chemical means
Weight	The downward pull of gravity on an object (K-4 uses mass interchangeably)
White light	Contains all the colors of the visible spectrum (colors of the rainbow)
Xylem	Vessels in a plant that carry water and nutrients from the roots to the leaves