Third Grade Nature of Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the nature and origin of scientific knowledge.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Identify scientific contributions. • Automobile • Telephone • Flight • Motors ✓ Explain science as a process involving asking and answering questions.

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Indicator 2: Apply the skills necessary to conduct scientific investigations.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Use investigations in science to acquire knowledge. Example: Investigate plant growth given environmental variables. • Make observations. • Make predictions. • Ask questions. • Plan investigations. • Use appropriate scientific equipment and proper safety procedures in all investigations. • Use appropriate metric measurement to collect, record, chart, and/or graph data. • Interpret data. • Communicate results.

Third Grade Nature of Science
Performance Descriptors

Note: At the third grade level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements. The skills and concepts addressed in this goal are to be included across the other goals. Appropriate scientific instruction should provide students the opportunity to actively engage in scientific investigations.

Third Grade Physical Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Describe structures and properties of, and changes in, matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**3.P.1.1. Students are able to describe physical properties of matter using the senses (touch, smell, etc.).** **Examples**: color, size, shape, hardness, opacity, flexibility, texture, smell, temperature, weight • Define the five senses. • Define solid, liquid, and gas.
(Application)	**3.P.1.2. Students are able to use tools to relate composition to physical properties.** **Example:** Use a magnifying glass to observe that matter is made of component parts. • Describe the basic characteristics of matter in relation to space and mass. • Recognize changes in matter from one state to another using water.
(Application)	**3.P.1.3. Students are able to demonstrate how a different substance can be made by combining two or more substances.** • Identify a mixture. Examples: Flour and water make paste. Flour, water, and salt make play-dough.

Indicator 2: Analyze forces, their forms, and their effects on motions.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	(Mastery of this indicator does not emerge until fourth grade.)

Indicator 3: Analyze interactions of energy and matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**3.P.3.1. Students are able to define energy and differentiate between sources of renewable and non-renewable energy.** • Describe renewable and non-renewable energy. Examples, renewable: wind and water Examples, non-renewable: coal and oil
(Application)	**3.P.3.2. Students are able to demonstrate how sound consists of vibrations and pitch.** • Relate the rate of vibration to the pitch of sound. Example: tuning fork vibrations • Low tones are caused by slow vibrations; high tones are caused by fast vibrations. Example: Varied levels of water in glass containers being struck create different pitches.
(Knowledge)	**3.P.3.3. Students are able to identify how sound is used as a means of communication.** • Give examples of kinds of communication. Examples: telephone ringing, train whistle, fire alarm, sirens, voice, and animal noises

Third Grade Physical Science
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • compare and contrast the physical properties of granite and calcite; • predict what would happen if we overused a renewable or non-renewable energy/resource; • demonstrate how sound travels.
Proficient	**Third grade students performing at the proficient level:** • use a magnifying glass to observe and describe the physical properties of a rock; • demonstrate how individual materials combine to make a different substance; • define energy and label pictures of renewable and non-renewable energy; • demonstrate how sound consists of vibrations and how pitch changes; • explain the different ways sound is used to communicate.

Basic	**Third grade students performing at the basic level:** • recognize physical properties of object; • use flour and water to make a substance; • sort pictures of renewable and non-renewable energy; • recognize different pitches.

Third Grade Life Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**3.L.1.1. Students are able to identify the basic structures, functions, and needs of plants in relation to their environment.** **Examples**: leaves, stems, roots, flowers • Differentiate between plants and animals.
(Knowledge)	**3.L.1.2. Students are able to identify characteristic features of animals and their related functions in relation to their environment.** **Examples:** wings/ hollow bones, webbed feet, fins • Differentiate between plants and animals.
(Comprehension)	**3.L.1.3. Students are able to describe life cycles, including growth and metamorphosis, of familiar organisms.** • Differentiate between adult males and females. Example: dull-colored female birds/colorful male

Indicator 2: Analyze various patterns and products of natural and induced biological change.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**3.L.2.1. Students are able to explain how animals instinctively meet basic needs in their environment.** • Give examples of basic needs. Example: Instincts such as baby birds know to open their mouths for food; newborn turtles know to go to water.

Indicator 3: Analyze how organisms are linked to one another and the environment.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**3.L.3.1. Students are able to describe how species depend on one another and on the environment for survival.** • Describe cause-and-effect relationships in living systems.
(Comprehension)	**3.L.3.2. Students are able to explain how environments support a diversity of plants and animals.** • Describe types of environments. Example: deserts and what lives there
(Comprehension)	**3.L.3.3. Students are able to describe ways humans impact air, water, and habitat quality.** **Example**: water pollution from chemical waste • Define pollution.
(Application)	**3.L.3.4. Students are able to examine fossils and describe how they provide evidence of change in organisms.** • Define a fossil.

Third Grade Life Science
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • explain how an animal or plant is specially adapted to meet its survival needs; • analyze the impact humans have on the environment.
Proficient	**Third grade students performing at the proficient level:** • name the basic structures, functions, characteristics, and basic needs of plants and animals; • describe life cycles, including growth and metamorphosis, of familiar organisms; • describe how living things are supported by the environment, yet are diverse and interdependent; • describe ways humans impact air, water, and habitat quality; • describe how fossils provide evidence of change.
Basic	**Third grade students performing at the basic level:** • explain the basic needs of plants and animals; • explain how plants and animals adapt to their environment; • name one way humans affect the environment;

	• identify a fossil.

Third Grade Earth/Space Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze the various structures and processes of the Earth system.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**3.E.1.1. Students are able to define the difference between a rock and a mineral.** **Example:** Minerals look the same throughout while you can see different minerals within a rock. ✓ Examine fossils and describe how they are formed.
(Comprehension)	**3.E.1.2. Describe how humans use Earth's natural resources.** **Example**: using minerals for jewelry or trees for paper • Define natural resources.

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**3.E.2.1. Students are able to identify the Earth as one of the planets that orbits the Sun.** • All planets orbit the Sun.
(Analysis)	**3.E.2.2. Students are able to recognize changes in the appearance of the Moon over time.** • Know that the Moon does not change shape, but at different times appears to change shape. ✓ Explain the relationship between the rotation of the Earth on its axis and the day/night cycle. • Describe the causes for Earth's seasons.

Third Grade Earth/Space Science
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • compare and contrast rocks and minerals; • create a visual representation of the Sun and planets.
Proficient	**Third grade students performing at the proficient level:** • group rocks and minerals; • describe Earth's natural resources and their products; • identify the Sun, Earth, and Moon as a system; • describe the change in appearance of the Moon over time.
Basic	**Third grade students performing at the basic level:** • locate the Sun and the Earth; • recognize natural resources.

Third Grade Science, Technology, Environment, and Society
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**3.S.1.1. Students are able to recognize ways to recycle, reuse, and reduce consumption of natural resources.** **Example**: using less water when brushing your teeth to reduce consumption of water • Define recycle, reuse, and reduce.

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Investigate how natural events and human influences can affect the survival of species. Examples: rainfall, flooding, and drought Example: Hunting regulations have developed to control

	wildlife populations. ✓ Describe solutions to environmental problems. Example: planting grass to prevent erosion caused by runoff Example: using no-till farming to prevent erosion

Third Grade Science Technology, Environment, and Society
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • analyze ways recycling, reusing, and reducing conserves natural resources.
Proficient	**Third grade students performing at the proficient level:** • recognize items for reuse or recycling.
Basic	**Third grade students performing at the basic level:** • recognize items for reuse or recycling.

Fourth Grade Nature of Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the nature and origin of scientific knowledge.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Identify people who have revolutionized scientific thinking. • Samuel Morse • Thomas Edison • Benjamin Franklin ✓ Describe science as the process of asking and answering questions and comparing the results to what is already known. Example: KWL Chart

Indicator 2: Apply the skills necessary to conduct scientific investigations.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Use investigations in science to acquire knowledge. Example: Investigate the effect of surface area and air temperature on evaporation. • Make observations. • Make predictions. • Ask questions. • Form a simple hypothesis. • Plan investigations. • Use appropriate scientific equipment and proper safety procedures in all investigations. • Use appropriate metric measurement to collect, record, chart, and/or graph data.

	• Interpret data. • Communicate results. ✓ Recognize the effect of manipulated variables on the outcomes of events.

Fourth Grade Nature of Science
Performance Descriptors

Note: At the fourth grade level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements. The skills and concepts addressed in this goal are to be included across the other goals. Appropriate scientific instruction should provide students the opportunity to actively engage in scientific investigations.

Fourth Grade Physical Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Describe structures and properties of, and changes in, matter.

Bloom's Taxonomy Level	Standards, Supporting Skills, and Examples
(Comprehension)	**4.P.1.1. Students are able to describe observable physical changes and properties in matter.** **Examples:** solubility (matter dissolving into water) and density (floating and sinking) • Define matter.
(Analysis)	**4.P.1.2. Students are able to explain how some physical properties remain the same as the mass is changed.** **Example**: A block of salt will taste the same as a grain of salt. • Define mass.
(Comprehension)	**4.P.1.3. Students are able to differentiate between the states of matter caused by changes in temperature using water.** **Example:** from ice to water to water vapor • Define states of matter.

Indicator 2: Analyze forces, their forms, and their effects on motions.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**4.P.2.1. Students are able to demonstrate how forces act over a distance.** **Example:** magnetism • Define force.

Indicator 3: Analyze interactions of energy and matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**4.P.3.1. Students are able to identify materials as being conductors or insulators of electricity.** **Examples:** aluminum, wood, paper, plastic, glass, rubber band, iron, and steel • Define a conductor and an insulator.
(Application)	**4.P.3.2. Students are able to construct and define a simple circuit.** **Examples:** open and closed circuits • Give examples of simple circuits. ✓ Define parallel and series circuits.
(Application)	**4.P.3.3. Students are able to use magnets, electromagnets, magnetic fields, and compasses to explore magnetic energy.** • Define magnets and their properties. ✓ Explain that electrical circuits can produce magnetic force. ✓ Demonstrate polarity using magnets and dry cells.

Fourth Grade Physical Science
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • create water vapor; • design an electromagnet; • design an invention which conducts electricity; • demonstrate the difference between parallel and series circuits.
Proficient	**Fourth grade students performing at the proficient level:** • describe what happens to water when it is heated or cooled; • use magnets to define and demonstrate force at varying distances; • sort materials by their conductivity; • construct and define a simple electrical circuit.
Basic	**Fourth grade students performing at the basic level:** • identify the three states of water; • explore the capabilities of magnets; • construct a simple electrical circuit.

Fourth Grade Life Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**4.L.1.1. Students are able to identify the basic systems (digestive, skeletal, muscular, nervous, respiratory, and circulatory) and major organs.** **Examples:** circulatory-heart, blood vessels, blood ✓ Primary function in the human body.
(Comprehension)	**4.L.1.2. Students are able to differentiate between vertebrates and invertebrates, and classify the five groups of vertebrates (mammal, reptile, amphibian, bird, and fish) based on characteristics.** **Examples**: reproduction (live birth or eggs), body covering, respiration • Define vertebrate and invertebrates.

Indicator 2: Analyze various patterns and products of natural and induced biological change.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**4.L.2.1. Students are able to identify behavioral and structural adaptations that allow a plant or animal to survive in a particular environment.** **Examples:** hibernation and migration • Explain environments and adaptations.
(Analysis)	**4.L.2.2. Students are able to explain how a size of a population is dependent upon the available resources within its community.** • Know community resources. • Define population.

Indicator 3: Analyze how organisms are linked to one another and the environment.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**4.L.3.1. Students are able to describe the flow of energy through food chains and webs.** • Understand food chains.

Fourth Grade Life Science
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • create a visual representation of the body including the skeletal, muscular, digestive, nervous, respiratory, and circulatory systems; • differentiate between groups of vertebrates based on their characteristics; • construct a food web/chain.
Proficient	**Fourth grade students performing at the proficient level:** • name the basic body systems (digestive, skeletal, muscular, nervous, respiratory, and circulatory,) and explain their primary functions; • differentiate between vertebrates and invertebrates, and name five groups of vertebrates (mammal, amphibian, bird, fish, and reptile); • describe adaptations that allow plants and animals to survive; • describe the flow of energy through food chains and webs.
Basic	**Fourth grade students performing at the basic level:** • identify the skeletal system and describe one basic function; • name an animal without a backbone; • recognize plants and animals can change to survive; • identify the parts of a basic food chain.

Fourth Grade Earth/Space Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze the various structures and processes of the Earth system.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**4.E.1.1. Students are able to describe the basic stages of the water cycle.** **Example:** model of water cycle • Define evaporation, condensation, and precipitation.
(Comprehension)	**4.E.1.2. Students are able to describe how weather conditions and phenomena occur and can be predicted.** • Identify the positive and negative impacts of weather on the environment. Example: flooding vs adequate rainfall ✓ Explain the use of weather instruments. Examples: rain gauge, weather vane, thermometer, and barometer ✓ Identify the Earth's atmosphere, biosphere, lithosphere, and hydrosphere.

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**4.E.2.1. Students are able to describe the motions of Earth, Sun, and Moon.** • Revolution and rotation ✓ Use terminology to describe the phases of the Moon. Examples: waning moon or waxing moon ✓ Describe relative size and position of moons, planets, and stars. ✓ Identify the characteristics of the planets. Examples: appearance, size, distance from the Sun

Fourth Grade Earth/Space Science
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • demonstrate the water cycle; • interpret a weather map; • describe the relationship between the tilt of the Earth and seasons.
Proficient	**Fourth grade students performing at the proficient level:** • explain the basic water cycle; • identify negative and positive effects of weather conditions; • describe the relationship between rotation and revolution of the Earth.
Basic	**Fourth grade students performing at the basic level:** • recognize the basic water cycle; • describe the weather today; • demonstrate rotation using a globe.

Fourth Grade Science, Technology, Environment, and Society
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**4.S.1.1. Students are able to describe how people continue to invent new ways of doing things, solving problems, and getting work done.** • Ways progress makes our lives easier • People and inventions can have tremendous impact on our daily lives. Examples: CDs vs tapes; cell phones vs telephones; ziplock baggies vs wax paper
(Comprehension)	**4.S.1.2. Students are able to explain how new ideas and inventions often affect people.** • Explain the benefits of new ideas and inventions. Examples: television, electric lights

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Identify South Dakota environmental concerns and describe possible solutions. Example: Pollution along our highways and roads led to our adopt-a-highway program. • Describe the relationship between the use of natural resources and the environment. Example: Open- pit mining in the Black Hills led to reclamation.

Fourth Grade Science, Technology, Environment, and Society
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • analyze the positive and negative ways electricity has changed our lives.
Proficient	**Fourth grade students performing at the proficient level:** • describe ways electricity has changed our lives.
Basic	**Fourth grade students performing at the basic level:** • sequence a group of pictures depicting the progression of communication from the telegraph to cell phones.

Fifth Grade Nature of Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the nature and origin of scientific knowledge.
Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Investigate scientific contributions of people who have revolutionized scientific thinking. ✓ Describe science as a body of knowledge and an investigative process. ✓ Describe how scientific knowledge increases and changes over time.

Indicator 2: Apply the skills necessary to conduct scientific investigations.
Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Use investigations in science to accumulate knowledge. Example: Record daily weather conditions to form a weather pattern. • Make observations. • Make predictions. • Differentiate between a hypothesis and a prediction. • Ask questions. • Formulate hypotheses based on cause and effect relationships. • Plan investigations. • Use appropriate scientific equipment and proper safety procedures in all investigations. • Use appropriate metric measurement to collect, record, chart, and/or graph data. • Interpret data and recognize numerical data that are contradictory or unusual in experimental results. • Communicate results. • Define variables that must be held constant in a specific experimental situation.

Fifth Grade Nature of Science
Performance Descriptors

Note: At the fifth grade level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements. The skills and concepts addressed in this goal are to be included across the other goals. Appropriate scientific instruction should provide students the opportunity to actively engage in scientific investigations.

Fifth Grade Physical Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Describe structures and properties of, and changes in, matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**5.P.1.1. Students are able to define matter on the basis of observable physical properties.** **Examples:** mass, volume, density, magnetism, physical state, and the ability to conduct heat, electricity, and sound • Explain the relationships among elements, molecules, and matter. Examples: carbon dioxide, water ✓ Explain differences and similarities between a solution and other mixtures and changes that occur within. Examples: solution (sugar dissolving in water) and mixture (trail mix)

Indicator 2: Analyze forces, their forms, and their effects on motions.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**5.P.2.1. Students are able to identify forces in specific situations that require objects to interact, change directions, or stop.** • Give examples of ways gravitational forces affect every object.
(Analysis)	**5.P.2.2. Students are able to analyze the structure and design of simple and compound machines to determine how the machines make work easier by trading force for distance.** • Distinguish between simple and compound machines. Examples: lever, pulley, wheel, axle, inclined plane, wedge, screw Example: how scissors cut paper

Indicator 3: Analyze interactions of energy and matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**5.P.3.1. Students are able to demonstrate and explain how to measure heat flow into an object.** **Example**: Measure temperatures of various materials placed in sunlight. • Interpret a thermometer.
(Correspondence)	**5.P.3.2. Students are able to describe the Sun's ability to produce energy in the forms of light and heat.** • Understand that the Sun produces energy. Example: energy from the Sun stored in coal and plants ✓ Describe significant characteristics of different forms of energy. ✓ Explain energy transfers and transformation of light.
(Correspondence)	**5.P.3.3. Students are able to describe basic properties of light.** **Examples:** reflection, scattering, color spectrum, shadows

Fifth Grade Physical Science
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • demonstrate how compound machines make work easier by trading force for distance.
Proficient	**Fifth grade students performing at the proficient level:** • identify matter according to its observable physical properties; • demonstrate how simple machines make work easier by trading force for distance; • measure the temperature of two different objects to compare heat flow; • describe basic properties of light (reflection, scattering, color spectrum, shadows).
Basic	**Fifth grade students performing at the basic level:** • define matter; • identify a simple machine; • measure temperature; • identify the spectrum of light.

Fifth Grade Life Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**5.L.1.1. Students are able to describe the basic process of photosynthesis and the role of light as a source of energy in plants.** • Use words to describe photosynthesis. Example: Carbon dioxide + water → sunlight; chlorophyll = sugar and oxygen.

Indicator 2: Analyze various patterns and products of natural and induced biological change.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**5.L.2.1. Students are able to predict physical characteristics with family lineage.** • Describe family trees. • Explain how physical traits pass from generation to generation. Examples: height, hair color, eye color
(Comprehension)	**5.L.2.2. Students are able to describe structures and processes involved in plant reproduction.** **Example**: fertilization • Know parts of the plant.

Indicator 3: Analyze how organisms are linked to one another and the environment.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**5.L.3.1. Students are able to describe how natural events and/or human influences may help or harm ecosystems.** **Example**: biotic (over-population) and abiotic (floods) • Define ecosystem.
(Application)	**5.L.3.2. Students are able to analyze the roles of organisms to determine the transfer of energy using an energy pyramid model.** **Examples**: producer, consumer, decomposer, herbivore, carnivore, omnivore, predator – prey • Define an energy pyramid. • Define an organism.
(Correspondence)	**5.L.3.3. Students are able to describe how interrelationships enable some organisms to survive.** • Define interrelationships. ✓ Adaptation, parasitism, mutation

Fifth Grade Life Science
Performance Descriptors

Performance Descriptors Advanced	**Fifth grade students performing at the advanced level:** • illustrate the roles of reactants (carbon dioxide and water), products (sugar and oxygen), and sunlight in photosynthesis; • describe characteristics of worms, mollusks, arthropods, and echinoderms; • predict outcomes of combinations of physical trait; • develop a plan to protect an ecosystem; • illustrate the transfer of energy in a food pyramid.
Proficient	**Fifth grade students performing at the proficient level:** • describe structures and life processes of plants; • predict physical characteristics of offspring; • describe how natural events, interrelationships of organisms, and/or human influences may help or harm ecosystems; • describe the roles of producers, consumers, and decomposers to determine the transfer of energy.
Basic	**Fifth grade students performing at the basic level:** • explain how plants get food; • describe how offspring resemble their parents; • explain the relationship between plants and animals.

Fifth Grade Earth/Space Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze the various structures and processes of the Earth system.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**5.E.1.1. Students are able to describe the basic structure of Earth's interior.** • Define crust, mantle, and core. ✓ Explain the formation of geological features of the Earth through plate tectonics. Examples: volcanoes, faults, ocean trenches ✓ Describe how Earth's surface is constantly changing. Examples: earthquakes, volcanoes, weathering, erosion, and deposition ✓ Examine topographical maps.

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**5.E.2.1. Students are able to describe the components (Sun, planets, and moons) of the solar system.** • Relative size • Order and relative distance from the Sun and each other ✓ Describe the relative scale of the Earth to the Sun, planets, and the Moon.
(Comprehension)	**5.E.2.2. Students are able to explain how the Earth's rotation affects the appearance of the sky.** • Constellations appear to move as a result of Earth's rotation. Example: The Big Dipper appears in different locations throughout the night. • Apparent brightness of a star depends in part upon its distance from the Earth. Example: A flashlight beam appears brighter as it moves closer.

Fifth Grade Earth/Space Science
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • list the characteristics of the Earth's interior; • compare and contrast the components of the solar system.
Proficient	**Fifth grade students performing at the proficient level:** • describe the layers of the Earth's interior; • describe the components (Sun, planets, and moons) of the solar system; • explain how the Earth's rotation affects the appearance of the sky.
Basic	**Fifth grade students performing at the basic level:** • recognize the layers of the Earth; • identify the nine planets in our solar system.

Fifth Grade Science, Technology, Environment, and Society
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**5.S.1.1. Students are able to identify scientific changes that have affected transportation, health, sanitation, and communication.**
(Comprehension)	**5.S.1.2. Students are able to describe how designing a solution may have constraints.** **Examples**: costs, time, space, materials, and safety • Explain why the benefits of science and technology are not available to all people. • Describe the consumption of resources over time. Examples: oil, gold, and coal

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**5.S.2.1. Students are able to explain the interrelationship of**

	populations, resources, and environments. **Example**: human populations encroaching upon wildlife habitat **Example:** Technology such as fish finders affects fish population. • Define interrelationships. ✓ Describe conservation practices. Examples: crop rotation, shelter belts, fishing limits, hybrid automobiles

Fifth Grade Science, Technology, Environment, and Society
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • evaluate positive and negative effects of modern transportation, health, sanitation, and communication; • given a specific issue or problem, identify and explain constraints that would prohibit the implementation of the solution; • develop a solution to a human/animal cohabitation problem.
Proficient	**Fifth grade students performing at the proficient level:** • list ways that modern transportation, health, communication, and sanitation has changed our lives; • explain how factors such as cost, time, and resources affect problem solving; • explain the effects of humans encroaching on wildlife habitats.
Basic	**Fifth grade students performing at the basic level:** • identify ways modern transportation has changed our lives; • name a constraint in solving a problem; • name one effect of humans encroaching on wildlife habitat.

NATURE OF SCIENCE STANDARDS
3-5

Indicator 1: Understand the nature and origin of scientific knowledge.

Note: Mastery is not expected at these grade levels.

Indicator 2: Apply the skills necessary to conduct scientific investigations.

Note: Mastery is not expected at these grade levels.

PHYSICAL SCIENCE STANDARDS
3-5

Indicator 1: Describe structures and properties of, and changes in, matter.

Third Grade	Fourth Grade	Fifth Grade
3.P.1.1. (Comprehension) Describe physical properties of matter using the senses (touch, smell, etc.).	4.P.1.1. (Comprehension) Describe observable physical changes and properties in matter.	5.P.1.1. (Knowledge) Define matter on the basis of observable physical properties.
3.P.1.2. (Application) Use tools to relate composition to physical properties.	4.P.1.2. (Analysis) Explain how some physical properties remain the same as the mass is changed.	
3.P.1.3. (Application) Demonstrate how a different substance can be made by combining two or more substances.	4.P.1.3. (Comprehension) Differentiate between the states of matter caused by changes in temperature using water.	

Indicator 2: Analyze forces, their forms, and their effects on motions.

Third Grade	Fourth Grade	Fifth Grade

	4.P.2.1. (Application) Demonstrate how forces act over a distance.	5.P.2.1. (Knowledge) Identify forces in specific situations that require objects to interact, change directions, or stop.
		5.P.2.2. (Analysis) Analyze the structure and design of simple and compound machines to determine how the machines make work easier by trading force for distance.

Indicator 3: Analyze interactions of energy and matter.

Third Grade	Fourth Grade	Fifth Grade
3.P.3.1. (Knowledge) Define energy and differentiate between sources of renewable and non-renewable energy.	4.P.3.1. (Knowledge) Identify materials as being conductors or insulators of electricity.	5.P.3.1. (Application) Demonstrate and explain how to measure heat flow into an object.
3.P.3.2. (Application) Demonstrate how sound consists of vibrations and pitch.	4.P.3.2. (Application) Construct and define a simple circuit.	5.P.3.2. (Comprehension) Describe the Sun's ability to produce energy in the forms of light and heat.
3.P.3.3. (Knowledge) Identify how sound is used as a means of communication.	4.P.3.3. (Application) Use magnets, electromagnets, magnetic fields, and compasses to explore magnetic energy.	5.P.3.3. (Comprehension) Describe basic properties of light.

LIFE SCIENCE STANDARDS
3-5

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Third Grade	Fourth Grade	Fifth Grade
3.L.1.1. (Knowledge) Identify the basic structures, functions, and needs of plants in relation to their environment.	4.L.1.1. (Knowledge) Identify the basic systems (digestive, skeletal, muscular, nervous, respiratory, and circulatory) and major organs.	5.L.1.1. (Comprehension) Describe the basic process of photosynthesis and the role of light as a source of energy in plants.
3.L.1.2. (Knowledge) Identify characteristic features of animals and their related functions in relation to their environment.	4.L.1.2. (Comprehension) Differentiate between vertebrates and invertebrates, and classify the five groups of vertebrates (mammal, reptile, amphibian, bird, and fish) based on characteristics.	
3.L.1.3. (Comprehension) Describe life cycles, including growth and metamorphosis, of familiar organisms.		

Indicator 2: Analyze various patterns of inheritance and biological change.

Third Grade	Fourth Grade	Fifth Grade
3.L.2.1. (Analysis) Explain how animals instinctively meet basic needs in their environment.	4.L.2.1. (Knowledge) Identify behavioral and structural adaptations that allow a plant or animal to survive in a particular environment.	5.L.2.1. (Evaluation) Predict physical characteristics with family lineage.
	4.L.2.2. (Analysis) Explain how a size of a population is dependent upon the available resources within its community.	5.L.2.2. (Comprehension) Describe structures and processes involved in plant reproduction.

Indicator 3: Analyze how organisms are linked to one another and the environment.

Third Grade	Fourth Grade	Fifth Grade
3.L.3.1. (Comprehension) Describe how species depend on one another and on the environment for survival.	4.L.3.1. (Comprehension) Describe the flow of energy through food chains and webs.	5.L.3.1. (Comprehension) Describe how natural events and/or human influences may help or harm ecosystems.
3.L.3.2. (Comprehension) Explain how environments support a diversity of plants and animals.		5.L.3.2. (Application) Using an energy pyramid model, analyze the roles of organisms to determine the transfer of energy.
3.L.3.3. (Comprehension) Describe ways humans impact air, water, and habitat quality.		5.L.3.3. (Comprehension) Describe how interrelationships enable some organisms to survive.
3.L.3.4. (Application) Examine fossils and describe how they provide evidence of change in organisms.		

EARTH/SPACE SCIENCE STANDARDS
3-5

Indicator 1: Analyze the various structures and processes of the Earth system.

Third Grade	Fourth Grade	Fifth Grade
3.E.1.1. (Knowledge) Define the difference between a rock and a mineral.	4.E.1.1. (Comprehension) Describe the basic stages of the water cycle.	4.E.1.1. (Comprehension) Describe the basic structure of Earth's interior.
3.E.1.2. (Comprehension) Describe how humans use Earth's natural resources.	4.E.1.2. (Comprehension) Describe how weather conditions and phenomena occur and can be predicted.	

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Third Grade	Fourth Grade	Fifth Grade
3.E.2.1. (Knowledge) Identify the Earth as one of the planets that orbit the Sun.	4.E.2.1. (Comprehension) Describe the motions of Earth, Sun, and Moon.	5.E.2.1. (Comprehension) Describe the components (Sun, planets and moons) of the solar system.
3.E.2.2. (Analysis) Recognize changes in the appearance of the Moon over time.		5.E.2.2. (Comprehension) Explain how the Earth's rotation affects the appearance of the sky.

SCIENCE, TECHNOLOGY, ENVIRONMENT, AND SOCIETY STANDARDS
3-5

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Third Grade	Fourth Grade	Fifth Grade
3.S.1.1. (Analysis) Recognize ways to recycle, reuse, and reduce consumption of natural resources.	4.S.1.1. (Comprehension) Describe how people continue to invent new ways of doing things, solving problems, and getting work done.	5.S.1.1. (Knowledge) Identify scientific changes that have affected transportation, health, sanitation, and communication.
	4.S.1.2. (Comprehension) Explain how new ideas and inventions often affect people.	5.S.1.2. (Comprehension) Describe how designing a solution may have constraints.

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Third Grade	Fourth Grade	Fifth Grade
		5.S.2.1. (Evaluation) Explain the interrelationship of populations, resources, and environments.