- Required to be taught to meet the state content standards in science
- ✓ Information introduced for the next grade level
- + Brookings school District additional requirements to be taught

Fifth Grade Nature of Science

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	Assessments	Resources
		✓ 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	Assessments	Resources
		✓ 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

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

Bloom's Taxonomy Level	Standard	Supporting Skills and Examples	Assessments	Resources
(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 (conduction), electricity, and sound • Explain the relationships among elements, atoms, 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	Assessments	Resources
(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	Assessments	Resources
(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 (including melting and boiling points).		
(Comprehension)	**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.		
(Comprehension)	**5.P.3.3. Students are able to describe basic properties of light.**	Examples: reflection, refraction, 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

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

Bloom's Taxonomy Level	Standard	Supporting Skills and Examples	Assessments	Resources
(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	Assessments	Resources
(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 and basic life processes involved with reproduction. (pollination, stamen, pistil, sepals, embryo, spore, seed) • Know difference between vascular and nonvascular plants		

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

Bloom's Taxonomy Level	Standard	Supporting Skills and Examples	Assessments	Resources
(Comprehension)	**5.L.3.1. Students are able to describe how natural events and/or human influences may help or harm ecosystems.**	Example: biotic/ living (over-population) and abiotic/ non living (floods) • Define ecosystem and state characteristics (prairie, ocean, desert) • Define endangered, threatened, and extinct species.		
(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. • Model flow of energy in food chains and food webs		
(Comprehension)	**5.L.3.3. Students are able to describe how interrelationships enable some organisms to survive.**	• Define interrelationships. Adaptation, parasitism, mutation +Students compare plant and animal cells		

Fifth Grade Life Science
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

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

Bloom's Taxonomy Level	Standard	Supporting Skills and Examples	Assessments	Resources
(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, folds, ice caps. ✓ Describe how Earth's surface is constantly changing. Examples: earthquakes, volcanoes, weathering, erosion, deposition, and plate tectonics Examine topographical maps and explain how they represent landforms.		

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

Bloom's Taxonomy Level	Standard	Supporting Skills and Examples	Assessments	Resources
(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

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

Bloom's Taxonomy Level	Standard	Supporting Skills and Examples	Assessments	Resources
(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	Assessments	Resources
(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.