

Seattle Public Schools Science Standards

Ecosystems

(Science and Technology for Children)

Grade 4

LIFE
SCIENCE

EARL #1 The student understands and uses scientific concepts and principles.		
Component	Benchmarks	Lesson #s
1.1 – Use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things.	<p><i>Basis of biological diversity</i></p> <ul style="list-style-type: none"> • sort and categorize living things using various characteristics • observe and describe the needs of a variety of living things (e.g., nutrients, water, and air) 	1 – 7, 13, 14
1.3 – Understand how interactions within and among systems cause changes in matter and energy.	<p><i>Life processes and the flow of matter and energy</i></p> <ul style="list-style-type: none"> • recognize that air, water, nutrients, and the chemicals in food are continually recycled (e.g., water cycle, nutrient cycle) • understand that energy from food is necessary for living things 	1 – 7, 13, 14
	<p><i>Interdependence of life</i></p> <ul style="list-style-type: none"> • describe how an organism’s behavior and ability to survive is influenced by its environment, other life forms, and availability of food and/or other resources 	1 – 9, 12, 16
	<p><i>Environmental and resource issues</i></p> <ul style="list-style-type: none"> • recognize that humans and other living things depend on the natural environment and can cause changes in their environment that affect their ability to survive (e.g., pollution experiments) 	1, 8 – 16

EARTH
SCIENCE

EARL #1 The student understands and uses scientific concepts and principles.		
1.1 – Use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things.	<p><i>Nature and properties of earth materials</i></p> <ul style="list-style-type: none"> • model and explain the water cycle 	To be developed
1.2 – Recognize the components, structure, and organization of systems and the interconnections within and among them.	<p><i>Components and patterns of the earth system</i></p> <ul style="list-style-type: none"> • investigate the interconnections and patterns among aquatic and terrestrial environments 	7, 13, 14

**SCIENCE
SKILLS/
PROCESSES**

1.3 – Understand how interactions within and among systems cause changes in matter and energy.	<p><i>Hydrosphere/atmosphere</i></p> <ul style="list-style-type: none"> recognize that events in nature have a repeating pattern (e.g., producers, consumers and decomposers; the water cycle) 	3 – 7, 13
EARL #2 The student understands the skills and processes of science and technology.		
2.1 – Develop the abilities necessary to do scientific inquiry.	<p><i>Questioning</i></p> <ul style="list-style-type: none"> ask questions about objects, organisms, and events in the environment <p><i>Designing and conducting investigations</i></p> <ul style="list-style-type: none"> plan and conduct simple investigations, using appropriate tools, measures, and safety rules <p><i>Evidence and explanation</i></p> <ul style="list-style-type: none"> use data to construct reasonable explanations <p><i>Modeling</i></p> <ul style="list-style-type: none"> model systems, events, or processes by representing them with concrete objects, metaphors, analogies, or other conceptual or physical constructs (e.g., graphic organizers) <p><i>Communication</i></p> <ul style="list-style-type: none"> record and report observations, explanations, and conclusions using oral, written, and mathematical expression 	<p>All lessons</p> <p>7, 11 – 13</p> <p>12 - 16</p> <p>2 – 7, 11 – 14</p> <p>All lessons</p>
2.2 – Apply science knowledge and skills to solve problems or meet challenges.	<p><i>Identifying problems</i></p> <ul style="list-style-type: none"> identify problems found in familiar contexts in which science and technology can be or have been used to design solutions <p><i>Designing and testing solutions</i></p> <ul style="list-style-type: none"> propose, design, and test a solution to a problem <p><i>Evaluating potential solutions</i></p> <ul style="list-style-type: none"> evaluate how well a design or a product solves a problem 	<p>9 – 16</p> <p>16</p> <p>16</p>

**SCIENTIFIC
THINKING**

EARL #3 The student understands the nature and contexts of science and technology.		
3.1 – Understand the nature of scientific inquiry.	<p><i>Intellectual honesty</i></p> <ul style="list-style-type: none"> understand that all scientific observations should be reported accurately even when they contradict expectations <p><i>Limitations of science and technology</i></p> <ul style="list-style-type: none"> distinguish between questions that can be answered with science and technology and those that cannot <p><i>Dealing with inconsistencies</i></p> <ul style="list-style-type: none"> explain why similar investigations may not produce similar results 	<p>12 – 16</p> <p>All lessons</p> <p>12 – 14</p>

	<p><i>Evaluating methods of investigation</i></p> <ul style="list-style-type: none"> recognize that results of scientific investigations can come from expected and unexpected sources (e.g., through sharing the results of investigations) <p><i>Evolution of scientific ideas</i></p> <ul style="list-style-type: none"> know that ideas in science change as new scientific thinking, theories, and evidence arise 	<p>7, 11 – 13</p> <p>8, 9, 14 – 16</p>
<p>3.2 – Know that science and technology are human endeavors, interrelated to each other, to society and to the workplace.</p>	<p><i>All peoples contribute to science and technology</i></p> <ul style="list-style-type: none"> know that science and technology have been practiced by all peoples throughout history <p><i>Relationship of science and technology</i></p> <ul style="list-style-type: none"> recognize that people have invented tools for everyday life and for scientific investigations <p><i>Careers and occupations using science, mathematics, and technology</i></p> <ul style="list-style-type: none"> identify the knowledge and skills of science, math, and technology used in common occupations 	<p>15, 16</p> <p>7, 11 – 13</p> <p>All lessons</p>