



District of Columbia
Office of the State Superintendent of Education

**ENVIRONMENTAL LITERACY GUIDES
FOR PRE-K THROUGH GRADE 5 EDUCATORS
IN THE DISTRICT OF COLUMBIA**



Essential Questions and Standards

Alignment by Grade Level

The Office of the State Superintendent of Education’s Environmental Literacy Program assists schools in implementation of the DC Environmental Literacy Plan by providing environmental education guidance, training, and technical assistance. The Environmental Literacy Guides are companion documents to the DC Environmental Literacy Framework, which describes a suggested sequence of place-based applications of science content. The Environmental Literacy Guides build upon the framework by proposing additional guiding questions for each grade level, and corresponding activities that can take place in various settings. The activities are aligned with the District’s Early Learning Standards, Next Generation Science Standards, and the College, Career, and Civic Life (C3) Framework for Social Studies State Standards.

Environmental literacy is the development of knowledge, attitudes, and skills necessary to make informed decisions concerning the relationships between natural and urban systems.

An environmentally literate person:

- Can discuss and describe ecological and environmental systems and human impacts on these systems;
- Engages in hands-on, outdoor learning experiences that involve discovery, inquiry, and problem-solving;
- Is able to question and analyze information pertaining to his or her surrounding environment; and
- Has the capacity to take actions that respect, restore, protect, and sustain the health and well-being of human communities and environmental systems.¹

The Environmental Literacy Guides are intended to provide inspiration for guiding questions and starting points for environmental investigations. By providing ideas firmly grounded in science and social studies content, students will have a better understanding of the relevant health, economic, and environmental concerns of the local and global community and will be prepared for the opportunities and challenges of the 21st century.

To develop these guides, OSSE worked with members of the 2016-17 Environmental Literacy Leadership Cadre. For more information about environmental literacy initiatives in the District, please visit <http://bit.ly/2o5I9bk>.

¹ Definition of environmental literacy found in the DC Environmental Literacy Plan, adopted in 2014.



	Manganese	Brain
	Calcium	Bones and Blood
	Iron	Keeps away outdoor
	Zinc	Bones
	Calcium	Bones
	Iron	Blood
	Calcium	Bones
	Iron	Blood

PRE-KINDERGARTEN

By the end of pre-K, an environmentally literate student knows how to use their senses and scientific tools to observe, collect and interpret data, and draw conclusions.

Essential and Guiding Questions

- What are the five senses?
- What do living things need to grow?
- What is weather?
- How do things in our environment change?

DC Early Learning Standards for Social Studies

- SS.6.2. Children demonstrate an understanding of self within the context of community.
- SS.6.5. Children begin to understand how people and things change over time.

DC Early Learning Standards for Scientific Inquiry

- SI.5.1. Children develop inquiry and process skills.
- SI.5.2. Children develop an understanding of the physical properties and uses of materials and objects.
- SI.5.3. Children will develop an understanding of living things (plants and animals) and what they need to survive.
- SI.5.4. Children develop an understanding of the Earth and the natural environment.

Example Activities

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none">• Create a photo collection that shows changes over time (people, trees, animals, buildings).• Care for a class pet and/or plants.• Watch snow/ice melt inside.• Monitor daily weather (graph, observations, etc.).	<ul style="list-style-type: none">• Adopt a tree and observe how it changes each month.• Plant a rainbow of differently colored flowers and vegetables in the school garden.	<ul style="list-style-type: none">• Go on a listening walk and record different sounds.• Take a nature walk and collect different types of tree leaves to be used for an art project.	<ul style="list-style-type: none">• Learn about different plant textures at the National Arboretum.• Count how many plant colors you can find at the U.S. Botanic Garden.• Chart reactions to different smells found at the National Zoo.



KINDERGARTEN

By the end of kindergarten, an environmentally literate student understands how to care for all living things found in the community.

Essential and Guiding Questions

- What do plants and animals need to survive?
- What are the ways to care for the plants and animals in our community?
- How do we care for ourselves, each other, and our community?

NGSS Performance Expectations

- K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
- K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.
- K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

College, Career, and Civic Life (C3) Framework for Social Studies State Standards

- D2.Civ.2.K-2. Explain how all people not just official leaders, play important roles in a community.
- D2.Geo.1.K-2. Construct maps, graphs, and other representations of familiar places.
- D2.Geo.6.K-2. Identify some cultural and environmental characteristics of specific places.
- D2.Geo.7.K-2. Explain why and how people, goods, and ideas move from place to place.

Example Activities:

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none"> • Find photos showing different stages of an animal's life cycle (baby chick, a pregnant woman, frog, and plant). • Learn about community helpers that have a role in caring for the environment: gardeners, veterinarians, scientists. 	<ul style="list-style-type: none"> • Plant something to care for, such as small seeds in the garden or a big tree. • Draw a map of the playground and label different areas with living and non-living things. • Outline students' shadows three times during the day to look for patterns. 	<ul style="list-style-type: none"> • Take a weekly weather walk to discuss observations in nature and how the weather is affecting the living things around you. • Go on a nature walk and list living and non-living things using a t-chart and camera to capture what students notice. 	<ul style="list-style-type: none"> • Visit the DC Aquatic Resources Education Center in the spring to see the life cycle of frogs, toads, and/or salamanders. • Learn how zookeepers care for animals at the National Zoo. Compare this with how we care for animals at home/school.



GRADE 1

By the end of first grade, an environmentally literate student knows how natural patterns affect living things and how different cultures interact with the environment.



NGSS Performance Expectations

- 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
- 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
- 1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.

College, Career, and Civic Life (C3) Framework for Social Studies State Standards

- D2.Eco.4.K-2. Describe the goods and services that people in the local community produce and those that are produced in other communities.
- D2.Geo.4.K-2. Explain how weather, climate, and other environmental characteristics affect people's lives in a place or region.
- D2.Geo.9.K-2. Describe the connection between the physical environment of a place and the economic activities found there.

Essential and Guiding Questions

- How do natural patterns affect living things?
- How do plants and animals change over the course of their lives?
- How do humans mimic plants and animals to solve problems?

Example Activities

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none">• Create a sun dial and make regular observations.• Research examples of products that mimic nature (e.g., helmet/turtle shell).• Identify how climate and the environment affect economy and trade of Maya, Aztec and Inca cultures.	<ul style="list-style-type: none">• Plant sunflowers and observe how they move during the day towards the sun.• Raise butterfly larvae to draw how animals change over time.• Observe how different materials absorb or reflect sunlight and heat on the playground.	<ul style="list-style-type: none">• Go on a community walk four times per year (once per season).• Sketch observations of different plants to observe changes over time.	<ul style="list-style-type: none">• Partner with local businesses whose work reflects items found in nature (e.g., helicopter/seeds, bike shop for helmets/turtles).• Learn how Native American cultures connect with the environment at the National Museum of the American Indian.

GRADE 2

By the end of second grade, an environmentally literate student knows how plants and animals support each other.



Essential and Guiding Questions

- How does pollination support animals and plants?
- How do worms support healthy animals and plants?
- How do plants support humans?
- How does a structure of an object determine its function?

NGSS Performance Expectations

- 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
- 2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

College, Career, and Civic Life (C3) Framework for Social Studies State Standards

- D2.Civ.14.K-2. Describe how people have tried to improve their communities over time.
- D2.Geo.5.K-2. Describe how human activities affect the cultural and environmental characteristics of places or regions.
- D4.6.K-2. Identify and explain a range of local, regional, and global problems, and some ways in which people are trying to address these problems.

Example Activities

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none"> • Build and manage a worm compost bin. • Create a web of sun, plants, pollinators, consumers (animals), decomposers. • Conduct a bee pollination representation (act out, draw what happens). • Dissect flowers. 	<ul style="list-style-type: none"> • Conduct an inventory/ scavenger hunt of plants and animals in the school yard (including soil) and comparing findings to what is found in garden soil. • Play a pollinator matching game. 	<ul style="list-style-type: none"> • Go on a nature walk and look for evidence of pollination. • Look for different types of seeds and how they travel. 	<ul style="list-style-type: none"> • Visit an industrial composting facility. • Check out the exhibits at the U.S. Botanic Garden for a mini lesson on pollination.

GRADE 3

By the end of third grade, an environmentally literate student starts to investigate and observe the complexity of natural systems (living and non-living) and know how living organisms (plants and animals) can interact with (their) changing environments.

Essential and Guiding Questions

- How do living things adapt to changes in the environment?
- How does our changing climate affect the weather right outside my door?

NGSS Performance Expectations

- 3-LS2-1. Construct an argument that some animals form groups that help members survive.
- 3-LS 3-2. Use evidence to support the explanation that traits can be influenced by the environment.
- 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- 3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather related hazard.

College, Career, and Civic Life (C3) Framework for Social Studies State Standards

- D2.Civ.13.3-5. Explain how policies are developed to address public problems.
- D2.Eco.2.3-5. Identify positive and negative incentives that influence the decisions people make.
- D2.Geo.3.3-5. Use maps of different scales to describe the locations of cultural and environmental characteristics.
- D2.His.2.3-5. Compare life in specific historical time periods to life today.

Example Activities

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none">• Make a fossil.• Conduct an experiment planting seeds under varying conditions.	<ul style="list-style-type: none">• Build a weather station and collect data daily throughout the year (cloud cover, temperature, humidity, wind – direction/strength, rainfall).	<ul style="list-style-type: none">• Research a current event that has an environmental context.	<ul style="list-style-type: none">• Visit the National Museum of Natural History to explore exhibits related to adaptation, extinction, and fossils.



GRADE 4

By the end of fourth grade, an environmentally literate student knows how humans use natural resources and how/ what processes influence Earth’s physical features.



NGSS Performance Expectations

- 4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
- 4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
- 4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering on the rate of erosion by water, ice, wind or vegetation.
- 4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth’s features.

College, Career, and Civic Life (C3) Framework for Social Studies State Standards

- D2.Eco.3.3-5. Identify examples of the variety of resources (human capital, physical capital, and natural resources) that are used to produce goods and services.
- D2.Geo.2.3-5. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their environmental characteristics.
- D2.Geo.5.3-5. Explain how the cultural and environmental characteristics of places change over time.

Essential and Guiding Questions

- How do humans use natural resources?
- What natural processes influence Earth’s physical features?

Example Activities

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none"> • Create a commodity chain for energy that describes where/ how your school gets power and usage patterns. • Make stop motion films to animate the causes, types, and solutions for erosion problems in DC. 	<ul style="list-style-type: none"> • Explore your schoolyard using the Schoolyard Report Card and look for signs of erosion and areas of vegetation. Use data compiled to plan an action project. 	<ul style="list-style-type: none"> • Investigate potholes as an example of how natural processes impact physical features, use a 2 liter bottle, to show ice, physical weathering in a 2 liter bottle • Walk to a nearby stream to look for signs of erosion. 	<ul style="list-style-type: none"> • Go on a boat trip on the Anacostia and/or Potomac River to learn about how humans have used natural resources, how that has impacted the rivers, and also observe how processes have influence the shape of the rivers (erosion, sedimentation, etc.).

GRADE 5

By the end of fifth grade, an environmentally literate student knows how Earth’s systems interact and how these interactions impact life on Earth, and what solutions individuals and communities are using to help protect the Earth’s resources and environment.



Essential and Guiding Questions

- What solutions are individuals and communities using to help protect Earth’s resources and environments?
- What are ways Earth’s four systems (atmosphere, biosphere, geosphere, and hydrosphere) interact, and how do these interactions impact life on the planet?
- How do local laws and policies impact the conservation, needs, and interactions of Earth’s systems? In particular the hydrosphere and biosphere.

Example Activities

CLASSROOM	SCHOOL GROUNDS	NEARBY	OFF-SITE
<ul style="list-style-type: none"> • Research how DC’s environmental laws address local environmental issues. • Interview a local organization to learn about efforts to solve a problem impacting the Chesapeake Bay. 	<ul style="list-style-type: none"> • Track trends in air quality and precipitation by using a cloud observation wheel or the NASA Globe Cloud Observer App to record observations of cloud cover over the course of a day for a month. 	<ul style="list-style-type: none"> • Participate in a BioBlitz or other citizen science project in your community. • Visit a nearby stream to study the relationship between water quality and biotic factors. 	<ul style="list-style-type: none"> • Learn about the Chesapeake Bay by participating in an Overnight Meaningful Watershed Educational Experience.

NGSS Performance Expectations

- 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.
- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

College, Career, and Civic Life (C3) Framework for Social Studies State Standards

- D2.Eco.2.3-5. Identify positive and negative incentives that influence the decisions people make.
- D2.Civ.13.3-5. Explain how policies are developed to address public problems.
- D4. 7.3-5. Explain different strategies and approaches students and others could take in working alone and together to address local, regional, and global problems, and predict possible results of their actions.





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