

Environmental Literacy Model



Title	How can we help our environment?
Author	Gerrie Wiersberg
School, District	Wicomico County Public Schools
Audience (grade, course)	Kindergarten

Curriculum Anchor

Defining the Learning Objectives and Curriculum Connection

Curriculum indicators, performance expectations, and/ or student learning objectives.

Since 2015, we have partnered with the Ward Museum to build upon preexisting but non-systemic MWEE efforts at the Kindergarten level. These efforts also support Next Generation Science Standards for Kindergarten instruction; specifically:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]

K-ESS-2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

K.MD.A.2 Directly compare two objects with a measurable attribute in common to see which object has “more of”/”less of” the attribute, and describe the difference.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. [Clarification Statement: Examples of human impact on the land could include Click or tap here to enter text. © 2017 Chesapeake Bay Foundation cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

K-PS3- 1. Make observations to determine the effect of sunlight on Earth’s surface. [Clarification Statement: Examples of Earth’s surface could include sand, soil, rocks, and water.] [Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.]

Describing the Local Context

The life-relevant issue that will serve as the context for learning.

Students will visit Schumaker Pond for their field experience, located on a tributary of the Wicomico River. With access to thriving water and arboreal habitats, they will explore the feature of these habitats, the animals who live there (particularly birds and aquatic macroinvertebrates), and consider their connections and how they're affected by humans. These habitats will later be compared to the habitats found around the schoolyard.

Identifying the Driving Question

A broad, open-ended, life-relevant question that is based on the standards/learning objectives. Guides inquiry for the investigation(s), prompts the development of actionable claims.

How do humans make a difference in their environment? Supporting Questions: - What is necessary for a healthy habitat? - How do humans make good habitats for themselves? - How do animals, like birds, make good habitats for themselves? - What happens if human change animals' habitats? - What are some changes humans make to animals' habitats? - What can we do to make animals' habitats better, healthier, and safer?

issue Investigation

Asking Questions, Defining Issues and Problems

Students define the issue, problem, or phenomenon to be investigated and develop supporting questions that are relevant for investigation.

Issue Investigation 1	Issue Investigation 2	Issue Investigation 3
<p>During the field experience component of their MWEE, the students will collect information on the habitats around Schumaker Pond and record them in their individual nature journals. Students will engage in three particular activities during their field experience: (1) a habitat walk on the nature trail and around other green areas, looking for the features of healthy habitats and searching for signs of animal habitation, including bird and squirrel nests, insect colonies, etc, and pondering how humans affect these habitats through changes to the land;</p>	<p>(2) an aquatic macroinvertebrate survey on the edge of the pond, finding examples of life beyond their ordinary experiences and connecting these life forms to others in the area through considerations of the food chains/webs;</p>	<p>(3) a lesson on runoff using an Enviroscope model, including a participatory demonstration of and discussion around all of the different sources of pollution we all contribute and how these might affect the animals in and around the pond.</p>

Planning and Conducting Investigations

Students plan and conduct investigations and classroom activities (indoor and outdoor) that actively address students' supporting questions. Students collect data that will be used to inform actionable claims.

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Analyzing and Interpreting Data

Students analyze data through graphs, models, and other methods to reveal patterns and relationships. Students synthesize and apply evidence from their investigations to draw conclusions that address the supporting questions.

Issue Investigation 1	Issue Investigation 2	Issue Investigation 3
Following the field experience is when the students will really begin to delve into the issue definition stage. Students will be prompted to share stories about what really stood out to them during the field experience. They will then be encouraged to make connections between what they experienced during these activities and what they see around the school, around their homes, and in their communities. Examples could be around different forms of pollution or other debris from runoff, different habitats and animals, etc.	Following the field experience is when the students will really begin to delve into the issue definition stage. Students will be prompted to share stories about what really stood out to them during the field experience. They will then be encouraged to make connections between what they experienced during these activities and what they see around the school, around their homes, and in their communities. Examples could be around different forms of pollution or other debris from runoff, different habitats and animals, etc.	Following the field experience is when the students will really begin to delve into the issue definition stage. Students will be prompted to share stories about what really stood out to them during the field experience. They will then be encouraged to make connections between what they experienced during these activities and what they see around the school, around their homes, and in their communities. Examples could be around different forms of pollution or other debris from runoff, different habitats and animals, etc.

Constructing and Communicating a Claim

Students draw on the conclusions from their investigations to make a claim about the driving question and communicate these evidence-based claims to internal and/or external audiences.

Issue Investigation 1	Issue Investigation 2	Issue Investigation 3
Drawing upon the stories shared in the classroom, how these stories connect to the everyday lives of the students, and the interests expressed in the students' nature journals, teachers will assist the class in narrowing down and synthesizing the interests of the students to a single issue. Students will then be encouraged to consider this single issue once again with regard to the original driving question: How do humans make a difference in their environment?	Drawing upon the stories shared in the classroom, how these stories connect to the everyday lives of the students, and the interests expressed in the students' nature journals, teachers will assist the class in narrowing down and synthesizing the interests of the students to a single issue. Students will then be encouraged to consider this single issue once again with regard to the original driving question: How do humans make a difference in their environment?	Drawing upon the stories shared in the classroom, how these stories connect to the everyday lives of the students, and the interests expressed in the students' nature journals, teachers will assist the class in narrowing down and synthesizing the interests of the students to a single issue. Students will then be encouraged to consider this single issue once again with regard to the original driving question: How do humans make a difference in their environment?

Stewardship and Civic Action

Identifying Solutions

Students identify and explore solutions that directly address the problem, challenge, or opportunity reflected in their claim. Students use decisionmaking processes to identify the solution(s) to implement.

The claims that will find the Stewardship and Civic Action components will be directly drawn from the students' final answers to the driving question in their nature journals as prompted in the Constructing, Communicating, and Refining Explanations section above.

Designing a Plan and Taking Informed Action

Students design a plan for implementing solutions through informed action in their classrooms, schools, and/or communities. The plans should include criteria for determining the extent to which the action successfully addresses the problem, challenge, or opportunity reflected in the claim. Students implement their plans.

Because of the limitations of kindergarteners in designing and planning their own action projects, the teacher will facilitate the development of action projects based upon the interests of their students as expressed in the claims above and additional in-class activities if necessary. When possible, teachers will present multiple feasible options to the class, and democratic methods will be employed to identify a single solution to be carried out. Possible action project could include:

- Maintaining schoolyard habitats through gardens, bird feeders, bat houses, etc
- Posting interpretive signage on interesting habitat/environmental features around the schoolyard
- Implementing programs, such as recycling, in the classroom to prevent contributions to runoff

Evaluating Action

Students reflect on the action and determine the extent to which it successfully addresses the problem, challenge, or opportunity reflected in the claim. Students communicate their findings and share proposals for sustaining or extending the action.

The final component of the ongoing nature journal will be a reflection on the success (or lack thereof) of the action projects. Students will observe, when possible, their projects, and note the effects they have. For example, bird feeders can be monitored to check seed levels, spot birds, count birds, and even produce guides to the birds seen at the feeders for other students. When direct observation isn't possible, students will be encouraged to imagine how the action project has changed the environment of the area. These analyses will be shared through participating classes to other classes through presentations, posters, or intercom announcements.