Phoenixville Area School District UbD Science Unit Plan

Grade: K **Unit:** Animals 2 by 2 (Interdependence & Env Sci) **Authors:** R. Lovelidge & L. Miller

<table>
<tr><th colspan="3">Stage 1 Desired Results</th></tr>
<tr><td rowspan="4">Overarching NGSS & PA Standards:

3.1.K.A Use observations to describe patterns of what plants and animals (including humans) need to survive.

3.3.K.B Conduct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

3.3.K.C</td><td colspan="2">Transfer</td></tr>
<tr><td colspan="2">Students will be able to independently use their learning to…

• Ask questions and/or define problems
• Plan and/or carry out investigations
• Analyze and interpret data using computational thinking
• Obtain, evaluate, and communicate information (supported by evidence)
• Develop and/or use models
• Construct explanations and design solutions</td></tr>
<tr><td colspan="2">Meaning-Making</td></tr>
<tr><td>Students will understand that…

• Plants and animals need certain necessities to survive.
• Plants and animals depend on each other for survival.
• When plants and animals obtain their needs it can have an affect the environment around them.
• Things people do to live comfortably can affect the world around them; but, they can make choices that reduce their impact on the land, water, air, and other living things.
• Humans use natural resources for everything they do.

*Every time “animals” is written it should be inferred that humans are included in this group</td><td>ESSENTIAL QUESTIONS
• Why do we need to eat?
• What do plants need to survive?
• What do animals need to survive?
• What do animals eat?
• How do plants and animals depend on each other?
• Are all plants the same?
• Are all animals the same?
• How are plants and the environment related?</td></tr>
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<tr>
<td rowspan="3">Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

Which branch(es) of science apply:

LS & E&SS</td>
<td></td>
<td>• How are animals (including humans) and the environment related?
• How do human choices impact the world around them?
• How do humans use natural resources?
• Why do humans need natural resources?
• How can humans make choices to reduce their impact on the land, water, air, and other living things?</td>
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<tr>
<td colspan="2">Knowledge and Skills Acquisition</td>
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<td>UNDERSTANDINGS
Students will know…

• Plants need light to live and grow.
• Animals need food to live and grow.
• Plants and animals need water to live and grow.
• Animals get their food from plants, other animals, or both.
• There are many different types of plants and animals.
• Plants and animals can change their environment when trying to obtain their needs. (e.g. plant roots lifting sidewalks because they need space to grow, using natural resources to build things).
• The relationship between plants and animals and the other (non-living) resources they need to survive.
• The relationships between places where different plants and animals live and the resources those places provide.
• That plants, animals, the places where they live, and the resources they need, are all parts of a system. These systems work together to make sure living things have what they need to survive.</td>
<td>Students will be skilled at…
• Using their senses to make observations and record their findings:
o to describe plants in their science journal
o to describe animals
• Using models to study plant and animal characteristics
• Recognizing patterns in feeding relationships</td>
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- That the needs of different plants and animals are met by the various places in which they live.
- That people affect the land, water, air, and/or other living things in the local environment in positive and negative ways.
- That solutions exist to reduce the negative effects of humans on the local environment.
- Examples of things that people do to live comfortably and how those things can cause changes to the land, water, air, and/or living things in the local environment.
- Examples of choices that people can make to reduce negative impacts and the effect those choices have on the local environment.

*Every time "animals" is written it should be inferred that humans are included in this group

KEY VOCABULARY

Animal	Space (room to grow)
Food	Senses
Living	Earth
Needs	Environment
Nonliving	Habitat
Sunlight	Litter
Plant	Man-made
Sun	Material
Observation	Natural
Survive	Pollute
Air	Recycle
Shelter	Reduce
Nutrient	Reuse

Stage 2 – Evidence

Evaluative Criteria	***Assessment Evidence***	
	PERFORMANCE TASK(S): Investigations:	**Differentiation Considerations:**

What criteria will be used in each assessment to evaluate attainment of the desired results? Rubrics related to each will be developed.	I. **Task(s):** Students first engage with the phenomenon of animals by observing fish. Students observe their structures and behaviors. They feed the fish and enrich the environment in which the fish live. They compare the structures and behaviors of the goldfish to those of other fish, for example guppies. Students compare photos of fish and read about fish. Students then engage with the phenomenon of local birds. They go bird watching in the schoolyard and compare features and behaviors of birds. **Assessment:** Investigation 1 I-Check II. **Task(s):** Students engage with another animal, the snail. Students observe the structures and behaviors of two types, for example, 2 water snails. Students will also work with a variety of seashells, discussing similarities and differences in their size, shape, color, and texture. Students match shell pairs, make designs, and create patterns. Students explore the schoolyard to find local land snails and compare their structures and behaviors to the other water snails they explored. **Assessment:** Investigation 2 I-Check III. **Task(s):** Students engage with the phenomenon of another animal, an earthworm. Students dig for worms, for example, redworms, rinse them off, and look at their structures. They study their behavior. They construct worm jars and provide for the needs of the composting worms. Students observe how the worms change the plant material into compost that will enrich soil. They compare the redworms to night crawlers, which are much larger. Students compare photos and read about worms and their activities in soil. **Assessment:** Investigation 3 I-Check IV. **Task(s):** Students engage with another animal, an isopod. Students observe structures of two kinds of isopods. They learn to identify the difference between pill bugs and sow bugs. They hold races. Students make a terrarium in which all the land animals live together. They compare photos and read about isopods. They read about and compare illustrations of a variety of animals and discuss the differences between living and nonliving things. **Assessment:** Investigation 4 I-Check Unit Activities:	For labs, consider that some students may wish to: • explain verbally instead of in a written format • draw their responses • write in their first language If challenges arise with the complexity of the task(s), some students may need: • more incremental steps • an alternative activity Other considerations: • When grouping students consider matching different skills sets • When asking students to describe a model, give them the opportunity to draw or write it, as well. • Teacher can scribe written responses for students

	1. Plants at Home **GOAL:** Your goal is to create a place in your home for a plant to thrive. **ROLE:** You are yourself. **AUDIENCE:** The audience is your classmates. **SITUATION:** Your class is being gifted plants for you each to take home to grow! To make sure that the plant will grow and thrive in your home, you need to create a list of all the things you will need for your plant to grow, including where you will place the plant in your home. **PRODUCT/PERFORMANCE AND PURPOSE:** The product is a list of what your plant needs to grow and a diagram. The performance task is to design a diagram of where you will keep your plant in your house. **STANDARDS & CRITERIA FOR SUCCESS**: Your list must include all the things your plant needs to grow and survive. Your diagram needs to show exactly where a plant must be kept in order to have all of its needs met. **2.** Human Impact on the Environment **GOAL:** Your goal is to create a poster to teach PAELC students what they can do to help the Earth. **ROLE:** You are an environmental scientist. **AUDIENCE:** The audience is PAELC students. **SITUATION:** PAELC students want to learn what to do at school to help the Earth! Your job is to teach students what daily steps they can take to help take care of the Earth. **PRODUCT/PERFORMANCE AND PURPOSE:** The performance task is to create a poster to display in the hallway to teach students one thing they should do to help the earth. The product is the poster **STANDARDS & CRITERIA FOR SUCCESS:** Your poster needs to include one thing students can do to help the Earth and an explanation why it is beneficial. **RESOURCE**: Environments-HumanImpactsKinderNGSS.pdf **- See LESSON 6** **3.** Animal & Plants Relationships in their Habitats **GOAL:** Your goal is to place the new animals from the zoo into the correct habitats for their needs. **ROLE:** You are a zookeeper. **AUDIENCE:** The audience is the people delivering the animals.	

	SITUATION: The zoo is getting some new animals! Your job is to place the animals in the correct habitat to meet their needs. **PRODUCT/PERFORMANCE AND PURPOSE:** The performance task is to create a brochure that shows what habitat each new animal must be brought to when they arrive at the zoo. The product is a brochure **STANDARDS & CRITERIA FOR SUCCESS**: Your animals must be placed in habitats with the correct food, shelter, and climate for them to survive. **SECOND PART OF TASK**: Oh no! One of the birds that was delivered escaped before they got to their new habitat! What does the bird need to do and use in their environment to survive? After student answers, follow up by asking how this might change the environment surrounding the bird? (*One example is that birds will build nests to survive, but that would change the environment around them, like using up sticks, taking up space in the tree, etc.* **RESOURCE:** NGSSKindergartenWhatdoAnimalNeedtoSurviveKLS11-1.pdf	

What criteria will be used in each assessment to evaluate attainment of the desired results?
 	
Rubrics related to each will be developed.
	OTHER EVIDENCE:
	
	• Checklists of collaborative behaviors in labs and activities
	• Checklists of collaborative behaviors in class discussions
	• Journal entries
	  ○ Science Journal-recording animal and plant observations
	  ▪ Are students drawing/writing to record their observations about what animals do to survive?
	  ▪ Are students drawing/writing to record their observations about what plants need to survive?
	  ▪ Can students use their journals to recognize patterns about animals/plants (things animals/plants have in common and not)?
	  ▪ Take a trip around the school and draw diagrams of the needs of different plants and animals and the places they live. For example, they can draw an image depicting a tree and explain that it takes in sunlight, water and nutrients in the soil. They can also draw a squirrel and explain that it gets nutrients from the plants and trees and water, etc.
		Differentiation Considerations:
		
		For journal entries, consider that some students may wish to:
		
		• draw instead of write entries
		• write in their first language
		
		For labs, consider that some students may wish to:
		
		• explain verbally instead of in a written format
		• write in their first language
		
		If challenges arise with complexity of the task(s):

	▪ Take a natural walk and record any changes in the environment that you observe. Then, students will hypothesize who was responsible for the change in environment and why (i.e., trash on playground, crack in sidewalk, hole in ground). Students will then present their argument to the class.	• smaller steps and/or • alternative activities will be provided.