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Unit Synopsis

Students take on the role of scientists advising an aquarium director by helping answer young visitors’ questions about Spruce the Sea Turtle, who will soon be released back into the ocean. They investigate how Spruce can survive in the ocean, particularly since sharks live in the area. They then investigate a question about Spruce’s offspring: How can Spruce the Sea Turtle’s offspring survive where there are sharks? This context, which serves as the anchor phenomenon for the unit, provides concrete examples and motivation for students to discover the core ideas of the unit about how organisms and their offspring survive, particularly how they avoid being eaten. Students gather evidence through careful observations of photographs and videos of real organisms and by reading science texts. Students create multiple models throughout the unit to explain their ideas about how defenses function. They apply their knowledge to two other challenges along the way—first by making a model that shows a way to defend the aquarium’s animal food supply from being eaten by wildlife, and then by making a model of a sea creature’s defense against being eaten. By the end of the unit, students will be able to use ideas of structure and function to explain how a wide variety of animals and plants and their offspring defend themselves from being eaten.

Amplify Unit Level 3D Statement

Students investigate **how animals and plants, as well as their offspring, use their structures to meet their needs for survival (structure and function)**. Students apply what they learn by **developing models** and constructing explanations to communicate their ideas about how aquarium animals use their defenses to survive (cause and effect).

Key: Targeted 3D Learning Objectives

Practices

Disciplinary Core Ideas

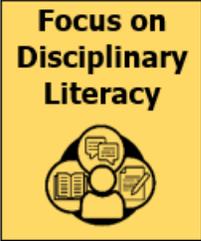
Crosscutting Concepts

***Reference your Scope and Sequence on Curriculum Corner to create your Long-Term Plan to determine your time frame for teaching the unit.**

Depending on your Long-Term Plan, you could have 1-3 flex days during the unit. Flex Days are recommended:

- After a Critical Juncture in lessons 1.5, 2.7 and 3.3
- Campus based activities day
- Review centers for the End of Unit Exam

DISCIPLINARY LITERACY



**Focus on
Disciplinary
Literacy**

In science, disciplinary literacy is synonymous with the science and engineering practices (SEPs). The SEPs are the context through which all science concepts should be taught. In the lessons, you will find the Science and Engineering practices icons when the SEPs are being explicitly used by students. The two focus SEPs for this unit are Developing and Using Models and Constructing Explanations and Designing Solutions.

Practice 1



Asking
Questions
Defining
Problems

Practice 2



Developing
and Using
Models

Practice 3



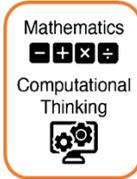
Planning and
Carrying Out
Investigations

Practice 4



Analyzing and
Interpreting
Data

Practice 5



Mathematics
Computational
Thinking

Practice 6



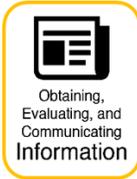
Constructing
Explanations
Designing
Solutions

Practice 7



Engaging in
Argument
from Evidence

Practice 8



Obtaining,
Evaluating, and
Communicating
Information

UNIT 1: ADVANCED TEACHER PREPARATION

Step	Action	Resource
1	Internalize the unit by following steps 1 & 2 on the Unit Internalization Protocol	Unit Internalization Protocol Curriculum Corner > State > Early Childhood > Grade > Instructional Resources
	Watch the Unit Overview Video/TIPS	First Grade Unit 1 Overview Video
	Review the visual flow of the unit	Coherence Flowchart
	Gain science background knowledge and identify student and teacher preconceptions	Amplify Science Background Knowledge
2	Prepare for each day of instruction by following <ul style="list-style-type: none"> Step 3 on the Unit Internalization Protocol Steps 1-3 on the Lesson Internalization Protocol for each lesson 	Lesson Internalization Protocol Curriculum Corner > State > Early Childhood > Grade > Instructional Resources

PROGRESS BUILD

Below describes the way in which students' explanations of the central phenomenon should develop and deepen over the course of this unit.

Animal and Plant Defenses Progress Build	
In the <i>Animal and Plant Defenses</i> unit, students will learn to construct scientific explanations of why animals' and plants' offspring are able to survive in areas where there are animals that might eat them.	
Prior knowledge (preconceptions): It is assumed students know that animals and plants are living things and can die if they do not get what they need. Students are expected to begin the unit with some ideas about plants' and animals' basic needs, such as light, water, and food, but they will have the opportunity to learn about a more comprehensive set of needs.	
Level 1	
Avoiding Being Eaten	To survive, animals and plants must not be eaten by animals that try to eat them for food.
Level 2	
Structures for Defense	To survive, animals and plants must not be eaten by animals that try to eat them for food. Many animals and plants have body structures with qualities that make them good for stopping animals from finding and/or eating them.
Level 3	
Offspring's Structures	To survive, animals and plants must not be eaten by animals that try to eat them for food. Many animals and plants have body structures with qualities that make them good for stopping animals from finding and/or eating them. Animals' and plants' offspring have similar, though not identical, structures to their parents that work in the same ways.

CONTENT STANDARDS

Below are the standards **taught** and **assessed** in this unit.

Standards
<i>Next Generation Science Standards (NGSS)</i>
<u>Focal Performance Expectations</u>
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. [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]
1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]
1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]
<u>Connections to Other Performance Expectations</u>
K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Standards

Texas Alignment (TEKS)

- 1.2.A identify basic advantages and limitations of models such as their size, properties, and materials;
- 1.3.A develop explanations and propose solutions supported by data and models;
- 1.12.A classify living and nonliving things based upon whether they have basic needs and produce young;
- 1.12.B describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums; and
- 1.12.C identify and illustrate how living organisms depend on each other through food chains.
- 1.13.A identify the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival;
- 1.13.C compare ways that young animals resemble their parents.
- 2.13.B record and compare how the structures and behaviors of animals help them find and take in food, water, and air;

Ohio Alignment (Ohio's Learning Standards)

K.LS.1: Living things have specific characteristics and traits.

K.LS.2: Living things have physical traits and behaviors, which influence their survival. Living things are made up of a variety of structures. Some traits can be observable structures. Some of these structures and behaviors influence their survival.

Florida Alignment (NGSSS)

- 1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.
- 1.L.14.1 Make observations of living things and their environment using the five senses.
- 1.L.14.2 Identify the major parts of plants, including stem, roots, leaves, and flowers.
- 1.L.14.3 Differentiate between living and nonliving things.
- 1.L.16.1 Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.
- 1.L.17.1 Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.

ROADMAP

Below is the recommended sequence of instruction for this unit.

At a Glance Unit 1: Animal and Plant Defenses								
Day	Lesson	Date	Day	Lesson	Date	Day	Lesson	Date
1	1.1		16	2.5 A		31	Optional Flex	
2	1.2		17	2.5 B		32	3.4 A	
3	1.3		18	2.6 A		33	3.4 B	
4	1.4 A		19	2.6 B		34	3.5	
5	1.4 B		20	2.7 A*		35	4.1	
6	1.5 A*		21	Optional Flex		36	4.2 A	
7	Optional Flex		22	2.7 B		37	4.2 B	
8	1.5 B		23	2.8 A		38	4.2 C	
9	2.1		24	2.8 B		39	4.3	
10	2.2 A		25	3.1 A		40	Review	
11	2.2 B		26	3.1 B		41	Review	
12	2.3 A		27	3.2 A		42	4.4 A	
13	2.3 B		28	3.2 B		43	4.4 B	
14	2.4 A		29	3.3 A		44	4.4 C	
15	2.4 B		30	3.3 B*				
<p>* Critical Juncture in lesson</p> <p>Formative Checks: Each lesson includes a formative check to gauge student progress, using varied, differentiated methods. Examples include: anecdotal records, oral and written explanations with evidence, illustrations with labels, physical models, presentations. Notice that we are moving away from exit tickets and multiple-choice questions. As you review responses, you will need to look for patterns of strength and areas that the teacher needs to make adjustments and provide more support.</p>						 <ul style="list-style-type: none"> • See Scope and Sequence for Scanning Deadline, Link • Allow 5 business days BEFORE the scanning deadline for grading responses and entering grades. 		