

MAPPING GRADE 3 SCIENCE INSTRUCTION

Concept: Animal Behavioral and Physical Adaptations

PWC Strand: Life Science

CMS Unit Test: Organisms Adaptations and Interactions

Reporting Categories: Life Processes & Living Systems

PWC Objective: 3.2.1

The student will investigate and understand that behavioral and physical adaptations allow animals to respond to life needs. Key concepts include:

- behavioral adaptations (hibernation, migration, instinct, and learned behavior) **(SOL 3.4a)**
- physical adaptations (camouflage, mimicry) **(SOL 3.4b)**

What Students Should Know (Critical Attributes)	What Students Should Be Able To Do (Essential Skills)
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are physical and behavioral adaptations? • What are some examples of physical and behavioral adaptations? • How do behavioral and physical adaptations allow animals to survive? <p><u>Critical Attributes:</u></p> <p>3.4a Behavioral adaptations allow animals to respond to life needs. Each organism has unique methods of adapting to its environment by means of different actions.</p> <p>3.4a Some behaviors are instinctive and others are learned. Instinctive behaviors are those that happen naturally and do not have to be learned. Instinctive behaviors include methods of gathering and storing food, finding shelter, defending oneself, raising young, hibernating (going into a deep winter sleep), and migrating (traveling long distances as the seasons change) . Learned behaviors are those obtained by interacting with the environment and need to be taught to the next generation in order for animals to survive, such as a bear cub learning to hunt.</p>	<ul style="list-style-type: none"> • Give examples of methods that animals use to gather and store food, find shelter, defend themselves, and rear young. • Describe the terms hibernation, migration, instinct, and learned behavior. • Explain how an animal’s behavioral adaptations help it live in its specific habitat. • Compare and contrast instinctive and learned behaviors.

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What Students Should Know (Critical Attributes)	What Students Should Be Able To Do (Essential Skills)
<p>3.4b Physical adaptations help animals survive in their environment. Physical adaptations are body structures that allow an animal to find and consume food, defend itself, and reproduce its species. Such adaptations would include camouflage (use of color in a surrounding to blend in), mimicry (looking or sounding like another living organism), chemical defenses (venom, ink, sprays), and specialized body coverings and parts, such as claws, beaks, feet, armor plates, skulls, and teeth.</p>	<ul style="list-style-type: none">• Distinguish between physical and behavioral adaptations of animals.• Describe and explain the terms camouflage and mimicry.• Compare the physical characteristics of animals, and explain how the animals are adapted to a certain environment.• Design and construct a model of a habitat for an animal with a specific adaptation.

MAPPING GRADE 3 SCIENCE INSTRUCTION

Concept: Feeding Relationships

PWC Strand: Life Science

CMS Unit Test: Organisms Adaptations and Interactions

Reporting Category: Life Processes & Living Systems

PWC Objective: 3.2.2

The student will investigate and understand the interdependent feeding relationships of plants and animals in aquatic and terrestrial food chains. Key concepts include:

- producer, consumer, decomposer **(SOL 3.5a)**
- herbivore, carnivore, omnivore **(SOL 3.5b)**
- predator and prey **(SOL 3.5c)**

What Students Should Know (Critical Attributes)	What Students Should Be Able To Do (Essential Skills)
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How are plants and animals interdependent? • What are producers, consumers, and decomposers? • What is a food chain? • How do these producers, consumers, and decomposers relate to one another in a food chain? • What are herbivores, carnivores, and omnivores? • What is the relationship between a predator and its prey? <p><u>Critical Attributes:</u></p> <p style="padding-left: 20px;">Living things in an ecosystem interact and depend upon each other for the food they need. We can observe and describe this interdependence of living things in terms of their feeding relationships.</p> <p>3.5a <i>Producers</i> are capable of making their own food. Plants are producers because they make their own food from sunlight, air, and water. <i>Consumers</i> are animals that eat living organisms (plants/animals). Consumers depend on producers and/or other consumers for their food. Animals are sometimes referred to as consumers because they eat food. <i>Decomposers</i> are organisms that break down dead plants and animals into small pieces that can be used by living things to grow.</p>	<ul style="list-style-type: none"> • Create and interpret a model of food chain showing producers and consumers. • Distinguish among producers and decomposers. • Identify sequences of feeding relationships in a food chain. • Infer that all food chains begin with a green plant.

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What Students Should Know (Critical Attributes)	What Students Should Be Able To Do (Essential Skills)
<p>3.5a A food chain shows a food relationship among plants and animals in a specific area or environment. A food chain shows part of a food web.</p> <p>3.5b Food chains can have an animal that eats only plants (herbivore). It can have an animal that eats only other animals (carnivore). It can have an animal that eats both plants and animals (omnivore).</p> <p>3.5c The carnivores that kill and eat other animals are called <u>predators</u>. The animals that get hunted by other animals are <u>prey</u>.</p> <p>Terrestrial organisms are found on land habitats such as deserts, grasslands, and forests. A terrestrial food chain shows the food relationships among organisms that live on land.</p> <p>Aquatic organisms are found in water habitats such as ponds, marshes, swamps, rivers, and oceans. An aquatic food chain shows the food relationships among organisms that live in water.</p>	<ul style="list-style-type: none">• Identify sequences of feeding relationships in a food chain.• Infer that all food chains begin with a green plant.• Distinguish among herbivores, carnivores, and omnivores.• Explain how a change in one part of a food chain might affect the rest of the food chain.• Differentiate between predators and prey.

MAPPING GRADE 3 SCIENCE INSTRUCTION

Concept: Aquatic and Terrestrial Environments

PWC Strand: Life Science

CMS Unit Test: Organisms Adaptations and Interactions

Reporting Categories: Life Processes & Living Systems
Earth/Space Systems & Cycles

PWC Objective: 3.2.3

The student will investigate and understand the basic characteristics of aquatic and terrestrial environments. Key concepts include:

- water-related environments including ponds, marshlands, swamps, streams, rivers, and ocean environments **(SOL 3.6a)**
- dry land environments including deserts, grasslands, rain forests, and forest environments **(SOL 3.6b)**
- populations and ecosystems **(SOL 3.6c)**
- plant and animal life cycles in aquatic and terrestrial environment **(SOL 3.8b)**

What Students Should Know (Critical Attributes)	What Students Should Be Able To Do (Essential Skills)
<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How are plants and animals dependent upon each other? • What are populations and communities? • What is the relationship between populations and communities? • What characteristics do we use to describe environments? • How does a water-related environment differ from dry land environment? • What kinds of plants and animals does each type of environment support? <p><u>Critical Attributes</u></p> <p>Environments have distinct characteristics and can be described based on the intensity of light they receive, temperature range, amount and type of precipitation that falls, types of organisms that live there, and major geographic features, such as the amount and type of land and water.</p> <p>3.6a <u>Water-related</u> environments contain either freshwater (ponds, streams, and rivers) or salt water (oceans) or a mix of fresh and salt water (marshlands). An example of a water-related community is an ocean made up of fish, crabs, and seaweed.</p>	<ul style="list-style-type: none"> • Describe major water-related environments and examples of animals and plants that live in each. • Analyze models or diagrams of different water-related environments in order to describe the community of organisms each contains and interpret how the organisms use the resources in that environment.

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What Students Should Know (Critical Attributes)	What Students Should Be Able To Do (Essential Skills)
<p>3.6b <u>Dry land related</u>, or <u>terrestrial</u>, environments are characterized by the features of the dry land they contain. An example of a dry land community is a forest made up of trees, squirrels, worms, rabbits, and hawks. Deserts, grasslands, forests, and tropical rainforests are examples of terrestrial environments.</p> <p>3.6a,b There are distinct differences among pond, marshland, swamp, stream, river, ocean, desert, grassland, rainforest, and forest environments.</p> <p>3.6c A <u>community</u> is all of the populations that live together in the same place.</p> <p>3.6c A <u>population</u> is a group of organisms of the same kind that live in the same place. Examples of a population are fish in a river, a group of swans in a pond, and a herd of cattle in the grassland.</p> <p>3.6c The size of a population can increase or decrease depending upon the resources available.</p> <p>3.8b Plants and animals undergo life cycles. For example, frogs begin as eggs in water. The eggs grow into tadpoles, tadpoles eventually become frogs, and adult frogs lay eggs to start the life cycle over again. In the plant life cycle, a seed grows into a new plant that forms seeds. Then the new seeds repeat the life cycle.</p>	<ul style="list-style-type: none"> • Create (model) a camouflage pattern for an animal living in a specific water-related environment. • Describe major dry-land environments and examples of animals and plants that live in each. • Analyze models or diagrams of different dry-land environments in order to describe the community of organisms each contains and interpret how the organisms use the resources in that environment. • Create (model) a camouflage pattern for an animal living in a specific dry land environment. • Compare and contrast water-related and dry-land environments. • Distinguish between a population and a community. • Explain how animals and plants use resources in their environment. • Predict what would occur if a population in a specific environment were to die. • Explain the pattern of growth and change that organisms, such as the butterfly and frog, undergo during their life cycle. <p>Teacher note:</p> <p>Students were introduced to the concept of life cycles and particular life cycles (butterfly and frog) at Grades K, 1, and 2. Emphasis on life cycles at Grade 3 should be to examine broader life cycles such as those found in aquatic and terrestrial environments.</p>