



Marine Science Institute: Kindergarten Inland Voyage, Sandy Beach

(*Themes: Human Impact, Food Web, Adaptations*)

K-LS1 From Molecules to Organisms: Structures and Processes

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

SEP Use observations to describe patterns in the natural world in order to answer scientific questions.

- Students observe sandy beach animals moving.
- Students observe animals' shape, color, size, texture etc.
- Students observe and discuss physical adaptations of the organisms and how they help them survive (e.g. how some animals burrow and how they feed.). (Theme: **Adaptations**)

LS1.C All animals need food in order to live and grow. They obtain food from plants or from other animals. Plants need water and light to live and grow.

- Students discuss stresses on sandy beach animals (e.g. shifting sand, waves, and tides).
- Students observe fish and invertebrate species and discuss how the animals feed.
- Students observe physical patterns in animals (eyes, ears, mouth, etc.).

CCC Patterns in the natural and human designed world can be observed as used as evidence

- Students observe patterns in the needs of living things.
- Students observe patterns in animal behavior.
- Students observe physical patterns in animals (eyes, ears, mouth, etc.).

K-ESS2 Earth's Systems

K-ESS-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

SEP Use observations to describe patterns in the natural world in order to answer scientific questions.

- Students observe sandy beach animals moving.
- Students observe animals' shape, color, size, texture etc.
- Students discuss the tides, which cause change on the sandy beach.

ESS2.D Weather and Climate: Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time.

- Students discuss stresses on sandy beach animals (e.g. shifting sand, waves, and tides).
- Students discuss how the sun warms the water.
- Students observe the temperature of the water by feeling the water in which the animals live.

ESS2.E Biogeology: Plants and animals can change their environment.

- Students discuss stresses on sandy beach animals (e.g. shifting sand, waves, and tides).
- Students discuss competition for food and space.
- Students discuss the functions of animals within their habitats.
- Students discuss how turtles lay their eggs on the sandy beach by observing artifacts and and photos.

ESS3.C Human Impacts on Earth Systems: Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things

- Students discuss and observe pollution in the wrack line (trash in the water). (Theme: **Human Impact**)
- Students observe synthetic materials such as plastic or Styrofoam and discuss what happens to these products over time. (Theme: **Human Impact**)
- Students brainstorm ways to protect beaches from pollution and marine debris. (Theme: **Human Impact**)

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- Students observe patterns in the needs of living things.
- Students observe patterns in animal behavior.
- Students observe physical patterns in animals (eyes, ears, mouth, etc.).

CCC Systems in the natural and designed world have parts that work together.

- Students observe and discuss the sandy beach habitat system (sun, sand, waves, animals, predators, etc.).

K-ESS3 Earth and Human Activity

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

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.

SEP Ask questions based on observations to find more information about the designed world.

- Students observe sandy beach animals moving. Questions include: How do animals move? What are the adaptations of the organisms? Why do they have those adaptations? Etc.
- Students observe animals' shape, color, size, texture etc.

SEP Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions.

- Students observe posters representing the ocean habitat and information about turtles.

ESS3.A Natural Resources: Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

- Students discuss the adaptations of sandy beach organisms (locomotion, protection, feeding, etc) and compare the different solutions to these challenges. (Theme: **Adaptations**)
- Students observe animals living in the water and discuss how they survive in their habitat.

ESS3.C Human Impacts on Earth Systems: Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

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ETS1.A: Defining and Delimiting an Engineering Problem: Asking questions, making observations, and gathering information are helpful in thinking about problems.

- Students ask questions about the sandy beach habitat.
- Students are asked questions about the sandy beach habitat.
- Students learn to inquire about what they see by making observations and asking questions.

CCC Systems in the natural and designed world have parts that work together.

- Students observe/discuss the sandy beach habitat system (sun, sand, waves, animals, predators etc.).
- Students discuss the food web of the sandy beach habitat. (Theme: **Food Web**)

CCC People encounter questions about the natural world every day.

- Students ask questions about the sandy beach habitat.
- Students are asked questions about the sandy beach habitat.
- Students learn to inquire about what they see by making observations and asking questions.

K-2 Engineering Design

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.

SEP Ask questions based on observations to find more information about the natural and/or designed world(s).

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CCC Structure and Function: The shape and stability of structures of natural and designed objects are related to their function(s).

- Students discuss tides and how they affect the habitat.
- Students observe animals living in the water and discuss how they survive in their habitat (shape, size, adaptations). (Theme: **Adaptations**)