Life at the Seashore

The seashore is a habitat where the ocean meets the land. It is a place where the changing water levels caused by the tides alternately cover it in ocean water and expose it high and dry to the air. Many fascinating and very different kinds of organisms make the seashore their home and survive very well here. These organisms are able to find food, reproduce, and protect themselves from the changing tides and crashing waves.

Unit Overview

In this Unit, students examine how living things survive at the seashore. Students take a look at what kind of place the seashore is and make observations on the kinds of structures organisms have that help them survive there, including structures that help them move, feed and protect themselves. They deepen their understanding of how a group of animals called Crustaceans survive and find food at the seashore, with investigations on a crayfish. As they build a 3-dimensional seashore in their classroom, students research an organism and present predictions for where on the seashore their animal would survive and grow. They create a Field Trip Guide to share their understanding of the seashore with visitors coming to observe their classroom seashore.

The Unit is built on three multi-session activities:

Investigation 1: Seashore Charades

In this engaging activity, students discuss what they would need and what they might expect to see on a field trip to the seashore, then embark on a virtual field trip. They learn what kind of place the seashore is and observe important conditions such as waves and changing tides. Students think about and discuss what an animal or seaweed living there would need or how it might behave to help it survive. The teacher adds to their ideas as s/he provides descriptive and interesting information about some common animals and seaweeds living at the seashore. S/he then guides small groups of students as they communicate this new information to the class through charades that demonstrate different body structures and behaviors used by seashore organisms. Students discover that organisms living here have different body parts, or structures, and behaviors, that help them sense their environment, find and take in food, protect themselves from predators, and have their young. Students learn and demonstrate their understanding that these structures are related to their function.

Investigation 2: Crayfish Capers

Students investigate a member of one of the most successful groups of animals in the world, the Arthropods, This group includes insects, spiders, and crustaceans such as lobsters, crabs, shrimp, beach hoppers, barnacles and crayfish. To build their understanding of how living things survive at the seashore, students observe and investigate a crustacean called a crayfish. Most crustaceans live in the ocean; however crayfish live in freshwater and thus are relatively easy to keep in the classroom. To learn more about how these organisms survive, students observe the external body parts of the crayfish and ask questions about how these organisms sense their environment. The students design and conduct an investigation to answer a question about how crayfish find and sense their food. They analyze data from another student investigation and make a claim about the structure(s) crayfish use to sense their food. Finally, students write and make labeled drawings to communicate what they have learned about crayfish.

Investigation 3: Build a Seashore

At first glance, the seashore habitat, much like a human city, seems busy and too big to navigate. When we notice a pattern, like recognizing neighborhoods, we can observe how the habitat is organized and attempt to explain how living things survive and grow there. One dominant pattern, found at most seashores in the world, are the bands, or **zones**, in which characteristic seaweeds and animals can be found. The crashing waves and rise and fall of the tides may present challenges to survival there, but the advantages include an environment rich with food, and plentiful shelter from both land and ocean predators. The zones describe the position on the shore in relation to the tides, ranging from zones exposed to air only at the lowest of tides, to zones that are rarely underwater and only splashed by waves at high tides. Body structures and behaviors provide organisms with the means to survive in these intertidal zones, such as conserving water so they can continue to breathe and maintain a cool temperature until the high tide returns. In this activity, students research an organism and present their prediction for where on the seashore the animal would survive and grow. They build a three dimensional (3-D) seashore in their classroom, to help them better understand the distribution of the organisms living there and create a Field Trip Guide

to share their understanding of the seashore with visitors coming to observe their classroom seashore.

Standards Correlations

The Next Generation Science Standards (NGSS) ask 1st grade students to develop an understanding of how plants and animals use their external parts to help them survive and grow and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The unit provides a curriculum that aligns with all the first grade life science disciplinary core ideas, (LS1.A; LS1.B; LS1.D; LS3.A partially; and, LS3.B). The cross cutting concepts of patterns and structure and function are called out in this Unit as organizing concepts for these disciplinary core ideas. NGSS also asks students to demonstrate grade-appropriate efficiency in science and engineering practices that deepen their understanding of science ideas and how science works. In this Unit, students plan and carrying out investigations, analyze and interpret data, construct explanations and design solutions, and obtain, evaluate, and communicate information to better understand life at the seashore.

The Unit also correlates with connected 1st grade Common Core State Standards in English language Arts &Literacy in History/Social Studies, Science, and Technical Subjects (CCSS ELA) and Common Core State Standards for Mathematics (CCSS Math), and the Ocean Literacy Principles.

Seashore Charades

NGSS	Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts

	Obtaining, Evaluating, and Communicating Information. Obtaining, evaluating, and communicating information in K– 2 builds on prior experiences and uses observations and texts to communicate new information. Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2) **Connections to Nature of Science.** Scientific Knowledge is Based on Empirical Evidence. Scientists look for patterns and order when making observations about the world. (1-LS1-2)	**LS1.A: Structure and Function.** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)	**Structure and Function.** The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)

CCSS ELA	**Reading: Informational Texts**	**Writing**	**Speaking & Listening**	**Language**

	Literacy R1.1.6 Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.	**Literacy W.1.8** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)	**Literacy. SL.1.1** Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups. **Literacy. SL.1.4** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly. **Literacy. SL.1.5** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings	**Literacy. L.1.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Partial coverage – indicated in red

Crayfish Capers

NGSS	Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
	Planning and Carrying Out Investigations. •Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. • Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question. • Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons. **Obtaining, Evaluating, and Communicating Information.** •Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question and/or supporting a scientific claim. • Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.	**LS1.A: Structure and Function.** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1) **LS1.D: Information Processing**. Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1) **LS3.B: Variation of Traits.** Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)	**Patterns.** In grades K-2, children recognize that patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. **Structure and Function.** The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)

CCSS ELA	Reading: Informational Texts	Writing	Speaking & Listening	Language
	Literacy RI.1.10 With prompting and support, read informational texts appropriately complex for grade. **Literacy RF.1.4** Read with sufficient accuracy and fluency to support comprehension.	**Literacy.W.1.2** Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. **Literacy W.1.7** Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).	**Literacy. SL.1.1** Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups. **Literacy. SL.1.4** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly. **Literacy. SL.1.5** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings	**Literacy. L.1.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. **Literacy. L.1.5** With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings
CCSS	**Measurement & Data**			

Math	**CONTENT.1.MD.C.4** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
	Operations & Algebraic Thinking
	CONTENT.1.OA.C.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Partial coverage – indicated in red

Build a Seashore

NGSS	Disciplinary Core Ideas	Science & Engineering Practices	Crosscutting Concepts
	LS1.A: Structure and Function. All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1) **LS1.B: Growth and Development of Organisms** Adult plants and animals can have young. In many kinds of animals, parents and the offspring	**Constructing Explanations and Designing Solutions**. Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. ➢ Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1) ➢ Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)	**Patterns.** In grades K-2, children recognize that patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. **Structure and Function.** The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)

	themselves engage in behaviors that help the offspring to survive. (1-LS1-2) **LS3.A: Inheritance of Traits** Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents. (1- LS3-1) **LS3.B: Variation of Traits.** Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)	**Obtaining, Evaluating, and Communicating Information.** Obtaining, evaluating, and communicating information in K– 2 builds on prior experiences and uses observations and texts to communicate new information. Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2) **Connections to Nature of Science.** Scientific Knowledge is Based on Empirical Evidence. Scientists look for patterns and order when making observations about the world. (1-LS1-2)	

CCSS ELA	**Reading: Informational Texts**	**Writing**	**Speaking & Listening**	**Language**
	Literacy R1.1.6 Distinguish between information provided by pictures or other illustrations and information provided by the words in a text. **Literacy RI.1.10** With prompting and	**Literacy.W.1.2** Write informative /explanatory texts in which they name a topic, supply some facts about the topic,	**Literacy. SL.1.1** Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.	**Literacy. L.1.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

	support, read informational texts appropriately complex for grade. **Literacy RF.1.4** Read with sufficient accuracy and fluency to support comprehension.	and provide some sense of closure. **Literacy W.1.8** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)	**Literacy. SL.1.4** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly. **Literacy. SL.1.5** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings	**Literacy. L.1.5** With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings

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Ocean Literacy Principles

- There is a greater diversity of organisms in the ocean than are found on land (K-2 S&S 5A; OLP 5a, c, d).
- The variety of different structures and behaviors that marine organisms have to help them survive (K-2 S&S 5A.4) provide unique and important examples for understanding structure and function (DCI LS1.A), growth and development of organisms (DCI LS1.B), and how organisms process information for growth and survival (DCI LS1.C).