

Structures of Life Unit Design - Grade 3

The **Structures of Life Module** consists of four sequential investigations dealing with observable characteristics of organisms. Students observe, compare, categorize, and care for a selection of organisms, and in so doing they learn to identify properties of plants and animals and to sort and group organisms on the basis of observable properties. Students investigate structures of the organisms and learn how some of the structures function in growth and survival.

RI Statements of Enduring Knowledge - (Established Goals):

LS 1 All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species). LS 3 Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).

LS2 Matter cycles and energy flows through an ecosystem.

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence***High Emphasis Targets
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LS1 (3-4)-1

Students demonstrate an understanding of classification of organisms by...

1a citing evidence to distinguish between living and non-living things.

1b identifying, sorting and comparing based on similar and/or different external features.

1c recording and analyzing observations/data about external features (e.g., within a grouping, which characteristics are the same and which are different).

1d citing evidence (e.g., prior knowledge, data) to draw conclusions explaining why organisms are grouped/not grouped together (e.g., mammal, bird, fish).

LS1 (3-4)-2 Students demonstrate understanding of structure and function-survival requirements by...

2a observing that plants need water, air, food, light and space to grow and reproduce; observing that animals need water, air, food, and shelter/space to grow and reproduce.

LS1 (3-4)-3

Students demonstrate an understanding of reproduction by...

3a observing changes and recording data to scientifically draw and label the stages in the life cycle of a familiar plant and animal.

3b sequencing the life cycle of a plant or animal when given a set of data/pictures.

3c comparing the life cycles of 2 plants or 2 animals when given a set of pictures.

LS1 (K-4) – INQ+POC –1

Sort/classify different living things using similar and different characteristics. Describe why organisms belong to each group or cite evidence about how they are alike or not alike.

Investigations 1-4

Science Stories, pp. 1-48

Investigation 3, Part 1, pp. 8-15

Investigation 4, Parts 1-2, pp. 8-19

Science Stories, pp. 17-18, 41-42

Investigation 4, Part 2, pp. 14-19

Investigation 4, Part 2, pp. 14-19

LS1 (K-4) SAE -2**

Identify the basic needs of plants and animals in order to stay alive. (i.e., water, air, food, space).

Investigation 1, Part 2, pp. 18-27

Investigation 2, Part 2, pp. 14-17

Investigation 3, Part 2, pp. 16-19

Science Stories, pp. 4-5, 10-11, 18, 22-34

LS1 (K-4) POC –3

Predict, sequence or compare the life stages of organisms – plants and animals (e.g., put images of life stages of an organism in order, predict the next stage in sequence, compare two organisms)

Investigation 2, Part 3, pp. 18-22

Investigation 2, Part 3, pp. 18-22

FOSS web, Activity: Life Cycles

Structures of Life	<p>LS1 (3-4)-4 Students demonstrate an understanding of structure and function survival requirements by...</p> <p>4a identifying and explaining how the physical structure/characteristic of an organism allows it to survive and defend itself (e.g., of a characteristic – the coloring of a fiddler crab allows it to camouflage itself in the sand and grasses of its environment so that it will be protected from predators).</p> <p>4b analyzing the structures needed to for survival of populations of plants and animals in a particular habitat/environment (e.g., populations of desert plants and animals require structures that enable them to obtain/conserves/retain water</p> <p>LS2 (3-4)-5 Students demonstrate an understanding of energy flow in an ecosystem by ... 5a identifying sources of energy for survival of organisms (i.e. light or food).</p> <p>LS2 (3-4)-6 Students demonstrate an understanding of food webs in an ecosystem by...</p> <p>6a demonstrating in a food web that all animals' food begins with the sun.</p> <p>6b use information about organisms to design a habitat and explain how the habitat provides for the needs of the organisms that live there.</p> <p>6c explaining the way that plants and animals in that habitat depend on each other.</p> <p>LS3 (3-4)-7Students demonstrate an understanding of equilibrium in an ecosystem by...</p> <p>7a explaining what plants or animals might do if their environment changes (e.g., changing food supply or habitat due to fire, human impact, sudden weather related changes).</p>	<p>LS1 (K-4) – FAF –4 <i>Identify and explain how the physical structures of an organism (plants or animals) allow it to survive in its habitat/environment (e.g., roots for water; nose to smell fire).</i></p> <p>Investigation 3, Part 1, pp. 8-15 Investigation 4, Part 1-2, pp. 8-19 Science Stories, pp. 3, 17-18, 20-21, 22-34, 37-39</p> <p>Science Stories, pp. 20-21, 22-34</p> <p>LS2 (K-4) – SAE –5 <i>Recognize that energy is needed for all organisms to stay alive and grow or identify where a plant or animal gets its energy.</i> Science Stories, p. 43</p> <p>LS2 (K-4) – SAE –6 <i>Describe ways plants and animals depend on each other (e.g., shelter, nesting, food).</i> Science Stories, p. 43 Investigation 3, Part 2, pp. 16-19</p> <p>LS3 (K-4) – SAE –7 <i>Using information (data or scenario), explain how changes in the environment can cause organisms to respond (e.g., survive there and reproduce, move away, die).</i></p> <p>Science Stories, pp. 35-36</p>
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Investigation – Time(45min periods)	Focus Questions (Essential Questions)	Big Ideas (Understandings)
1	<ul style="list-style-type: none"> • Where do seeds come from? • Where are seeds found on plants? 	<ul style="list-style-type: none"> • Seeds develop in the plant part called a fruit. • Different kinds of fruits have different kinds and number of seeds. • Seeds have a variety of properties.
3	<ul style="list-style-type: none"> • Can a seed grow without soil? • What effect does water have on seeds? • What would happen if we just watered the seeds instead of planting them in soil? 	<ul style="list-style-type: none"> • Seeds undergo change in the presence of water. • A seed is an organism, a living thing.
1	<ul style="list-style-type: none"> • How much water does a seed soak up? 	<ul style="list-style-type: none"> • A seed contains the embryo plant and stores food and water.
1	<ul style="list-style-type: none"> • What effect does water have on the seeds in the mini-sprouter? • How do the plants change over time? • How do seeds develop into plants? 	<ul style="list-style-type: none"> • Germination is the onset of a seed's growth.
1	<ul style="list-style-type: none"> • How can you grow plants without soil • What conditions do plants need in order to grow? 	<ul style="list-style-type: none"> • Plants need water, light, and nutrients to grow • Plants can grow in water if nutrients are added
1	<ul style="list-style-type: none"> • What is the sequence of the bean plant's life cycle? 	<ul style="list-style-type: none"> • The life cycle is the process of a seed growing into a mature plant, which in turn produces seeds. • The fruit of the plant develops from the flower
3	<ul style="list-style-type: none"> • What are the structures of a crayfish? • How do the structures of the crayfish help the crayfish to survive? 	<ul style="list-style-type: none"> • Crayfish have observable structures (legs, eyes, antennae, carapace, swimmerets, tail, pincers and mouth parts).

2	<ul style="list-style-type: none"> • What do we need to think about in order to build a suitable habitat for the crayfish in the classroom? • What do we need to know about the crayfish in order to keep them here in our classroom? 	<ul style="list-style-type: none"> • Crayfish have particular requirements for life (water, food and shelter). • Habitat is where an animal lives.
1	<ul style="list-style-type: none"> • What do crayfish do when something happens to them? 	<ul style="list-style-type: none"> • Behavior is what an animal does.
1	<ul style="list-style-type: none"> • Does each crayfish have its own house that it always goes to? • How can we keep track of crayfish movements over many days? 	<ul style="list-style-type: none"> • Some animals claim a territory that they protect from other animals.
2	<p>(NOTE: Since snails are hard to come by, Investigation 4 is optional.)</p> <ul style="list-style-type: none"> • What structures do land snails have? • What does a snail need in its habitat? 	<ul style="list-style-type: none"> • Land snails have a coiled shell, a large foot on which they glide, and a body with a variety of structures. • Land snails need water, food, air, and space.
1	<ul style="list-style-type: none"> • What functions do land snails structures serve? • How are the structures of the land snail and crayfish alike and how do they differ? 	<ul style="list-style-type: none"> • An organism's structures have functions that help it survive in its habitat. • The structures found on different kinds of organisms show some similarities and some differences.