Incredible Invertebrates

K-12th Virtual Education Class

Standards Alignment:

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

K-ESS3-1. Use a model to represent the relationship between the needs of different plants and 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.

1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

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3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.

3-LS4-2.Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*

4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1.Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

MS-LS1-2.   Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.
MS-LS1-3.   Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
MS-LS1-8.   Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.
MS-LS4-1.   Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
MS-LS2-2.   Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
MS-LS2-5.   Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*
MS-LS4-2.   Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
MS-LS4-3.   Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy
MS-LS4-4.   Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
MS-LS4-6.   Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.
HS-LS2-6.   Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
HS-LS2-7.   Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*
HS-LS2-8.   Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce.
HS-LS4-6.   Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.*
HS-LS4-3.   Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
HS-LS4-4.   Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
HS-LS4-5.   Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

Overview:

Pre-class activity (10-15 min): Take a virtual tour through the St. Louis Aquarium at Union Station! We will send a link to an online video that your students can watch to learn about the Aquarium and prepare them for the virtual class!

Virtual Class (60 min): Students will learn about the three common invertebrate species: octopus, squid, and jellyfish and what makes them different from each other. Students will play a game on the differences of octopus and squid and make a fun craft on jellyfish. We will also have a video from one of our Aquarist on our Moon Jellies and North Pacific Octopus.

Suggested Supplemental Projects:

- Students can create informational posters on the effects of plastic in our rivers and oceans. Jellyfish and plastic bags are very common for looking alike. Many animals, like sea turtles, eat jellyfish and confuse plastic bags for them. Have students teach other students on ways to reduce their plastic and what alternatives they can make.