Unit 3-Animals Through Time

Content Area: **Science**
Course(s): **Science 3**
Time Period: **Marking Period 3**
Length: **MP3**
Status: **Published**

Essential Questions

- What are the advantages and disadvantages of group living?
- How do animal groups differ from one another?

Big Ideas

- Being part of a group helps animals obtain food, defend themselves, and cope with changes.
- When the environment changes some organisms survive and reproduce, some move to new locations, some move into the transformed environment and some die.
- Some living organisms resemble organisms that once lived on earth.
- Different organisms vary in how they look and function because they have different inherited information; the environment also affects the traits that an organism develops.

Science and Engineering Practices

Planning and Carrying Out Investigations:

● Distinguish among facts, reasoned judgement based on research findings, and speculation in an explanation.

Science and Society

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CSDT Technology Integration

8.1.5.AP.6: Develop programs using an iterative process, implement the program design, and test the program

to ensure it works as intended.

Activity: Students will view the Mystery Science lesson: Can selection happen without people? Students will use Google sheets to create a spreadsheet of the anole population in the classroom. We will then make graphs depicting the decline in each population after each round. Students will see how the anole population with the most sticky foot pads outlive the other anoles. We will then the design and see how different variables affect the population.

Enduring Understandings

● 3-LS2.D Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size

Ecosystem Dynamics, Functioning, and Resilience

● 3-LS4.C When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. Some kinds of plants and animals that once lived on Earth are no longer found anywhere.

Evidence of Common Ancestry and Diversity

● 3-LS4.A Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.

Natural Selection

● 3-LS4.B Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.

Adaptation

● 3-LS4.B Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.

Biodiversity and Humans

● 3-LS4.D For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.

Inheritance of Traits

● 3-LS3.A Many characteristics of organisms are inherited from their parents. ● 3-LS3.A Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.

Variation of Traits

● 3-LS3.B Different organisms vary in how they look and function because they have different inherited information.

● 3-LS3.B The environment also affects the traits that an organism develops.

Student Learning Standards

Mathematics

● 3.NBT. Number and Operations in Base Ten. Science example: Be quantitative when describing the group behaviors of animals

● 3.MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. Science examples: (1) Given a bar graph showing the number of speeds of dinosaurs. Where would your speed fit on the graph. (2) Make a scaled bar graph to show the number of surviving individuals with and without an advantageous trait. How many more of the individuals with the advantageous trait survived?

● 3.MD.B.4.a Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. Science example: Make a line plot to show the length of each classmates speed vs. dinosaurs speed.

● 3.MD.B.4.b Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. Science examples: (1) Make a line plot to show the height of each of a number of plants grown from a single parent. Observe that not all of the offspring are the same size. Compare the sizes of the offspring to the size of the parent. (2) Make a similar plot for plants grown with insufficient water.

Focus Areas

Knowledge

● Animals either are either solitary or live in groups.

● Animals cannot spend their entire lives alone; they need each other in order to breed. ● Living in a group has advantages and disadvantages.

● Animal groups form for different reasons.

● Animal groups vary widely in size, even among the same species.

● Habitats include biotic and abiotic factors.

● Fossils indicate changes of environments on Earth.

● Adaptations help organisms survive.

● Environmental changes affect an organism’s survival.

● Predatory defense, foraging, raising young and other tasks can be shared in a group to help the species survive.

● Solitary organisms have to collect resources and benefit particular organisms. ● Reproduction is necessary for all organisms.

● Variations in grouping affect the survival of organisms.

Skills

● Understand advantages and disadvantages of group living through experience working in a group.

● Explain some animal behavior in relation to group or solitary living.

● Identify biotic and abiotic factors in the environment.

● Analyze and interpret data to understand what has lived on Earth over time. ● Identify and explain specific causes of environmental change; and the direct implications for species in that environment.

● Define a problem and propose solutions for an environmental issue.

● Analyze an organism and determine how their social behavior helps their survival ● Ask questions about organisms and why they choose the social behavior they do.

Understandings

● Construct an argument that some animals form groups that help members survive. ● Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

● 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.

● Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

● Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Resources

Primary Resource

● Mystery Science

Supplemental Resources

Flocabulary- Inherited and Acquired Traits

Leveled Readers

- Owl Life
- Polar Life
- Exoskeleton

Scientific Inquiry

Core

- Can selection happen without people?
- What kind of animals might there be in the future?
- Where can you find a whale in the desert?
- How do we know what dinosaurs looked like?
- Can you outrun a dinosaur?