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| **3rd Grade Structures of Life** | | |
| **Content Area:** Science | | |
| **Unit Title:** **Structures of Life** | | |
| **Target Course/Grade Level: 3** | | |
| **Unit Summary:**  Human life is unique, as far as we can tell, because humans have the capacity to design, plan, use history, imagine non-existent objects, and devise systems of laws and codes of behavior.  **Primary interdisciplinary connections:**  ELA/Literacy –  RI 1: Ask and answer questions to demonstrate understanding of a text.  RI 1: Ask and answer questions.  RI 2: Determine the main idea of a text.  RI 2: Determine the main idea of a text; recount the key details.  RI 3: Describe the relationship between scientific ideas, using language that pertains to cause and effect.  RI 3: Describe the relationship between scientific ideas, using cause and effect.  RI 3: Describe the relationship between scientific ideas.  RI 4: Determine the meaning of domain-specific words and phrases in text.  RI 5: Use text features to locate information.  RI 6: Distinguish your own point of view from that of the author of a text.  RI 7: Use information gained from illustrations and words to demonstrate understanding of the text.  RI 7: Use information gained from illustrations.  RI 8: Describe the logical connection in a text (cause and effect).  RI 9: Compare and contrast two texts on the same topic.  RI 10: Read and comprehend informational text.  RF 3: Apply word analysis skills in decoding words.  RF 4: Read with fluency.  W 1: Write opinion pieces.  W 2: Write informative text.  W 3: Write a narrative.  W 7: Ronduct short research projects.  W 8 : Recall from experience and gather information from print; take brief notes and sort evidence into provided categories.  L 1: Produce compound and complex sentences.  L 4: Determine the meaning of unknown words. .  L 4c: Use a known root word as a clue to the meaning of an unknown word.  L 6: Use domain-specific words.  L 6: Acquire and use domaine-specific words.  L 5: Demonstrate understanding of word relationships.  SL 1: Engage in collaborative discussions.  SL 1: Engage in collaborative discussions, building on others’ ideas.  SL 2: Determine the main idea from information presented orally.  SL 3: Ask and answer questions, offering appropriate elaboration and detail.  SL 4: Recount an experience with appropriate facts and relevant descriptive details. SL 4: Report on a topic.  SL 6: Speak in complete sentences.  Mathematics  MP.4 Model with mathematics. (3-LS1-1), (3-LS4-1),(3-LS4-2),(3-LS4-3),(3-LS4-4)  MP.2 Reason abstractly and quantitatively. (3-LS3-1),(3-LS3-2) (3-LS4-1),(3-LS4-2),(3-LS4-3),(3-LS4-4)  MP.5 Use appropriate tools strategically. (3-LS4-1)  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. (3-LS4-2),(3-LS4-3)  3.NBT Number and Operations in Base Ten (3-LS1-1)  3.NF Number and Operations—Fractions (3-LS1-1)  3.MD.B.4 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. (3-LS3-1),(3-LS3-2) | | |
| **21st Century Themes:**  Digital media will be used incorporated in project presentations. This module will develop students’ abilities to do and understand scientific inquiry. Students will identify questions, design and conduct scientific investigations to answer those questions, employ tools to gather, analyze, and interpret data. They will use data to construct reasonable explanations, develop and communicate investigations and evidence and understand that scientists use different kinds of investigations and tools to develop explanations using evidence and knowledge. This module will develop and extend students’ understandings about science and technology. Students will work collaboratively in teams and use tools and scientific techniques to make better observations. | | |
| **Unit Rationale**  We have power unknown in other life-forms. But we still share the most fundamental requirements with all other life-forms— nourishment, water, air, space, and suitable environment. Students must understand these facts so that they are prepared to assume responsibility for the well-being of the system of life on Earth.  The Structures of Life Module consists of four investigations dealing with big ideas in life science—plants and animals are organisms and exhibit a variety of strategies for life, organisms are complex and have a variety of observable structures and behaviors, organisms have varied but predictable life cycles and reproduce their own kind, and individual organisms have variations in their traits that may provide an advantage in surviving in the environment. | | |
| **Learning Targets** | | |
| Disciplinary Core 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.  All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (extended from grade 1)  **LS1.B: Growth and development of organisms**  Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.  **LS3A: Inheritance of traits**  Many characteristics of organisms are inherited from their parents.  Other characteristics result from individuals’ interactions the environment. Many characteristics involve both inheritance and environment.  **LS2.C: Ecosystem dynamics, functioning, and resilience**  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**.**  **LS2.D: Social interactions and group behavior**  Being part of a group helps animals ain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.  **LS3.B: Variation of traits**  Different organisms vary in how they look and function because they have different inherited information.  The environment also affects the traits that an organisms develops.  **LS4.A: Evidence of common ancestry and diversity**  Some kinds of plants and animals that once lived on earth are no longer found anywhere.  Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.  **LS4.B: Natural selection**  Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.  **LS4.C: Adaptation**  For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.  **LS4.D: Biodiversity and humans**  Populations live in a variety of habitats, and change in those habitats affects the organisms living there. | | |
| **PE #** | **Performance Expectations** | |
| 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-LS2-1. | Construct an argument that some animals form groups that help members survive. | |
| 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-LS4-1. | Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. | |
| 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. | |
| 3-LS4-3. | 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. | |
| 3-LS4-4. | 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. | |
| **Unit Essential Questions**   * How are seeds alike and different? * What effect does water have on seeds? * How much water does a seed soak up? * How do seeds disperse away from the parent plant? * What structures does a seedling have to help it grow and survive? * What is the sequence of the bean plant’s life cycle? * How do the roots of schoolyard plants compare to the roots of bean plants? * What are the structures of a crayfish? * How do crayfish structures and behaviors help crayfish survive? * What kind of behavior do crayfish display in their habitat? * How are the structures of crayfish and other animals alike and different? * What is needed to sustain a food chain? * What are the functions of the skeletal system? * In what ways are the skeletons of a rodent and a human similar? * What makes our skeletal system flexible? * How are fingerprints alike and different? | | **Unit Enduring Understandings**   * Seeds develop in the plant part called a fruit. * Different kinds of fruits have different kinds and numbers of seeds; seeds have a variety of properties. * A seed is an organism, a living thing. * Seeds undergo changes in the presence of water. * A seed contains the embryo plant and stores food. A seed grows into a new plant (reproduction). * Seed-dispersal mechanisms (wind, water, and animals) move seeds away from parent plants. * Germination is the onset of a seed’s development. * Plants need water, light, space, and nutrients to grow. * The life cycle is the sequence of stages during which a seed grows into an adult (mature) plant and produces seeds, which in turn produce new plants of the same kind. * The fruit of the plant develops from the flower. * Roots function to take up water and nutrients so they can be transported to other parts of the plant. Different kinds of plants have different root systems. * Crayfish have observable structures and behaviors that serve various functions in growth, survival, and reproduction. * Different organisms can live in different environments; organisms have adaptations that allow them to survive and reproduce in those environments. * Organisms are related in feeding relationships called food chains. * Difference in characteristics between individuals of the same species may provide an advantage in surviving. * Some animals claim a territory that they defend against others of their kind. Some organisms live in social groups that many help the individuals in the group survive. * A skeleton is a system of interacting bones. Humans have about 206 bones. Bones have several functions: support, protection, and movement. * The number and kinds of bones in an organism are characteristics inherited from the parents of the organism. * Muscles attach across joints to move bones. * Fossils are important evidence about extinct organisms and past environments. * Fingerprints can be sorted into three groups based on basic pattern: whorl, arch, and loop. |
| Unit Learning Targets -  Students observe, compare, categorize, and care for a selection of organisms. Students engage in science and engineering practices to investigate structures and behaviors of the organisms and learn how some of the structures function in growth and survival. Students look at the interactions between organisms of the same kind, among organisms of different kinds, and between the environment and populations over time. | | |
| **Evidence of Learning** | | |
| **Embedded Assessments:**   * Response Sheets * Performance Assessments * Science Notebook Entries   **Benchmark Assessments:**   * Investigation I-Checks * Surveys * Post-Test | | |
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