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| **Grade 2: Biological Evolutions: Unity and Diversity** | | |
| **Content Area:** Life Science | | |
| **Unit Title:** Insects and Plants | | |
| **Target Course/Grade Level:** Second Grade | | |
| **Unit Summary:**  In order to provide young students with in depth opportunities to experience the biodiversity on Earth, they will become naturalists and study insects and plants in and out of their classroom. | | |
| **Primary interdisciplinary connections:**  ***ELA/Literacy***  RI 1: Ask and answer questions to demonstrate understanding.  RI 2: Identify the main topic of the text.  RI 3: Describe the connection between scientific ideas or concepts.  RI 4: Determine the meaning of words and phrases in the text.  RI 5: Know and use text features.  RI 6: Identify the main purpose of the text.  RI 7: Explain how images contribute to and clarify text.  RI 9: Compare and contrast two texts on the same topic.   RF 4: Read with accuracy and fluency to support comprehension.   W 1: Write opinion pieces.  W 3: Write narratives.  W 5: Strengthen writing by revising and editing.  W 8: Recall information from experiences or gather information from provided sources to answer a question.  SL 1: Participate in collaborative conversations. SL 2: Recount or describe key ideas. SL 3: Ask and answer questions. SL 4: Recount an experience.  SL 5: Add drawings or other visual displays to recounts of experiences.  SL 6: Produce complete sentences.   L 1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. L 4: Determine or clarify the meaning of unknown or multiple-meaning words and phrases. L 6: Use acquired words and phrases.    MP.2: Reason abstractly and quantitatively. (2-LS2-1) MP.4: Model with mathematics. (2-LS2-1),(2-LS2-2) MP.5: Use appropriate tools strategically. (2-LS2-1) 2.MD.D.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems. (2-LS2-2) November 2013 | | |
| **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**  The anchor phenomenon for this module is the natural history of common insects and their interactions with plants. The guiding question for this module is what is the natural history of some plants and animals in different habitats? Students build on their understanding of growth and development of plants and animals from grades K–1 by observing new organisms over time. Students see the life cycles of insects unfold in real time and compare the structures and functions exhibited by each species to reveal patterns. At the same time, students grow a flowering plant in the classroom. They gain experience with the ways that plants and insects interact in feeding relationships, pollination, and seed Dispersal. | | |
| **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. Plants also have different parts (roots, stems leaves, flowers, fruits) that help them survive and grow. (Extended from G1)  **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. (3-LS1-1, foundational)  **LS2.A: Interdependent relationships in ecosystems** • Plants depend on water and light to grow. (2-LS2-1) • Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)  **LS4.D: Biodiversity and humans** • There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)  **ETS1.A: Defining and delimiting engineering problems** • Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)  **ETS1.B: Developing possible solutions** • Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solution to other people. (K-2-ETS1-2)  **ETS1.C: Optimizing the design solution**  • Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K-2-ETS1-3) | | |
| **Cross-Cutting Concepts-**  **Patterns** • Patterns in the natural and human-designed world can be observed, used to describe phenomena, and used as evidence.  **Cause and effect** • Events have causes that generate observable patterns. • Simple tests can be designed to gather evidence to support or refute student ideas about causes. **Structure and function** • The shape and stability of structures of natural and designed objects are related to their function(s).  **Stability and change** • Some things stay the same while other things change. • Things may change slowly or rapidly. | | |
| **PE #** | **Performance Expectations** | |
| **2-LS2-1.** | Plan and conduct an investigation to determine if plants need sunlight and water to grow. | |
| **2-LS2-2.** | Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.\* | |
| **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 | |
| **ETS1.A:** | Defining and delimiting an engineering problem | |
| **ETS1.B:** | Developing possible solutions | |
| **ETS1.C:** | Optimizing the design solution | |
| **Unit Essential Questions**  What is the natural history of a beetle?  What is the natural history of a flowering plant?  What is the natural history of a milkweed bug?  How does the natural history of moths compare to other insects? How can we compare the animals that live in different habitats?  How does the natural history of butterflies compare to other insects? How might insects pollinate schoolyard flowers? | | **Unit Enduring Understandings**  Insects need air, food, water, and space.  The life cycle of the beetle is egg, larva, pupa, and adult, which produces eggs.  Insects have characteristic structures and behaviors.    Adult insects have a head, thorax, and abdomen.  Insects have predictable characteristics at different stages of development.  There are many different kinds of living things and they live in different places on land and in water.  Plants need water, air, nutrients, light, and space.  As plants grow, they develop roots, stems, leaves, buds, flowers, and seeds in a sequence called a life cycle. Seeds develop into new plants that look like the parent plant.  Animals disperse seeds, moving them from one location to another where they grow.  Bees and other insects help some plants by moving pollen from flower to flower.  Insects need air, food, water, and appropriate space including shelter; different insects meet these needs in different ways in different habitats.  The life cycle of some insects is egg, nymph stages, and adult, which produces eggs.  Variations exist within a group of related organisms.  As insects grow, they molt their exoskeleton.  There are many different kinds of living things and they live in different places on land and in water.  Insects need air, food, water, and space including shelter; different insects meet these needs in different ways.  The life cycle of some insects involves complete metamorphosis—egg, larva, pupa, and adult, which produces eggs.  Some kinds of plants provide habitats for a greater diversity of insects and other small animals.  The life cycle of the butterfly involves complete metamorphosis. Butterflies construct chrysalises when they pupate.  Bees and other insects help some plants by moving pollen from flower to flower.  Life cycles are different for different animals.  There are many different kinds of living things and they live in different places on land and in water.  There are many different kinds of living things and they live in different places on land and in water. |
| **Unit Learning Targets -**  Throughout the Insects and Plants Module, students engage in science and engineering practices to collect and interpret data to answer science questions, develop natural history models to communicate interactions and processes, and define problems in order to develop solutions. Students gain experiences that will contribute to understanding of crosscutting concepts of patterns; cause and effect; structure and function; and stability and change. | | |
| **Evidence of Learning** | | |
| **Embedded Assessments:**   * **Response Sheets** * **Performance Assessments** * **Science Notebook Entries**   **Benchmark Assessments:**   * **Investigation I-Checks** * **Surveys** | | |
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