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| **Title: Lagoon**  **Duration: 6 weeks** | **Course: Life Science** |
| **Stage 1 – Desired Results** | |
| **Standards** | |
| **Priority**  **SC.4.L.17.4** Recognize ways plants and animals, including humans, can impact the environment  **SC.4.L.17.3** Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.  **LAFS.4.RI.1.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.  **LAFS.4.RI.1.2** Determine the main idea of the text and explain how it is supported by key details; summarize the text.  **LAFS.4.RI.2.4** Determine the meaning of general academics and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area  **LAFS.4.L.3.4** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.  **LAFS.4.L.3.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., *wildlife, conservation,* and *endangered* when discussing animal preservation).  **Secondary**  **SC.4.L.16.4** Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.  **SC.4.L.17.2** Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.  **SC.4.L.17.3** Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.  **SC.4.N.1.1** Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.  **SC.4.N.1.3** Explain that science does not always follow a rigidly defined method (“the scientific method”) but that science does involve the use of observations and empirical evidence.  **SC.4.N.1.4** Attempt reasonable answers to scientific questions and cite evidence in support.  **SC.4.N.1.6** Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.  **SC.4.N.1.7** Recognize and explain that scientists base their explanations on evidence.  **LAFS.4.RI.2.4** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.  **LAFS.4.RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.  **LAFS.4.W.4.8** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.  **LAFS.4.SL.1.2** Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.  **LAFS.4.SL.2.4** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.  **LAFS.4.L.1.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.  **Math Standards for Mathematical Practice**  **MP.4** Model with mathematics.  **MP.5** Use appropriate tools strategically.  **SC.4.L.16.1**—plant reproduction (touched on with mangrove life cycles)  **SC.4.L.16.2**—structural adaptations (touched on with mangroves and lionfish)  **SC.4.L.16.3**—behavioral adaptations (touched on with lionfish and manatees) | |
| **Transfer** | |
| Students will be able to independently use their learning to…   * Explain the impact a specific plant or animal (including humans) can have on the Indian River Lagoon ecosystem. * Illustrate the life cycle of a plant and animal in the Indian River Lagoon, including those that go through both complete and incomplete metamorphosis * Develop a solution to the problem of lionfish, an invasive species in the Indian River Lagoon. | * Trace the flow of energy in an Indian River Lagoon food web. * Conduct a systematic investigation of pollution in the Indian River Lagoon. * Construct a written response to an informational text. |
| **Meaning** | |
| **UNDERSTAND**  Students will understand that…   * Environment plays a role in plant and animal survival. * Both human activities and natural events can have major impacts on the environment. * Lifecycles vary among organisms but energy flows through the sun through producers to consumers. | **ESSENTIAL QUESTIONS**  Students will keep considering…   * How do the actions of individuals (human, animal, or plant) affect the entire ecosystem? * How are animals influenced by their environment? * What is survival? |
| **Acquisition** | |
| **Know**  Students will know…   * Stages of a life cycle * Animals have basic needs * Structure of plants * Function of reproduction * Classify animals by physical characteristics * Know plants and animals resemble their parents | **Do**  Students will be skilled at…   * Researching information (how to…, incorporate with media) * Content-specific vocabulary * Habitats of Florida plants and animals * Finding evidence from multiple sources * Organizing information |

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| **Stage 2 – Evidence** | |
| **Lesson Plans**  **(5E Model)** |  |
| **Lesson 1 Title: *Life Cycles of the Indian River Lagoon***  This PowerPoint-based lesson will take students through the life cycles of animals and plants in the Indian River Lagoon.  **Lesson 3 Title: *What’s for Dinner?***  This update of a Lagoon Quest lesson explores all aspects of food webs and food chains  **Lesson 4 Title: *Who am I?***  This Lagoon Quest lesson helps students realize that loss of habitat is the main reason 15 IRL animal species are endangered.  **Lesson 5 Title: *Lionfish Invasion***  This PowerPoint-based lesson introduces students to an invasive species that could wreak havoc on the IRL ecosystem.  **Lesson 6 Title: *Stopping the Lionfish Invaders—an Engineering Design Challenge***  In this STEM lesson, students create a solution to the problem of lionfish in the Indian River Lagoon.  **Lesson 7 Title: *Wetlands in a Pan***  This Lagoon Quest lesson is a demonstration of why wetlands are so important to the Indian River Lagoon.  **Lesson 8Title: *Algal Bloom! CIS***  Using the Comprehension Instructional Sequence, teachers guide students through a close read of a complex informational text. \*\*ELA-focused lesson  **Lesson 9 Title: *Testing pH***  This “Lagoon Quest” lesson leads students through pH testing of common liquids.  **Lesson 10 Title: *pHertilizer Running Wild***  Teacher will guide students through the steps of the Scientific Method as they investigate this question:  “How do different amounts of fertilizer affect the pH of Indian River Lagoon water?” | **PERFORMANCE TASK(S):**  Students will show that they really understand by evidence of:   * Design and presentation of an animal poster that recognized and explains characteristics of Florida plants and animals including life cycle and behaviors shaped by heredity and learning * Using their knowledge from the above activity, students will debate and justify if/how their animal will survive the next 10, 20, or 30 years in Florida environments. * Have students create a computer-based summary of their learning to be presented to the class as a way of explaining their learning to others. (***Technology Extension***) Some examples of student-created projects are:Glogster (poster), Prezi or PowerPoint presentation, Photostory (find images that pertain to our unit—or take photos throughout—and build a Photostory, Create a quiz on Edmodo * ***Current Event Extension:*** Have students research other invasive species, how they are impacting the ecosystem, and how they first were introduced in Florida. Some examples are: Brazilian pepper, Cuban tree frog, kudzu, Burmese pythons (huge problem in the Everglades), iguanas in south Florida,tilapia (African freshwater fish species) |
| **Engaging Activities:**   * Guest Speaker from Lagoon Learn Team (Brevard Zoo) * Field Trip to Indian River Lagoon (Brevard Zoo) | **OTHER EVIDENCE:**  Students will show they have achieved Stage 1 goals through:  **Formative Assessment:**   * Each lesson plan has a formative assessment component in the Engage portion of the lesson plan * Students will choose one of the performance tasks as a formative assessment   **Summative Assessment:**   * Have students write an extended response (several paragraphs long) to the Essential Question: * *How do the actions of individuals (human, animal, or plant) affect the entire ecosystem* * Evaluate unit with following rubrics: Science Content,Writing Process |