Classroom Adventures

Alignment with Next Generation Science Standards and Common Core State Standards 2019

3rd Grade Alignment - Aquatic Investigators	**NGSS:** 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. 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC.RSL.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. CC.RSL.3.10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently. CC. WS.3.1b: Provide reasons that support the opinion. CC.WS.3.2a: Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. CC.WS.3.2b: Develop the topic with facts, definitions, and details.
4th Grade Alignment - Aquatic Investigators	**NGSS:** 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

	Common Core ELA: CC.RLS.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. CC.RLS.4.10: By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range. CC.WS.4.1b: Provide reasons that are supported by facts and details. CC.WS.4.2a: Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. CC.WS.4.2b: Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. CC.WS.4.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.
5th Grade Alignment - Aquatic Investigators	**Science:** 5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. 5-ESS3-1 – Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC. RLS.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. CC.RLS.5.10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.

	CC.WS.5.1b: Provide logically ordered reasons that are supported by facts and details. CC.WS.5.2a: Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. CC.WS.5.2b: Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. CC.WS.5.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.
Program Components - Aquatic Investigators	*In the program, students complete short "tools," which are digital interactives focused around one learning objective.* Healthy Coral: **Learning Objective:** Students will investigate the effect if unhealthy coral on the ocean ecosystem. **Interactive Tool Description:** Students will see the impact of increasing ocean temperatures on coral bleaching. They will then see how bleached coral impacts the larger ecosystem. Food Chain: **Learning Objective:** Students will be able to track energy through a food chain. **Interactive Tool Description:** Students will put a food chain in order and see how energy, starting from the Sun, travels through it. They will then use their knowledge of food chains to see how ocean acidification impacts pteropods, the base of the food chain, and how it impacts the entire ecosystem. Habitat Loss: **Learning Objective:** Students will understand how what causes water level rise and how rising ocean levels impact the monk seals' habitat. **Interactive Tool Description:** Students will see how the monk seal's habitat changes has they raise the water level. They will also investigate the cause of water level rise and how land ice melting causes the water level to rise. Ocean Acidification:

	Learning Objective: Students will be able to understand how carbon dioxide affects the acidity of the ocean. **Interactive Tool Description:** Students will first investigate how carbon dioxide enters the ocean and the chemical reactions that take place to make the ocean more acidic. They will then see how changes in acidity impact the small animals and plant in the ocean. <u>Beach Clean Up:</u> **Learning Objective**: Students will understand how trash travels around the world and make decisions about whether items are trash, recyclable, or compostable. **Interactive Tool Description**: Students first investigate a piece of trash and map its route through the ocean. They will then sort many pieces of trash to determine if they should be thrown away, recycled, or composted. <u>Engineering Design Activity:</u> **Learning Objective:** Students will be able to use the engineering design cycle to build a tool related to the story line of the Adventure. **Interactive Tool Description:** Students will go through the components of the engineering design cycle. They will then use recycled materials and materials found in classrooms to create a tool that is aligned with the story line of the simulated Adventure. <u>Writing Activity:</u> **Learning Objective:** Students will be able to communicate the information they learned in the Adventure through non-fiction writing. **Interactive Tool Description:** Students will be able to choose between several non-fiction writing styles and prompts and use a provided graphic organizer to write a reflection of what they learned.

	
3rd Grade Alignment - Dirt Decoders	**Science:** 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC.RSL.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. CC.RSL.3.10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently. CC. WS.3.1b: Provide reasons that support the opinion. CC.WS.3.2a: Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. CC.WS.3.2b: Develop the topic with facts, definitions, and details.
4th Grade Alignment - Dirt Decoders	**Science:** 4-ESS1-1: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. 4-ESS2-1: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. 4-ESS2-2: Analyze and interpret data from maps to describe patterns of Earth's features. 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

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5th Grade Alignment - Dirt Decoders	**Science:** 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC. RLS.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. CC.RLS.5.10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently. CC.WS.5.1b: Provide logically ordered reasons that are supported by facts and details. CC.WS.5.2a: Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g.,

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Program Components - Dirt Decoders	*In the program, students complete short "tools," which are digital interactives focused around one learning objective.* <u>Fossil Dating Tool</u> **Learning Objective**: Students will be able to determine the relative age of age of rocks based on their position in rock layers. **Interactive Tool Description:** Students will see how rock layers deeper in the Earth are older than layers closer to the surface. They will see a short animation of how rock layers settle and will determine the relative age of rocks. <u>Weathering Tool</u> **Learning Objective**: Students will be able to investigate real-world examples of physical and chemical weathering. **Interactive Tool Description:** There is an image of the Grand Canyon with four locations highlighted, each showing a different form of weathering. Physical weathering by wind and water and chemical weathering by water and acid are shown. <u>Erosion Tool</u> **Learning Objective**: Students will understand how erosion takes place through several means, such as wind, water, and glacial. **Interactive Tool Description:** Students will see the effects of three types of erosion – water, wind, and glacial—on landscape. They will be able to see the change of the land over time, highlighting the timescale of erosion. Each study will investigate a different location in the United States that has experienced this erosion. <u>Rates of Weathering and Erosion Tool</u>: **Learning Objective**: Students will understand the impact rainfall, wind, and preventative measures (vegetation) have on the rate of coastal erosion.

	Interactive Tool Description: Students will be able to increase and decrease the amount of rainfall, wind, and vegetation to see how the coastal erosion changes. This will be looking at the impact on the coastline of North Carolina. <u>Rock Analysis Tool</u> **Learning Objective**: Students will be able to classify rocks as sedimentary, igneous, or metamorphic based on observations and statements about the rock. **Interactive Tool Description:** Students will be given several mystery rocks and classify them based on how they were formed and other characteristics. <u>Engineering Design Activity:</u> **Learning Objective:** Students will be able to use the engineering design cycle to build a tool related to the story line of the Adventure. **Interactive Tool Description:** <u>Students will go through the components of the engineering design cycle. They will then</u> use recycled materials and materials found in classrooms to create a tool that is aligned with the story line of the simulated Adventure. <u>Writing Activity:</u> **Learning Objective:** Students will be able to communicate the information they learned in the Adventure through non-fiction writing. **Interactive Tool Description:** Students will be able to choose between several non-fiction writing styles and prompts and use a provided graphic organizer to write a reflection of what they learned.

	
3rd Grade Alignment – Nature Rangers	**Science:** 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC.RSL.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. CC.RSL.3.10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently. CC. WS.3.1b: Provide reasons that support the opinion. CC.WS.3.2a: Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. CC.WS.3.2b: Develop the topic with facts, definitions, and details.
4th Grade Alignment – Nature Rangers	**Science:** 4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC.RLS.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.

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5th Grade Alignment – Nature Rangers	**Science:** 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. 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **Common Core ELA:** CC. RLS.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. CC.RLS.5.10: By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently. CC.WS.5.1b: Provide logically ordered reasons that are supported by facts and details. CC.WS.5.2a: Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g.,

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Program Components – Nature Rangers	*In the program, students complete short "tools," which are digital interactives focused around one learning objective.* <u>Plant External Structure Tool:</u> **Learning Objective**: Students will be able to label a plant's external features and know their function. **Interactive Tool Description**: Students will see an image of a plant with a flower with parts highlighted on the roots, stem, leaf, and flower. When the parts are clicked, information pops up and there is a quick animation that shows what it does (roots spreading, stem growing, etc.) <u>Photosynthesis Tool</u>: **Learning Objective**: Students will be able to observe how sunlight, water, and carbon dioxide allow plants to grow and select ideal conditions for plant growth. **Interactive Tool Description**: Students see an image of a plant. There are three sliders – sunlight, water, carbon dioxide. As you increase each of the sliders, the plant will grow, and they will see sunlight going into the chloroplast, the water going into the roots, and the carbon dioxide going into the stomata of the leaves. For an assessment, students will be given choices of different environments and they select the best environment for growth. <u>Plant Reproduction Tool</u>: **Learning Objective**: Students will be able to identify the reproductive parts of a plant based on a description of their function. **Interactive Tool Description**: There is a virtual "dissection" tool. An image of a lily is shown and as students move a slider, layers will be removed, and individual pieces highlighted with a statement about what it does. Once it has been dissected, students will label the plant. The labeled parts are: petal, stamen, pistil, stigma, style, ovary, ovule, fruit, and seed. <u>Seed Dispersal Tool</u>:

	Learning Objective: Students will be able to predict the method of dispersal for seeds. **Interactive Description**: Given a picture of a seed, students decide whether the seed is most likely dispersed through water, wind, or animal. They drag it onto the location (all three are represented in the background/landscape). <u>Ecosystem Tool</u>: **Learning Objective**: Students will be able to identify species as consumers, producers, and decomposers and identify links between different parts of an ecosystem. **Interactive Description**: There are two parts. First, given images of different organisms and a 1-2 sentence description, students will sort them into producers, decomposers, and consumers. Next, there is an image of the Smoky Mountains ecosystem with 5-6 parts (e.g., sun, animals, lake, etc.) highlighted, along with lines showing the interdependence between parts of the ecosystem. When students click on the lake, everything connected to the lake will gray out. After that, everything connected to something grayed out will also gray out. This shows the impact that changing the abundance of one resource has on the rest of the ecosystem. <u>Engineering Design Activity:</u> **Learning Objective:** Students will be able to use the engineering design cycle to build a tool related to the story line of the Adventure. **Interactive Tool Description:** <u>Students will go through the components of the engineering design cycle. They will then</u> use recycled materials and materials found in classrooms to create a tool that is aligned with the story line of the simulated Adventure. <u>Writing Activity:</u> **Learning Objective:** Students will be able to communicate the information they learned in the Adventure through non-fiction writing. **Interactive Tool Description:** Students will be able to choose between several non-fiction writing styles and prompts and use a provided graphic organizer to write a reflection of what they learned.