



## Program Components and Standards

Students complete short digital interactives tools focused on one learning objective. Each tool is grounded in both Next Generation Science Standards (NGSS) and Common Core State Standards (CCSS).

### Fossil Dating Tool

**Learning Objective:** Students will be able to determine the relative age of rocks based on their position in rock layers.

**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.

**Standards:**

NGSS 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

CCSS.ELA-LITERACY.RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

### Map Selection

**Learning Objective:** Students will learn about four different types of maps: physical, temperature, topographical, and political.

**Tool Description:** Students will select the proper map to use to locate the remainder of the fossil.

**Standards:**

NGSS 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.

CCSS.ELA-LITERACY.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.

## Map Study

**Learning Objective:** Students will learn about parts of a map and landforms.

**Tool Description:** Students will read a map and match the landforms to the icons.

**Standards:**

NGSS 4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.

CCSS.ELA-LITERACY.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.

## Weathering

**Learning Objective:** Students will be able to investigate real-world examples of physical and chemical weathering.

**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.

**Standards:**

NGSS 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.

NGSS 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.

## Erosion

**Learning Objective:** Students will understand how erosion takes place in several ways, such as wind, water, and glaciers.

**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.

**Standards:**

NGSS 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.

NGSS 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.

## Erosion Over Time

**Learning Objective:** Students will understand the impact water, wind, and preventative measures (vegetation) have on the rate of coastal erosion.

**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.

**Standards:**

NGSS 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.

NGSS 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.

## Team Rescue Contributions

**Learning Objective:** Each team will work together to determine how to help rescue the trapped geologist.

**Tool Description:** Students will assist the rescue of the geologist by entering coordinates for the drone, programming the drone, or selecting the necessary supplies.

**Standards:**

CCSS.MATH.CONTENT.5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates.

## Rock Study

**Learning Objective:** Students will be able to classify rocks as sedimentary, igneous, or metamorphic based on observations and statements about the rock.

**Tool Description:** Students will be given several mystery rocks and classify them based on how they were formed and other characteristics.

**Standards:**

NGSS 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.

**Engineering Activity**

**Learning Objective:** Students will be able to use the engineering design cycle to build a tool related to the story line of the Adventure.

**Tool Description:** Students will learn the components of the engineering design cycle. They will then use recycled materials and materials found in classrooms to create a raft that can be used in rescue missions, as it was used in the Adventure.

**Standards:**

NGSS 3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

NGSS 3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

CCSS.ELA-LITERACY.RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

**Nonfiction Science Writing Exercise**

**Learning Objective:** Students will be able to communicate the information they learned in the Adventure through nonfiction writing.

**Tool Description:** Students will be able to choose between several nonfiction writing styles with suggested prompts and use a provided graphic organizer to write a reflection of what they learned.

**Standards:**

CCSS.ELA-LITERACY.W.5.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

CCSS.ELA-LITERACY.W.5.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.