

## Grade 4 – Earth & Space Sciences



### Earth’s Place in the Universe

Standard	Learning Objective	Clarification Statement
<p><b>4.ESS1.1</b> Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p> <p><i>Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.</i></p>	<p><b>1.1</b> Identify patterns in <b>rock and fossil formation</b>.</p> <p><b>1.2</b> Explain <b>changes in landscape</b> over time.</p>	<p>Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.</p>

### Earth’s Systems

Standard	Learning Objective	Clarification Statement
<p><b>4.ESS2.1</b> Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p> <p><i>Assessment Boundary: Assessment is limited to a single form of weathering or erosion.</i></p>	<p><b>1.0</b> Describe the <b>effects of weathering</b>.</p>	<p>Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.</p>
<p><b>4.ESS2.2</b> Analyze and interpret data from maps to describe patterns of Earth’s features.</p> <p><i>Assessment Boundary: None.</i></p>	<p><b>2.0</b> Analyze maps to describe <b>patterns in Earth’s features</b>.</p>	<p>Maps can include topographic maps of Earth’s land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.</p>

### Earth and Human Activity

Standard	Learning Objective	Clarification Statement
<p><b>4.ESS3.1</b> Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p> <p><i>Assessment Boundary: None.</i></p>	<p><b>1.1</b> Describe how <b>energy and fuels are derived</b> from natural resources.</p> <p><b>1.2</b> Describe how using <b>energy and fuel affects the environment</b>.</p>	<p>Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.</p>
<p><b>4.ESS3.2</b> Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</p> <p><i>Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.</i></p>	<p><b>2.0</b> Compare solutions that <b>reduce the impact of natural Earth processes on humans</b>.</p>	<p>Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.</p>