

## The Changing Earth Grade 8

### Texts to be used:

McDougal Littell & \*Unit Resource Book (URB) where noted

The Changing Earth (CE)

#### RI Statements of Enduring Knowledge - (Established Goals):

ESS1 - The Earth and earth materials as we know them today have developed over long periods of time, through continual change processes.

ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.

PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

Related Rhode Island GSE's (Understandings)	RI Assessment Targets Assessment Evidence
<p><b>ESS1 (5-6)–1</b> Students demonstrate an understanding of processes and change over time within earth systems by ...</p> <p><b>1a</b> <u>identifying and describing the layers of the earth.</u></p> <p><i><b>1b</b> <u>plotting location of volcanoes and earthquakes and explaining the relationship between the location of these phenomena and faults.</u></i></p> <p><b>Students demonstrate an understanding of characteristic properties of matter by ...</b></p> <p><b>1a</b> measuring mass and volume of both regular and irregular objects and using those values as well as the <u>relationship <math>D=m/v</math> to calculate density.</u></p> <p><i>ESS1 (7-8)–1</i> Students demonstrate an understanding of processes and change over time within earth systems by ...</p> <p><b>1a</b> <u>citing evidence and developing a logical argument for plate movement using fossil evidence, layers of sedimentary rock, location of mineral deposits, and shape of the continents.</u></p> <p><b>ESS1 (7-8)–3</b> Students demonstrate an understanding of processes and change over time within earth systems by ...</p> <p><b>3a</b> <u>evaluating slow processes (e.g. weathering, erosion, mountain building, sea floor spreading) to determine how the earth has changed and will continue to change over time.</u></p>	<p><b>ESS1 (5-8) INQ+ POC –1</b> Use geological evidence provided to support the idea that the Earth’s crust/lithosphere is composed of plates that move.</p> <ul style="list-style-type: none"> <li>• Text Reference: Chapter 1.0-1.1 pp. 6-13 (CE)</li> <li>• Investigation: Earth’s Moving surface p.7 (CE)</li> <li>• Investigation: Will a denser material sink or float? (CE)</li> <li>• How can you model the layers of the earth? (CE)</li> </ul> <p><b>ESS1 (5-8) POC –3</b> <i>Explain how earth events (abruptly and over time) can bring about changes in Earth’s surface: landforms, ocean floor, rock features, or climate.</i></p> <ul style="list-style-type: none"> <li>• Text reference: Chapter 1.2-1.3</li> <li>• Use visuals to show what the earth was like 200 million years ago, 180 million, etc. (CE)</li> <li>• Class discussion: Mid Ocean ridges, etc. and sea floor spreading, p.21</li> <li>• Investigation: Convection and Plate Movements, p. 20,21 (CE)</li> <li>• Investigation: Magnetic reversals, p.25 (CE)</li> <li>• Investigation: What happens when plates move apart? P. 22 (CE)</li> <li>• Investigation: What happens when tectonic plates collide? P. 30 (CE)</li> <li>• Text reference: 2.0 -2.3, pp. 44 -67 (CE)</li> <li>• Investigation: How does energy travel? P. 51 (CE)</li> <li>• Class discussion Seismic waves diagram p. 55 (CE)**</li> </ul> <p><b>ESS1 (5-8) INQ+ POC –5</b></p>

**3b** evaluating fast processes (e.g. erosion, volcanoes and earthquakes) to determine how the earth has changed and will continue to change over time.

**3c** investigating the effect of flowing water on landforms (e.g. stream table, local environment).

**ESS1 (5-6)-3**

**Students demonstrate an understanding of processes and change over time within earth systems by ...**

**3a** describing events and the effect they may have on climate (e.g. El Nino, deforestation, glacial melting, and an increase in greenhouse gases).

**ESS1 (5-6)-5**

**Students demonstrate an understanding of processes and change over time by ...**

**5a** representing the processes of the rock cycle in words, diagrams, or models.

**5b** citing evidence and developing a logical argument to explain the formation of a rock, given its characteristics and location. (e.g. classifying rock type using identification resources).

**PS2 (7-8) -7**

**Students demonstrate an understanding of heat energy by...**

**7a** designing a diagram, model, or analogy to show or describe the motion of molecules for a material in a warmer and cooler state.

**7b** explaining the difference among conduction, convection and radiation and creating a diagram to explain how heat energy travels in different directions and through different materials by each of these methods.

**\*IN THIS UNIT EMPHASIS IS ON HEAT ENERGY FLOW WITHIN THE EARTH AND ITS SURFACE**

*Using data about a rock's physical characteristics make and support an inference about the rock's history and connection to rock cycle.*

- Investigation: How does pressure affect a solid material? P. 45 (CE)

**PS2 (5-8) INQ+SAE+POC – 7**

*Use data to draw conclusions about how heat can be transferred (convection, conduction, radiation).*

- Investigation: Convection and Plate Movements,p. 20,21 (CE)

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	<b>Focus Questions (Essential Questions)</b>	<b>Instructional Activities &amp; Investigations (INQ)</b>	<b>Big Ideas (Understandings)</b>
<b>1</b>	<b>What are the layers of the earth?</b>	<ul style="list-style-type: none"> <li>Text Reference: Chapter 1.1 pp. 6-13 <b>(CE)</b></li> <li>Investigation: Earth's Moving Surface p.7 <b>(CE)</b></li> <li>Investigation: Will a denser material sink or float? <b>(CE) p.9</b></li> <li>How can you model the layers of the earth? <b>(CE) p.12</b></li> </ul>	<ul style="list-style-type: none"> <li>Earth is made up of materials with different <b>densities</b>.</li> <li>Denser materials generally sank over the time that the <b>layers</b> formed.</li> <li><b>Core, Mantle, &amp; Crust</b> and the mantle &amp; crust form the <b>lithosphere</b>.</li> <li>Earth Layers have different properties</li> <li><b>** (INCLUDE REFERENCE TO ROCK CYCLE previously addressed in grade 6)</b></li> </ul>
<b>2</b>	<b>What are plates and how are they related to Pangaea and continental drift?</b>	<ul style="list-style-type: none"> <li>Text reference: Chapter 1.2-1.3 p.14-36</li> <li>Use visuals to show what the earth was like 200 million years ago, 180 million, etc. <b>(CE) p.16</b></li> <li>Class discussion: Mid Ocean ridges, etc. and sea floor spreading, p.16-17</li> </ul>	<ul style="list-style-type: none"> <li>Continents have changed position over time</li> <li>Pangaea and continental drift</li> <li>Plate tectonics is a theory that explains our observations.</li> <li>Sea floor spreading</li> <li>Convection is heat transfer by the movement of material and causes currents that produce continental drift.</li> </ul>
<b>3</b>	<b>What are convection currents within the earth?</b>	<ul style="list-style-type: none"> <li>Investigation: Convection and Plate Movements, p. 20,21 <b>(CE)</b></li> <li>Investigation: Magnetic reversals, p.25 <b>(CE)</b></li> <li>Investigation: What happens when plates move apart? P. 22 <b>(CE)</b></li> </ul>	<ul style="list-style-type: none"> <li>The sea floor spreads apart at divergent boundaries</li> <li>Evidence for sea floor spreading is based on the Earth's magnetic field reversals.</li> <li>Continents split apart at divergent boundaries</li> </ul>
<b>4</b>	<b>What are volcanos and what does their locations tell us?</b>	<ul style="list-style-type: none"> <li>Use NECAP released tasks and text diagrams in conjunction for classroom discussions.</li> </ul>	<ul style="list-style-type: none"> <li>Hot spots at various locations or heated rock rises in plumes or columns causing volcanoes to develop.</li> <li>Hot spots can be used to track plate movements.</li> </ul>
<b>5</b>	<b>What happens when plates collide?</b>	<ul style="list-style-type: none"> <li>Investigation: What happens when tectonic plates collide? P. 30 <b>(CE)</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Convergent</b> boundaries, where two continental plates collide, can cause <b>subduction</b>.</li> </ul>
<b>6</b>	<b>What are faults?</b>	<ul style="list-style-type: none"> <li>Text reference: 2.0 -2.3, pp. 44 -67 <b>(CE)</b></li> </ul>	<ul style="list-style-type: none"> <li>Faults are cracks or fractures in the Earth's lithosphere.</li> <li>Faults are categorized among "Normal", Strike-Slip, and reverse faults.</li> </ul>

6	<b>What is an earthquake?</b>	<ul style="list-style-type: none"> <li>Investigation: How does pressure affect a solid material? P. 45 <b>(CE)</b></li> </ul>	<ul style="list-style-type: none"> <li>The buildup of pressure yields earthquakes when released.</li> </ul>
7	<b>How do the properties of waves tell us about the earth's structure and Earthquakes?</b>	<ul style="list-style-type: none"> <li>Investigation: How does energy travel? P. 51 <b>(CE)</b></li> <li>Class discussion Seismic waves diagram p. 55 <b>(CE)**</b></li> </ul>	<ul style="list-style-type: none"> <li>When waves travel through different materials they bend. At boundaries between materials (layers of the earth) some of the energy is transmitted, some reflected, and some refracted or bent.</li> <li>Primary and Secondary waves</li> <li>**Connect to what students learned in grade 7 about waves in general.</li> </ul>