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# 6<sup>th</sup> Grade Earth Science

Curriculum Guide

Scranton School District

Scranton, PA



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Curriculum Guide

**6<sup>th</sup> Grade Earth Science**

**Prerequisite:**

- Completion of Fifth Grade Science

The 6th Grade Earth Science curriculum provides students with the necessary knowledge and skills in earth science. The course is designed to provide students with an overview of the common concepts in earth science including, but not limited to, meteorology, geology, astronomy, hydrology, the impact of humans on the earth, and resource utilization and conservation. These concepts are investigated through observing, collecting, summarizing, analyzing, and presenting the results of scientific investigations for students to develop the appropriate skills in science as inquiry.

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Year-at-a-glance

|  |                         |                                  |
|--|-------------------------|----------------------------------|
| <b>Subject: 6<sup>th</sup> Grade Earth Science</b> | <b>Grade Level: 6th</b> | <b>Date Completed: 6-19-2015</b> |
|--|-------------------------|----------------------------------|

**1<sup>st</sup> Quarter- Earth Composition (Geology/Paleontology)**

| Topic                      | Resources                                | Assessment Anchors   |
|----------------------------|--|--|
| Scientific Method          | District approved textbook and resources | S.8.A.1.1 .2 Explain how certain questions can be answered through scientific inquiry and/or technological design. S.8.A.1.1.3 |
| Soil                       |  | S.6.D.1.1 Describe how constructive and destructive natural processes can influence different biomes                           |
| Rocks and the rock cycle   |  | S.7.D.1.1 Describe Earth structures and processes that characterize different biomes on Earth.                                 |
| Rock and the fossil record |  | S.6.D.1.1 Describe constructive and destructive natural processes that form different geologic structures and resources.       |
| Mining                     |  | S.8.D.1.1 Describe constructive and destructive natural processes that form different geologic structures and resources.       |
| Energy resources           |  | S.8.D.1.2 Describe the potential impact of human made processes on Earth's resources and how they affect everyday life.        |

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2<sup>nd</sup> Quarter: Earth Movement

| Topic                 | Resources                                | Assessment Anchors   |
|-----------------------|--|--|
| Plate Tectonics       | District approved textbook and resources | S.8.D.1.1 Describe constructive and destructive natural processes that form different geologic structures and            |
| Earthquakes/Volcanoes |  | S.8.D.1.1 Describe constructive and destructive natural processes that form different geologic structures and resources. |

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**2<sup>nd</sup>-3<sup>rd</sup> Quarter: Water Systems (Hydrology/Oceanography)**

| Topic          | Resources                                | Assessment Anchors   |
|----------------|--|--|
| Earth's Oceans | District approved textbook and resources | S.7.D.1.2 Describe characteristic features and significance of Earth's water systems.  |
| Fresh Water    |  | S.8.D.1.3 Describe characteristic features of Earth's water sources and their impact on resources.   |
| Weather        |  | S.6.D.2.1 Explain basic elements of weather and climate.   |
| Weather        |  | S.7.D.2.1 Explain the basic elements of meteorology.   |
| The Atmosphere |  | S.8.D.2.1 Explain how pressure, temperature, moisture, and wind are used to describe atmospheric conditions that affect regional weather or climate. |

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4<sup>th</sup> Quarter

| Topic                     | Resources                                | Assessment Anchors  |
|---------------------------|--|---|
| Studying Space            | District approved textbook and resources | S.6.D.3.1 Explain the relationship between objects in the universe.   |
| Formation of Solar System |  | S.7.D.3.1 Describe the essential ideas about the composition and structure of the universe and the Earth's place in it. |
| Planets                   |  | S.8.D.3.1 Explain the relationship between and among the objects of our solar system.                                   |

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| <b>General Topic</b>     | <b>Academic Standard(s)</b> | <b>Essential Knowledge, Skills &amp; Vocabulary</b>   | <b>Resources &amp; Activities</b>  | <b>Assessments</b>                           | <b>Suggested Time</b>             |
|--------------------------|-----------------------------|---|--|--|-----------------------------------|
| <b>Scientific Method</b> |                             |   | <b>Suggested:</b><br>Holt Science and Technology (Earth Science): Chapter 1.2                | <b>Teacher prepared tests, quizzes, etc.</b> | <b>5 days</b>                     |
| <b>Soil</b>              | <b>S.6.D.1.1</b>            | <b>Describe how soil fertility, composition, resistance to erosion, and texture are affected by many factors.</b>   | <b>Suggested:</b><br>Holt Science and Technology (Earth Science): Chapter 10.3, 10.4         |  | <b>40 days to complete unit 1</b> |
|                          | <b>S.7.D.1.1</b>            | <b>Identify and describe soil characteristics (i.e., particle size, porosity, and permeability) of different biomes.</b>  |  |  |                                   |
| <b>Rock</b>              | <b>S.6.D.1.1</b>            | <b>Explain the rock cycle as changes in the solid earth and rock types (igneous-granite, basalt, obsidian, pumice; sedimentary-limestone, sandstone, shale, coal; and metamorphic-slate, quartzite, marble, gneiss) Identify the three basic rock types and describe their formation.</b> | <b>Suggested:</b><br>Holt Science and Technology (Earth Science): Chapter 4.1, 4.2, 4.3, 4.4 |  |                                   |

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|-------------------------|------------------|---|---|--|--|
| <b>Fossil Record</b>    | <b>S.8.D.1.1</b> | <b>Explain how fossils provide evidence about plants and animals that once lived throughout Pennsylvania’s history (e.g., fossils provide evidence of different environments).</b>  | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 6.4, 6.5</b>           |  |  |
| <b>Mining</b>           | <b>S.8.D.1.2</b> | <b>Describe a product’s transformation process from production to consumption (e.g., prospecting, propagating, maintaining, adapting, treating, converting, disposing).</b>   | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 3.3</b>                |  |  |
| <b>Energy Resources</b> | <b>S.8.D.1.2</b> | <b>Describe potential impacts of human made processes (e.g., manufacturing, agriculture, transportation, mining) on Earth’s resources, both living ( i.e, plants and animals) and nonliving (i.e., air, water, or earth materials).</b> | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 3.3, 5.1, 5.2, 5.3</b> |  |  |



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| <b>Plate Tectonics, Earthquakes, Volcanoes</b> | <b>S.8.D.1.1</b>   | <b>Describe natural processes that change Earth's surface (e.g., landslides, volcanic eruptions, earthquakes, mountain building, new land being formed, weathering, erosion, sedimentation, soil formation).</b>                                    | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 7.2, 7.3, 7.4, 8.1, 9.1, 9.2</b> |  | <b>25 days to complete unit 2</b> |
|  | <b>S.8.D.1.1</b>   | <b>Identify soil types (i.e. humus, topsoil, subsoil, loam, loess, and parent material) and their characteristics (i.e., particle size, porosity, and permeability) found in different biomes in Pennsylvania, and explain how they are formed.</b> |   |  |                                   |
| <b>Water Systems</b>                           | <b>S.7.D.1.2.1</b> | <b>Compare the different water systems on Earth (e.g., wetland, watershed, ocean, river).</b>   | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 13.1</b>                         |  | <b>65 days to complete Unit 3</b> |
| <b>Conservation</b>                            | <b>S.7.D.1.2.3</b> | <b>Describe the importance of water systems on the diversity and distribution of life on Earth.</b>   | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 13.3</b>                         |  |                                   |

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|---------------------------|---------------------------|---|--|--|--|
| <p><b>Water Cycle</b></p> | <p><b>S.8.D.1.3.1</b></p> | <p><b>Describe the water cycle and the physical processes on which it depends (i.e., evaporation, condensation, precipitation, transpiration, runoff, infiltration, energy inputs, and phase changes).</b></p>                      | <p><b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 11.1, 16.1</b></p>       |  |  |
|                           | <p><b>S.8.D.1.3.2</b></p> | <p><b>Compare and contrast characteristics of freshwater and saltwater systems on the basis of their physical characteristics (i.e., composition, density, and electrical conductivity) and their use as natural resources.</b></p> | <p><b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 13.1</b></p>             |  |  |
|                           | <p><b>S.8.D.1.3.3</b></p> | <p><b>Distinguish among different water systems (e.g., wetland systems, ocean systems, river systems, watersheds,) and describe their relationships to each other as well as to landforms.</b></p>                                  | <p><b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 11.1, 11.2, 11.3</b></p> |  |  |

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|                | <b>S.8.D.1.3.4</b> | <b>Identify the physical characteristics of a stream and how these characteristics determine the types of organisms found within the stream environment (e.g, biological diversity, water quality, flow rate, tributaries, surrounding watersheds).</b> | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 11.1, 11.4</b> |  |  |
| <b>Weather</b> | <b>S.6.D.2.1.1</b> | <b>Describe cloud types and measurable factors (i.e. wind direction, temperature, barometric pressure, moisture, and precipitation).</b>  | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 16.1</b>       |  |  |
|                | <b>S.6.D.2.1.2</b> | <b>Interpret weather data to develop a weather forecast.</b>  | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 16.4</b>       |  |  |
|                | <b>S.6.D.2.1.3</b> | <b>Explain how global patterns (jet stream, water currents) influence weather in measurable terms (e.g. wind direction, temperature, barometric pressure, precipitation).</b>   | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 16.2</b>       |  |  |

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|  | <b>S.7.D.2.1.1</b> | <b>Explain the effect of wind patterns, circulation of ocean currents, atmospheric pressure and temperature on weather.</b>                                | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 17.1, 15.2, 15.3</b>       |  |  |
|  | <b>S.7.D.2.1.2</b> | <b>Describe changes in atmospheric conditions associated with various weather patterns.</b>  | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 15.2, 16.2</b>             |  |  |
|  | <b>S.8.D.2.1.1</b> | <b>Explain the impact of water systems on the local weather or the climate of a region (e.g., lake effect snow, land/ocean breezes).</b>                   | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 15.3, 17.1, 17.2, 17.3</b> |  |  |
|  | <b>S.8.D.2.1.2</b> | <b>Identify how global patterns of atmospheric movement influence regional weather and climate.</b>  | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 16.2</b>                   |  |  |
|  | <b>S.8.D.2.1.3</b> | <b>Identify how cloud types, wind direction, and barometric pressure changes are associated with weather patterns in different regions of the country.</b> |   |  |  |

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| Solar System | S.6.D.3.1.1 | Compare the size and surface features of the planets that comprise the solar system as well as the objects orbiting them.                                | Suggested:<br>Holt Science and Technology (Earth Science): Chapter 21.1, 21.2, 21.3             |  | 45 days to complete Unit 4 |
|              | S.6.D.3.1.2 | Describe how the size, composition, and surface features of the planets are influenced by their distance from the Sun.                                   | Suggested:<br>Holt Science and Technology (Earth Science): Chapter 20.1, 21.1, 21.2, 21.3,      |  |                            |
|              | S.7.D.3.1.1 | Describe the patterns of Earth's rotation and revolution in relation to Sun and Moon (i.e., lunar eclipse, solar eclipse, phases of the moon, and time). | Suggested:<br>Holt Science and Technology (Earth Science): Chapter 21.4                         |  |                            |
|              | S.7.D.3.1.2 | Explain how gravity is the essential force in determining the motions of the planets and other objects in solar system.                                  | Suggested:<br>Holt Science and Technology (Earth Science): Chapter 20.4                         |  |                            |
|              | S.7.D.3.1.3 | Compare the properties and conditions of objects in the solar system to those of Earth.  | Suggested:<br>Holt Science and Technology (Earth Science): Chapter 21.1, 21.2, 21.3, 21.4, 21.5 |  |                            |

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|  | <b>S.7.D.3.1.4</b> | <b>Identify and describe instruments that are used to study the universe (e.g., telescope, probes, satellites, space observatories).</b>                      | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 18.2</b>                         |  |  |
|  | <b>S.8.D.3.1.1</b> | <b>Describe patterns of earth's movements (i.e., rotation and revolution) in relation to the moon and sun (i.e., phases, eclipses, tides).</b>                | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 20.4, 21.4</b>                   |  |  |
|  | <b>S.8.D.3.1.2</b> | <b>Describe the role of gravity as the force that governs the movement of the solar system and universe.</b>  | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 20.1, 20.4</b>                   |  |  |
|  | <b>S.8.D.3.1.3</b> | <b>Compare and contrast characteristics of celestial bodies found in the solar system (e.g., moons, asteroids, comets, meteors, inner and outer planets).</b> | <b>Suggested:<br/>Holt Science and Technology (Earth Science): Chapter 21.1, 21.2, 21.3, 21.4, 21.5</b> |  |  |

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**ELA Standards in Science**

| Quarter/Unit              | Academic Standards   | Examples of Resources  |
|---------------------------|--|--|
| All units throughout year | RL 6.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.  | Lab reports, short essay responses, open ended responses                                     |
|                           | RL 6.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.  | Lab reports, short essay responses, open ended responses                                     |
|                           | RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 6-8 texts and topics</i> . | Vocabulary activities  |
|                           | RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.   | Text , nonfiction selections   |
|                           | RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.  | Labs/experimentation   |
|                           | RST. 6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).             | text, nonfiction selected readings with visual information (graphs, tables, etc.), newspaper |

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| <b>1<sup>st</sup> Quarter/Earth's Composition</b> | <b>W.6.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</b> | <b>Analyze the rock cycle, classify types of rocks</b> |
|---|--|--|