Georgia Performance Standards Framework for Earth Science – Grade 6

Unit: Inside the Earth

General Task
Characteristics of the Layers of the Earth

Standards (Content and Characteristics):

S6E5. Students will investigate the scientific view of how the earth’s surface formed.
   a. Compare and contrast the Earth’s crust, mantle, and core including temperature, density, and composition.

S6CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
   a. Understand the importance of—and keep—honest, clear, and accurate records in science.
   b. Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypotheses turn out not to be completely accurate descriptions.

S6CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.
   a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.

S6CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.
   a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts. (For example: El Nino’s effect on weather)
   b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model’s purpose and complexity.

S6CS6. Students will communicate scientific ideas and activities clearly.
   b. Understand and describe how writing for scientific purposes is different than writing for literary purposes.
   c. Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal.
S6CS10. Students will enhance reading in all curriculum areas by:

a. Reading in All Curriculum Areas
   - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
   - Read both informational and fictional texts in a variety of genres and modes of discourse.
   - Read technical texts related to various subject areas.

b. Building vocabulary knowledge
   - Demonstrate an understanding of contextual vocabulary in various subjects.
   - Use content vocabulary in writing and speaking.
   - Explore understanding of new words found in subject area texts.

c. Establishing context
   - Explore life experiences related to subject area content.
   - Discuss in both writing and speaking how certain words are subject area related.
   - Determine strategies for finding content and contextual meaning for unknown words.

Enduring Understanding:

The earth is layered with a partly molten, metallic core; a mantle that though solid, is hot enough to flow; and a colder, rigid lithosphere.

Essential Questions:

- How are the earth’s layers alike and different?
- What challenges stand in the way of sending explorers to the center of the earth?
### ADMINISTRATION PROCEDURES

**Pre-Assessment:**

Provide students with a cross section diagram of the Earth. Students will label the four layers of the earth and write two interesting facts for each layer.

| Outcome / Performance Expectations | Students will be able to name and label the four layers of the earth. Students will compare and contrast each layer in terms of its temperature, density, and composition. Basic knowledge includes the following facts:  
• The earth is layered with a lithosphere (crust and uppermost mantle), a convecting mantle, and a dense metallic core.  
• Each layer differs in composition, density, and temperature.  
• Temperature and density increases as depth increases.  
• The composition of the earth changes with depth and layers.  
• The crust is the upper part of the rigid lithosphere and is of different composition under land as opposed to the ocean floor.  
• Below the rigid lithosphere, the mantle consists of hot rock with semi-liquid consistency, which slowly moves or flows.  
• The outer core is molten, and the inner core is a dense solid.  
• The lithosphere is divided into separate plates which move very slowly in response to the mantle.  
• Heat from the mantle and core creates convection currents. |
| General Teacher Instructions | Prepare a list of interactive websites which include information and illustrations about the layers of the earth. The list should be diverse and include animated graphics, interactive activities, audio, games, and quizzes. Provide students with a hard copy of the internet addresses. Addresses could also be posted in the room or in a folder in the “Favorite” feature of the computer. |
| Materials Needed | • computers with internet access  
• logbooks |
| Safety Precautions | Make sure each student has a signed permission form to use the internet. Remind students of the school’s policy and the importance of staying on the assigned websites. |
| Task with Student Directions | Choose a minimum of two of the assigned websites to explore. Record the address of the website in your logbook. Next, evaluate the site using the following items to guide you:  
• Write a summary using the information you found on the site which includes the layers, density, composition, and temperature. |
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#### Instructional Task Accommodations for ELL Students:
- Adjust teacher talk when explaining activity to increase comprehensibility (face the students, pause frequently, speak at a moderate speed)
- Decrease details needed to learn main concepts
- Reduce length of assignment
- Pair verbal directions with visual clues
- Provide additional examples

#### Instructional Task Accommodations for Students with Specific Disabilities:
- Reduce the number of questions answered about each website students investigate
- Provide quiet work space with minimal distractions
- Provide sentence/story starters for answering questions about each website
- Enlarge font size on student copies of website listings
- Record websites orally on data collecting instrument

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#### Homework / Extension:
Design and construct a model of the four layers of the earth. Label the layers. Your model will be presented in class and displayed in the media center. Creativity is encouraged.
### Instructional Task Accommodations for Gifted Students:

- Students will write an original story to explain why it is not possible to traveling to the center or core of the earth
- Students will investigate how far man has drilled into the crust and prepare a news report
- Students will design their own original website on the earth’s inner structure
- Students can conduct a “writer’s workshop” detailing why they wouldn’t recommend a particular website to their peers
- Students can make “editorial” changes to the website they wouldn’t recommend to their peers
- Students will write a skit based on interactive graphics, activities discovered and the researched websites; students will then cast and perform the skit for their peers