Georgia Performance Standards Framework for Earth Science – 6th Grade

Unit: Earth, Moon, and Sun
Differentiated (Tiered) Task
Understanding Moon Phases

Standards (Content and Characteristics):
S6E2 Students will understand the effects of the relative positions of the earth, moon, and sun.
  a. Demonstrate the phases of the moon by showing the alignment of the earth, moon, and sun.

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.

S6CS2. Students will use standard safety practices for all classroom laboratory and field investigations.
  a. Follow correct procedures for use of scientific apparatus.
  b. Demonstrate appropriate techniques in all laboratory situations.
  c. Follow correct protocol for identifying and reporting safety problems and violations.

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.
  c. Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal.
S6CS9. Students will investigate the features of the process of scientific inquiry.

Students will apply the following to inquiry learning practices:

a. Scientific investigations are conducted for different reasons. They usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations.

b. Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator’s credibility with other scientists and society.

c. Scientists use technology and mathematics to enhance the process of scientific inquiry.

S6CS10. Students will enhance reading in all curriculum areas by:

a. Reading in All Curriculum Areas

c. Building vocabulary knowledge

d. Establishing context

Enduring Understanding:

- The moon’s orbit around the Earth once in about 28 days changes what part of the moon is lighted by the sun and how much of that part can be seen from the Earth.

Essential Question(s):

- Why does the moon appear to change shapes?

Pre-Assessment:

Instruct students to list the phases of the moon in the order they happen on white boards. Check students white boards. Use these results to group students into three different levels.

<table>
<thead>
<tr>
<th>Outcome/Performance Expectation</th>
<th>BASIC</th>
<th>INTERMEDIATE</th>
<th>ADVANCED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will draw a diagram and label the phases of the Moon.</td>
<td>Students will use common objects to represent the Sun, Earth and Moon and construct the phases of the moon through dramatization.</td>
<td>Students will create a board game involving the phases of the moon.</td>
<td></td>
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</tbody>
</table>

Performance Task: (Detailed Description)

Teacher role?

1. Show students diagrams of the phases of the moon.

Teacher:

Use the websites listed in the resources and/or other text sources to:

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Teacher:

Use the websites listed in the resources and/or other text sources to:

1. Show students diagrams of the phases of the moon.
<table>
<thead>
<tr>
<th>Student role?</th>
<th>Student(s):</th>
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</tr>
</thead>
<tbody>
<tr>
<td>You may draw, paint, color, and cut out the shapes to construct your diagram or use modeling clay for the following activities:</td>
<td>Gather common objects of your choice to represent the sun, earth, and moon. You will need 10 spheres (one sun, one earth, and eight moon.</td>
<td>1. Create a board game using the phases of the moon. You should include the vocabulary words associated with the phases of the moon (1&lt;sup&gt;st&lt;/sup&gt; quarter, full moon, new moon, 3&lt;sup&gt;rd&lt;/sup&gt; quarter, umbra, penumbra, etc.) and their definitions as well as the alignment of the earth, moon, and sun.</td>
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<tr>
<td>1. Make a mural depicting the phases of the moon.</td>
<td>1. Assign a moon phase to each student in your group and use a source of light to shine on the “moon” to represent the different phases. Each student should hold a sign with the name of its moon phase.</td>
<td>2. Use index cards, dice, or other materials you would like to make the game interesting for your classmates to play.</td>
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<tr>
<td>2. Label your diagram and provide the approximate number of days of the different moon phases.</td>
<td>2. Choose a student to narrate each phase as the light shines on each student/moon.</td>
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<td>1. Bookmark specific websites students can use when doing research. Remind students to point cutting instruments away from others when working on murals.</td>
<td>1. Bookmark specific websites students can use when doing research. Remind students to be cautious when working with hot light bulb.</td>
<td>1. Bookmark specific websites students can use when doing research. Remind students that the dice game should only be tailored to their moon activity.</td>
<td>1. Bookmark specific websites students can use when doing research. Remind students to point cutting instruments away from others when working on murals.</td>
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<td>2. Students should complete documentation on appropriate internet use as directed by the school system.</td>
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<td>3. Preview video prior to showing to students.</td>
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### Resources

Moon phase animation:
- [http://www.noao.edu/education/phases/phases_demo.html](http://www.noao.edu/education/phases/phases_demo.html)
- [http://www.astro.wisc.edu/~dolan/java/MoonPhase.html](http://www.astro.wisc.edu/~dolan/java/MoonPhase.html)

Worksheet Sample:

Diagrams of Solar and Lunar Eclipses and phases of the moon:
- [http://www.earthview.com/tutorial/causes.htm](http://www.earthview.com/tutorial/causes.htm)
- [http://home.hiwaay.net/~krcool/Astro/moon/moonphase/Homework/](http://home.hiwaay.net/~krcool/Astro/moon/moonphase/Homework/)

### Homework/Extension

| Choose one (or all) of the phases of the moon to write a poem or a Haiku. | Use electronic resources to find out when the dates of next month’s phases of the moon will occur. | Write a script for a television news anchor person who is reporting on euphemisms involving the moon and its phases (i.e. blue moon, harvest moon). |

### Instructional Tasks Accommodations for ELL Students

- Increase % of student talk about topic to help develop prior knowledge
- Let ELL students label the phases of the moon in their native language and present to class
- Highlight key points of information students are to find
- Extend the time students have for completing the assignment
- Present model/example of work done well at beginning of the assignment

### Instructional Tasks Accommodations for Students with Specific Disabilities

- Provide a peer partner for students with sensory disabilities
- Use amplification equipment or communication aids as appropriate for students who are DHH
- Have students with listening difficulties repeat the task instructions to an adult or a partner
- Use proximity seating during direct instruction or when conveying content information prior to activity
- Gain students’ attention before delivery of content information (ADD, ADHD)

### Instructional Tasks Accommodations for Gifted Students

- Provide a learning center where students can be in charge of own learning
- Ask student’s higher level questions that require them to investigate causes, experiences and facts to draw conclusions or make connections to other areas of learning
- Give gifted students opportunity to design multi-media game to use with the class
- Brainstorm with gifted students about types of projects they would like to explore for extending the classroom learning