

# Grade 1 Earth Science Unit (1.E.1)

## Decision 1: What will students learn in this unit?

### Standards Addressed:

1. Science: 1.E.1. Sun, Moon, and Stars
2. Reading Informational Text: Reading Non-fiction texts as read-alouds and small groups.
3. Math: Time and measurement
4. Writing: Write an informational piece on what you have learned.
5. Technology Internet: looking up the phases on the moon monthly calendars. Discovery education videos. SMARTboard activities.

What do I want my students to **KNOW**, **UNDERSTAND** and be able to **DO** at the end of this unit?

<b>Know</b>	<b>Understand</b>	<b>Do</b>
<ol style="list-style-type: none"><li>1. Objects in the sky have a pattern and movement.</li><li>2. The sun is a star.</li><li>3. The sun can only be seen in the daytime.</li><li>4. The moon can be seen in the day and the night.</li><li>5. There are an infinite amount of stars in the sky.</li><li>6. Their brightness is a result of their location.</li><li>7. Sun, moon, and stars all appear to move slowly across the sky.</li><li>8. There are phases of the moon.</li></ol>	Objects in the sky all have patterns and phases.	<ol style="list-style-type: none"><li>1. Observe that the sun changes location throughout the day as a result of the earth rotating.</li><li>2. Recognize the different features of day and night, as well as the movement across the sky as observed from the earth (this is day vs. night).</li><li>3. Students utilize a sun dial to watch the progression from day to night.</li><li>4. Students observe and record the different phases of the moon.</li><li>5. Students will draw examples of stars in the sky (scattered vs. clustered).</li></ol>

## Decision 2: Assessment

Plan for how students will indicate learning and understanding of the concepts in the unit. How will you assess learning?

Possibilities/options:

- Pre-assessment:
  1. Create a Venn diagram of the moon and the sun as a group.
  2. Group discussion.
- Short answer tests or quizzes: NA
- Student logs, journals and informal writing:
  1. Journal about what you learned about.
  2. Observations
- Lab activities:
  1. Using Playdough to build a model of four phases of the moon.
  2. Use a flashlight and Styrofoam ball to show the phases of the moon.
- Formal writing assignments: informative writing piece on what they have learned.
- Informal or formal student Interviews, conferences, observations etc.: science journal.

**Describe the performance, product, or project that will be the culminating activity for the unit.**

The student's assignment for the Culminating Activity includes:

- **Unit** essential question or "I Can" statement for the culminating activity.
- A thorough **description** of the activity including steps or task **analysis** in completing the culminating activity.
- A copy(ies) of the rubric(s) you will use to assess the culminating activity or any other aspects of the unit.
- Sequence four cards in order to show the phases of the moon, and explain their reasoning in writing.

**Decision 2: Assessments – Rubric Reminders:**

		Scale			
		1	2	3 (Proficient)	4
Indicators	What does each number or adjective in your scale mean?				
	Sorting of the cards.	Did not sort the cards correctly.	Sorted cards correctly with minor errors in reasoning.	Sorted the cards correctly and explained their reasoning.	Sorted the cards correctly and explained their reasoning with a higher level reasoning.
	Explanation of the card sort.	They are able to accurately explain 0 to 1 of their cards.	They are able to accurately explain 2 to 3 of their cards.	They are able to accurately explain all four of their cards.	They are able to accurately explain all four of their cards using a higher level of thinking and reasoning.

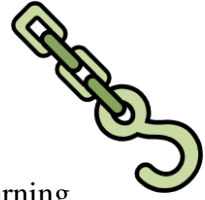
### Decision 3: Student Learning Map

#### Key Learning Targets: Earth in the Universe

Objects in the sky have patterns of movement.

<p><b>Concept:</b> The sun is a star and can be seen in the day time.</p>	<p><b>Concept:</b> The moon can be seen during the day and the night, and they have phases.</p>	<p><b>Concept:</b> There are an infinite amount of stars in the sky and their brightness is a result of their location.</p>	<p><b>Concept:</b> The sun, moon, and stars move slowly across the sky.</p>
<p><b>Lesson EQ(s):</b> I can observe how my shadow changes during the day. I can create a sun dial to track the sun's movement. I can explain what makes day and night. I can demonstrate that the sun is a light source. I can explain that the sun is a star.</p>	<p><b>Lesson EQ(s):</b> I can identify/ explain the differences in day and night. I can record and draw the phases of the moon in the correct sequence. I can create a model of the phases of the moon. I can explain why the moon is sometimes seen during the day.</p>	<p><b>Lesson EQ(s):</b> I can explain why stars look different. I can explain why some stars are brighter than others. I can represent an example of stars in the sky.</p>	<p><b>Lesson EQ(s):</b> I can demonstrate how the earth moves around the sun using materials. I can describe how the night changes. I can sequence patterns in the sky.</p>
<p><b>Vocabulary:</b> star            create sunrise        explain shadow        sun dial sunset        sun observe        Earth demonstrate</p>	<p><b>Vocabulary:</b> phases        explain identify        sequence record        moon pattern</p>	<p><b>Vocabulary:</b> stars            cluster represent        scattered brightness      pattern constellations</p>	<p><b>Vocabulary:</b> Earth            spin moon            rotate sun              sequence orbit            describe demonstrate</p>

## Decision 4: Launch Activities



### Hooks and Links

Develops student **interest** and links **prior knowledge**. Provides the Student Learning Map and the key vocabulary to students.

### Guiding Questions:

1. How are you going to get students engaged? Role plays, videos, read aloud, hands on activities, models, demonstrations, and KWLS.
2. How are you going to develop student interest and link their prior knowledge? KWLS and Venn diagram of the sun and moon. Student hypothesis. Predictions.
3. How are you going to start the Student Learning Map of the unit with students? Explain the I can statements and words splash with vocabulary. PowerPoint with pictures and vocabulary.
4. How are you going to preview key vocabulary with students? With visuals.

## Decision 5: Acquisition Lesson One: Shadows (Day 1)

### Language Objective(s), where appropriate:

Participate in shared research projects.  
Participate in collaborative discussions.

### Lesson Essential Question(s) or “I Can” Statement(s):

I can observe how my shadow changes during the day.

### Activating Strategies: (Learners Mentally Active)

KWL of the sun  
Nonfiction read-a-loud on the sun  
Acceleration/Previewing: (key vocabulary)

### Teaching Strategies: (Explain and Model Collaborative Pairs; Distributed Guided Practice; Distributed Summarizing; Graphic Organizers)

Partner students and model activity. Trace partners feet and shadow on sidewalk (or bus parking lot). Measure your partner’s shadow using a stack of 10 cubes. Record data and complete “Measure My Shadow” worksheet. Wait one or two hours. Make a prediction graph asking the question, “Will your shadow change?” Go outside and repeat experiment. Measure the length of your shadow and the distance between. While students are recording their data, go to each student and ask them why they think their shadow changed.

*Differentiation:* Peer teams. Pair students together with different ability levels.

Distributed Guided Practice/Summarizing Prompts: (prompts designed to Initiate Periodic Practice or Summarizing)

### Summarizing Strategies: Learners Summarize and Answer Essential Questions

Class discussion following the experiment. Ask, “What can your shadow tell you about the sun?”

### Lesson Resources

Read-a-loud  
Chalk  
“Measure My Shadow” worksheet  
KWL chart  
Prediction chart

## Decision 5: Acquisition Lesson Two: Sun Dial (Day 2)

### Language Objective(s), where appropriate:

Participate in shared research.  
Participate in collaborate discussions.

### Lesson Essential Question(s) or “I Can” Statement(s):

I can create a sun dial to track/record the sun's movement.

### Activating Strategies: (Learners Mentally Active)

Display assorted pictures of clocks, watch, and sundial.  
Ask what each has in common to create a connection between sundials and time.  
Make predictions about how to use sundial how does sun change during day from morning to evening.

Acceleration/Previewing: (key vocabulary)

### Teaching Strategies: (Explain and Model Collaborative Pairs; Distributed Guided Practice; Distributed Summarizing; Graphic Organizers)

Students create sundials with paper plate and teacher hot glue straw in middle.  
Leave blank for students to record time and shadow information.  
Multiple student recordings - 3 to 4 observations during the day.

*Differentiation:* Peer teaching opportunities.

Can do one large students/class sundial and measure more times during the day. (Use sidewalk chalk to draw dial.)

Distributed Guided Practice/Summarizing Prompts: (prompts designed to Initiate Periodic Practice or Summarizing)

### Summarizing Strategies: Learners Summarize and Answer Essential Questions

Share recorded responses and answer predictions.

### Lesson Resources

sidewalk chalk	straws
clock and sundial pictures	hot glue
paper plates	prediction chart

## Decision 5: Acquisition Lesson Three: Day vs. Night (Day 3)

### Language Objective(s), where appropriate:

- Sequence and describe the cycle of the day.
- Identify key details in non-fiction text.
- Summarize information from graphic organizers.

### Lesson Essential Question(s) or “I Can” Statement(s):

I can explain what makes day and night.

### Activating Strategies: (Learners Mentally Active)

- KWL Chart on Day/Night
- Read *What Makes Day and Night* by Franklyn Branley. Discuss vocabulary (i.e., sunrise, day, noon, sunset, night) and add questions.

Acceleration/Previewing: (key vocabulary)

### Teaching Strategies: (Explain and Model Collaborative Pairs; Distributed Guided Practice; Distributed Summarizing; Graphic Organizers)

- Darken the room and turn on lamp. Explain that the lamp represents the Sun.
- Ask a student to be Earth. Place a stickers/label on the student so that your town is on his/her chest. Make sure he or she can be seen by all students.
- Have student begin with their back to the lamp (night). Ask students if they think it is day or night in their town. Why?
- Have student rotate counter-clockwise fashion until their left arm is pointed to the sun. Ask students if they think it is sunrise or still night. Why?
- Student continues the counter-clockwise rotation until he faces the sun directly. Ask students what time it is now in their town. Students should be able to see it is noon, the middle of the day when we get the most light from the sun.
- Ask student to rotate a little more and stop when his right arm is pointed to the sun. Ask students what time of the day it is. They should be able to tell you that it is sunset.
- Complete the day/night cycle by having the student return to their original position with their back to the sun. Student should be able to tell you that is it now midnight.
- Ask students to notice what time of day it is on the other side of the Earth (noon).
- Explain that one half of the Earth is always light while the other is dark. Emphasize that it is the Earths’ own shadow that makes the night side of the Earth dark.
- Repeat process with the globe.
- Break into partners and repeat with the method of their choice. When students are finished working, they can write “What They’ve Learned” and any unanswered questions on sticky notes to add to our KWL chart.
- At the end of the experiments, explain to students that it take 24 hours for the Earth to rotate completely. Refer back to our Sun Dial Lesson on times.

Distributed Guided Practice/Summarizing Prompts: (prompts designed to Initiate Periodic Practice or Summarizing)

### Summarizing Strategies: Learners Summarize and Answer Essential Questions

- Students will make “Moon Sun Earth Orbit Model”:
- Materials Needed: 1 paper plate, white construction paper or card stock, Earth and Moon shapes or hand-drawn pictures, hole puncher, crayons, 2 brass fasteners, and scissors.
- Color the plate yellow. Color the larger circle Earth. Punch a hole at the end of each strip and in the



middle of the paper plate. Fasten the pieces together using brass fasteners. \*See picture in Scanned Resources.

- **THINK PAIR SHARE:** Students should be able to rotate the Earth to show the changes from day to night with a partner. They should also be able to explain in words their thinking. Teacher will monitor and observe their explanations.

### **Lesson Resources**

*What Makes Day and Night* by Franklyn Branley

Scanned Resources (*Orbit Model*)

[www.eyeonthesky.org](http://www.eyeonthesky.org)

Differentiation:

- Powerpoint Presentation with the Vocabulary Words. Also – students and teachers can come up with motions for the new words (i.e., sunrise, day, noon, sunset, night, spin, and rotation).
- Lesson utilizes multiple modalities.

If needed, students can draw a picture instead of writing what they learned.

## Decision 5: Acquisition Lesson Four: Phases of the Moon (Day 4)

### Language Objective(s), where appropriate:

Discuss and write about changes in the moon phases using models and diagrams.

### Lesson Essential Question(s) or “I Can” Statement(s):

I can record and draw the phases of the moon in the correct sequence. I can create a model of the phases of the moon.

### Activating Strategies: (Learners Mentally Active)

Moon pre-assessment quiz

Read aloud: *Papa, Please Get the Moon for Me* by Eric Carle

Acceleration/Previewing: (key vocabulary) Phases, identify, record, explain, sequence, moon, and pattern

### Teaching Strategies: (Explain and Model Collaborative Pairs; Distributed Guided Practice; Distributed Summarizing; Graphic Organizers)

Three days previous to this lesson have students take home their 'Lunar Project' to record the moon and its phases.

- Have students pair share their observations and how they are alike and different.
- Display a monthly calendar of the phases of the moon for students to fill in their own monthly calendar.
- Create a graphic organizer (a moon) and have students provide facts about the moon.
- Complete the Oreo moon phases activity.

Distributed Guided Practice/Summarizing Prompts: (prompts designed to Initiate Periodic Practice or Summarizing)

### Summarizing Strategies: Learners Summarize and Answer Essential Questions

- Add the moon to the moon, sun, earth orbit model made on the previous lesson with what makes night and day.
- Post-assessment quiz and discuss the misconceptions that they have.

### Lesson Resources

See attachments.

Discovery Education: A Closer Look at Space: The Moon

<http://www.neok12.com/Moon.htm>

<http://analyzer.depaul.edu/paperplate/Oreo%20Moon%20Phases.htm>

## Decision 5: Acquisition Lesson Five: Stars (Day 5)

### Language Objective(s), where appropriate:

R1.1.1. Ask and answer questions about key details in a text.  
R1.1.5. Know and use various text features  
R1.1.7. Use illustrations and details to describe ideas

### Lesson Essential Question(s) or “I Can” Statement(s):

I can explain why stars look different.  
I can explain why some stars are brighter than others.  
I can represent an example of stars in the sky.

### Activating Strategies: (Learners Mentally Active)

Explore the SkyView app with students and allow students to pair share about their observations.  
Possible read aloud options include: *I Can Be An Astronaut* by June Behrens and *A Curious George Gets A Medal* by H Rey  
Word splash about stars whole group.

Acceleration/Previewing: (key vocabulary) -stars, brightness, cluster, pattern, scattered constellations, represent

### Teaching Strategies: (Explain and Model Collaborative Pairs; Distributed Guided Practice; Distributed Summarizing; Graphic Organizers)

- Read aloud *Seeing Stars: A Book About the Constellations* by Barbara Seiger and students work in pairs to record their learning/wondering questions in a graphic organizer
- Teach demonstration: Shine flashlight on board, move further and closer to the board and allow students to share their observations. Incorporate vocabulary.
- Class discussion: Do you think stars shine during the day?
- Student activity: Students use push pins to punch holes in black construction paper. Attach to the end of a paper towel roll. Shine flashlight through tube to shine design on ceiling.
- Discuss: Did you make a pattern? Are your stars scattered or clustered?
- Differentiation: Teachers may implement the following options: dictate to scribe, verbally sharing as opposed to writing, and draw and label understanding.

Distributed Guided Practice/Summarizing Prompts: (prompts designed to Initiate Periodic Practice or Summarizing)

- Activity "star pattern" See attached. Follow activity and procedure. Discuss: Is your representation of the stars in the sky a pattern, cluster, or scattered? Instruct students to record observations.
- Smart exchange activity for first graders entitled "where did all the stars go?"

### Summarizing Strategies: Learners Summarize and Answer Essential Questions

- Activity: "star pattern" (see attached). Follow activity and procedure.
- Discuss: Is your representation of the stars in the sky a pattern, cluster, or scattered? Instruct students to record observations.
- Smart exchange activity for first graders entitled "Where Did All the Stars Go?"

### Lesson Resources

- Smart Exchange, star patterns attachment, SkyView app
- Books: *I Can Be An Astronaut* by June Behrens and *A Curious George Gets A Medal* by H Rey

## Decision 6: Extending Thinking Activities

Include extending activities for several lessons in the essential units.

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<b>Cause/Effect</b>	<b>Compare/Contrast</b>	<b>Deduction</b>
<b>Justification</b>	<b>Induction</b>	<b>Analyzing Perspective</b>
<b>Error Analysis</b>	<b>Abstracting</b>	<b>Evaluation</b>
<b>Classifying</b>	<b>Constructing Support</b>	<b>Writing Prompt</b>

1. Study how earth revolves around the sun and causes the seasons.
2. Learn about constellations.
3. Compare and contrast: sun and moon, sun and earth, earth and moon.
4. Astronomy Night: invite parents to come in and let students teach them about the sun, moon, and stars.
  - a. Set up the telescope to view the sun and moon and stars
  - b. Make constellations-match constellations with transparencies
  - c. Oreo cookie moon phases
  - d. Starburst graphing
  - e. Make moon sand
  - f. Snacks (i.e., starburst, moon pie, milky way etc.)
5. Moon Bag: Free pintables and instructions on tpt each night one student will take home the bag and draw a picture of what the moon looks like.

## Decision 7: Differentiating the Unit

What accommodations will you make in order to meet the varied interests, learning styles, and ability levels of all students?

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**choice menus**

**compacting**

**grouping**

**seating**

**visual, auditory, kinesthetic activities**

**scaffolding**

**real world meaning**

**interests**

- Leveled readers for nonfiction during flex time
- Ability based groups: student learning teams (high and low)
- Draw instead of writing
- Choice boards
- Peer teachers

## **Decision 8: Unit Calendar**

Determine the most viable sequence for the experiences, activities, and lesson and create a timeline.

Build background knowledge about the sun with the use of books (fiction and nonfiction, videos, websites, etc).

- Observe the sun's changes location in the sky by noting changes in their shadows. (Measure the distance between shadows.)
- Recognize different features of day and night as observed from earth.
- Use a sun dial to track the progression of the sun.
- Students observe and record different phases of the moon.
- Draw examples of stars in the sky.

## **Decision 9: Resources and Research**

Provide graphic organizers, links, book titles, websites, etc. that provide support for teaching.

Provide ideas about how to integrate Big 6 or Super 3 research framework.

## Unit Designers:

**Date:** January 22, 2013

Name	School
Megan Farmer	MRS
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