



Project Essential Questions

- How do phases of the moon depend on relative positions of the sun, moon and earth?
- How can drawing be used to better understand the phases of the moon?

PROJECT DESCRIPTION

In this project, students will design a field journal illustrating the eight phases of the moon to demonstrate understanding of the phases and cycles of the moon over time.

LEARNING TARGETS

“I Can...”

- Illustrate the phases of the moon for one month
- Describe how the phases of the moon change over the duration of one month

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Units provide differentiated ideas and activities aligned to a sampling of standards.

The units do not necessarily imply mastery of standards, but are intended to inspire and equip educators.

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Cherokee County (GA) School District and ArtsNow, Inc.

Project Description	Learning Targets
<p>In this project, students will design a field journal illustrating the eight phases of the moon to demonstrate understanding of the phases and cycles of the moon over time.</p>	<p>“I Can...”</p> <ul style="list-style-type: none"> ● Illustrate the phases of the moon for one month ● Describe how the phases of the moon change over the duration of one month

ESSENTIAL QUESTIONS

<ul style="list-style-type: none"> ● How do phases of the moon depend on relative positions of the sun, moon and earth? ● How can drawing be used to better understand the phases of the moon?
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STANDARDS

Curriculum Standards	Arts Standards
<p>S4E2 Students will model the position and motion of the earth in the solar system and will explain the role of relative position and motion in determining sequence of the phases of the moon. b. Explain the sequence of the phases of the moon.</p>	<p>VA4MC1 Engages in the creative process to generate and visualize ideas.</p> <p>VA4PR.1 Creates artworks based on personal experience and selective themes.</p>

KEY VOCABULARY

Content Vocabulary
<ul style="list-style-type: none"> ● Phase ● Cycle ● Orbit ● Waxing ● Waning ● Gravity ● Tides ● Full moon ● Quarter moon ● Crescent ● Illuminate ● Fractions ● Data collection
Art Vocabulary
<ul style="list-style-type: none"> ● Line: An element of art which refers to the continuous mark made on some surface by a moving point. It may be two dimensional, like a pencil mark on a paper or it may be three dimensional (wire) or implied (the edge of a shape or form) often it is a outline, contour or silhouette. ● Shape: An enclosed space defined by other elements of art. (Shapes may take on the appearance 2 or 3 objects). ● Form: An element of art that is three-dimensional and encloses volume (cubes, spheres, and cylinders are examples of various forms). ● Sphere: A round solid figure, or its surface, with every point on its surface equidistant from its center. ● Value: This describes the lightness or darkness of a color. Value is needed to express volume.

- Drawing: A picture or diagram made with a pencil, pen, or crayon rather than paint, especially one drawn in monochrome.
- Illustration: A picture illustrating a book, newspaper, etc.
- Bookbinding: The process of physically assembling a book from an ordered stack of paper sheets that are folded together into sections or sometimes left as a stack of individual sheets. The stack is then bound together along one edge by either sewing with thread through the folds or by a layer of flexible adhesive.

TECHNOLOGY INTEGRATION

<https://www.youtube.com/watch?v=AQ5vty8f9Xc>

ASSESSMENTS

Formative	Summative
<ul style="list-style-type: none"> • Assess the calendar weekly using a sentence frame: "This week I observed..." 	<ul style="list-style-type: none"> • Pre/Post-Test (before and after unit) • Documenting Phases of the Moon Rubric (See Downloads)

MATERIALS

- Calendar for data collection; Art pencils H, 2b, 4b, 6b; 1 rubberband per student; hole punch; five pieces of copy paper per student; 1 sheet of cardstock per student; 1 pencil or bamboo skewer per student

Activating Strategy (5-10 min)

Share PBS moon phase video with class <https://www.youtube.com/watch?v=AQ5vty8f9Xc>. Introduce Sketching pencils. Allow students to experiment with the 4 different pencils. Discuss how the pencils are different. Create a value scale sketch demonstrating the value range of the 4 pencils.

- Each student will be given a calendar to record moon phase observations for one month.
- Each student will create a field journal.
- They will use this journal and their recordings on their calendar to create illustrations depicting the phases of the moon, adding a written description.

Main Activity

PROCESS:
 In this project each student will be given a calendar to record moon phase observations for one month. Each student will create a field journal. They will use this journal and their recordings on their calendar to create illustrations depicting the phases of the moon, adding a written description.

Part 1

- Distribute the moon phase calendar and discuss the process of data collection over the course of a month.

Part 2

- Create a field journal by introducing this simple book binding technique. (Books may be pre assembled due to time constraints if necessary.)
- Materials Needed: 8 ½ x 11 copy paper (4 sheets), 8 ½ x 11 cardstock (1 piece), rubber band, Pencil or bamboo skewer

- Tools: scissors, hole punch
- Fold copy paper and cardstock in half horizontally.
- Stack your folded paper, sandwiching the text paper in between the cardstock creating a book.
- Punch two holes along the spine of the book – approximately 1/2 inch from the spine edge and 1 inch from the top and bottom (this can vary but making the holes too close to the edges puts them at risk to rip out)
- Thread the rubber band through the holes and capture the pencil or skewer – this will hold the cover and pages together.
- Now you have created a field journal!

Part 3

- Facilitate a whole group discussion sharing the completed data on the calendars. Highlight the eight phases of the moon and explain the process of illustrating the field journal using the 4 sketching pencils. Explain the difference between the quick sketches collected on the calendars and the illustrations. Explain the difference between a circle (shape) and a sphere (form).

Part 4

- Allow students to complete their field journals illustrating the 8 phases of the moon using their knowledge of form and value along with data collected from the direct observations recorded on their calendars.

REFLECTION**Reflection Questions**

- *How did you use your knowledge of form and value along with data collected from the direct observations to complete the illustrations in your field journal?*
- *How do the phases of the moon correlate with the relative position and motion of the earth in the solar system?*

DIFFERENTIATION**Accelerated:**

- These students could research how the moon would look in the different hemispheres (northern vs. southern) and could sketch the moon as it would look in the southern hemisphere.

These students could also compose a musical selection using found sounds that represent the phases of the moon. The sound's pitch should reflect the size of the moon – such as a full moon would be represented by a deep low sound (like a tuba or bass drum) and a new moon should be represented by a high pitched sound (like a piccolo).

Remedial/EL Students:

- Assist students with vocabulary and sketching by conferencing often throughout the project.

APPENDIX (See Downloads)

- **Documenting Phases of the Moon Rubric**

CREDITS

U.S. Department of Education
Arts in Education--Model Development and Dissemination Grants Program
Cherokee County (GA) School District, Clayton County (GA) School District and ArtsNow, Inc.
Ideas contributed and edited by:
Pam Lehman, Lisa McEachern, Cheryl McFarland, Shannon Green, Jessica Espinoza

Documenting Phases of the Moon Rubric

TASK: Eight Recorded Moon Phases and Informational Writing

Task	4	3	2	1
Accurately draw all eight phases of the moon in the correct sequence.	All 8 phases of the moon are accurately drawn and shaded in the correct sequence.	Most (between 5-7) phases of the moon are accurately drawn and shaded in the correct sequence.	Some (between 3-5) phases of the moon are accurately drawn and shaded in the correct sequence.	Two or less phases of the moon are accurately drawn and shaded in the correct sequence.
Use all vocabulary words for phases: <i>new moon, waxing crescent moon, first quarter moon, waxing gibbous moon, full moon, waning gibbous moon, third quarter moon, waning crescent moon, new moon</i>	Student uses appropriate language skills in the written descriptions of <u>all</u> 8 phases of the moon.	Student uses appropriate language skills in the written descriptions of most phases of the moon.	Student uses appropriate language skills in the written descriptions of some phases of the moon.	Student uses appropriate language skills in the written descriptions of a few phases of the moon.
Accuracy of Science Content	All facts presented about the phases of the moon are complete and correct.	Most facts presented about the phases of the moon are complete and correct.	Most science content is neither complete nor correct.	None of the science content is complete or correct.

Total Score: _____