ArtsNow®
Teaching and Learning Across the Curriculum

GRADE 4 Project Overview

Making a Stabile of the Moon, Sun & Earth

Project Essential Questions

- How can a stabile model the relationship between Earth and its moon?
- What is the cyclical process that results in day and night?

PROJECT DESCRIPTION

In this project, students will design and build a stabile model demonstrating the movement of the Moon, Sun and Earth. The Stabile design was first used by artist Alexander Calder. (He invented the mobile and the stabile). His artwork will be explored and used as an inspiration for this project!

LEARNING TARGETS

"I Can…"

- Design and construct a stabile model of the Sun, Moon and Earth
- Explain the day and night cycle of the earth using the stabile model
- Write a detailed description of the day to night cycle

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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.

Produced through the U.S. Department of Education: Arts in Education—Model Development and Dissemination Grants Program
Cherokee County (GA) School District and ArtsNow, Inc.

Out of this World! **Making a Stabile of the Moon, Sun & Earth** **4th Grade**

DURATION: 2-3 days

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ESSENTIAL QUESTIONS

- How can a stabile model the relationship between Earth and its moon?
- What is the cyclical process that results in day and night?

STANDARDS

Curriculum Standards	Arts Standards
S4E2a Explain the day/night cycle of Earth using a model. **b.** Explain the sequence of the phases of the moon. **c.** Demonstrate the revolution of the earth around the earth's tilt to explain seasonal changes. **d.** Demonstrate the relative size and order from the sun of the planets in the solar system. **ELAGSE4RI3** Explain events, procedures, ideas or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. **MGSE4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	**VA4PR.3** Understands and applies media, techniques, and processes of three-dimensional works of art (ceramics, sculpture, crafts, and mixed-media) using tools and materials in a safe and appropriate manner to develop skills.

KEY VOCABULARY

Content Vocabulary
● Planet ● Solar system ● Crater ● Axis ● Rotation

- Orbit
- Revolution
- Satellite
- Tide
- Phase
- Telescope
- Astronaut
- Cycle
- Proportion
- Scale
- Rates of change
- Orientation
- Scale Model
- Informational text
- Topic sentence
- Main idea
- Key details
- Support
- Site example
- Summary
- Cause/effect

Art Vocabulary

- **Stabile:** a freestanding abstract sculpture or structure, typically of wire or sheet metal, in the style of a mobile but rigid and stationary
- **Sculpture in the round:** a three-dimensional art piece that is freestanding and is meant to be viewed from all sides
- **Balance: r**efers to the ways in which the elements of visual art (lines, shapes, colors, textures, etc.) of a piece are arranged
- **Aluminum armature wire:** heavy, dark aluminium wire which is stiff, but can be bent and twisted into shape without much difficulty
- **Primary colors:** any of a group of colors from which all other colors can be obtained by mixing. Primary colors consist of red, yellow, and blue
- **Color mixing:** mixing together a number of colors to create new colors or shades
- **Shade/tint:** the darkness or coolness of a color

TECHNOLOGY INTEGRATION

- www.eyes.nasa.gov
- www.howstuffworks.com
- www.visuallearningsys.com

ASSESSMENTS

Formative	Summative
• Monitoring progress on designing and constructing the stabile • Assess the calendar weekly using a sentence frame: “This week I observed…”	• Pre/Post-Test (beginning and end of unit) • Stabile model will be assessed based on completion and the student’s ability to write a detailed explanation of day and night cycle using the rubric.

MATERIALS

12 gauge armature wire, 3 sizes of Styrofoam balls, foam brushes, Tempera paint (primary colors and black and white), matchbox car

Activating Strategy (5-10 min)

Introduce the work of Alexander Calder using this site:
http://the189.com/sculpture/mobiles-stabiles-and-sculptur

Teacher can show an example of a completed Stabile using this site:
https://www.brainpop.com/science/space/moon/

Main Activity

Part 1

- Facilitate a whole group discussion of how day and night happen.
- Discuss the relationship between the Earth, Moon and Sun including relative proportion, size and distance.
- Discuss scale models and use a matchbox car as an example because it is 1/64 the size of the real car it represents (real world example). Explain that this is why the 3 Styrofoam balls need to be different sizes. Ask which ball would represent each element.
- Discuss the process of creating a model out of armature wire and styrofoam balls.
- Discuss the role of color in the sculpture and review color mixing.

Part 2

- Students will build the three dimensional stabile of the Earth, Moon and Sun using wire, paint and Styrofoam balls.
- Determine which ball will represent each element.
- Paint each ball to represent the Sun, Moon and Earth making thoughtful color choices and allow to fully dry.
- Build the structure using the armature wire adding the Styrofoam balls to represent the relationship between the elements.

Part 3

- Students will complete informational writing piece answering the following question: Should the Sun cease to exist, what is your predicted outcome for the Earth and the Moon?

REFLECTION

Reflection Questions

- *How did this project help you understand the relationship between Earth and the Moon?*
- *What was most challenging about creating your stabile?*
- *If you could do this project again, what would you do differently?*
- *Does your writing demonstrate understanding of the day/night cycle? (Conduct a peer review of each other's writing before asking this question.)*

DIFFERENTIATION

Accelerated:

- These students could create a virtual stabile for the Earth, Sun, Moon and the eight phases of the moon. Students can use Prezi to create the virtual model. With each segment students

must write an explanation of each process. Students will then present their Prezi's in class. A three-point rubric will be used to assess the presentation.

- These students could write a script that could be used by a tour guide of an exhibit that demonstrates the day and night cycle caused by the revolution of the Earth around the sun. The script should include statements referencing the stabile that was created for class addressing the standards.
- These students could write a song that describes the movement of the Moon, Sun, and Earth. The pitch of the music could change relative to the size of the object (for example – the Sun is the largest, so it would be represented by the lowest pitch since bigger instruments make lower sounds).
- These students could research how the days would be different on different planets in the solar system (longer/shorter) and write an informational essay to compare and contrast the day/night cycle of Earth vs. another planet.

Remedial/EL Students:

- These students will create a stabile using the provided materials. However, with teacher assistance, students will work in a group to complete a Circle Map discussing Rotation.

ADDITIONAL RESOURCES

- Prezi (accelerated accommodation)
- Alexander Calder Presentation: https://the189.com/sculpture/mobiles-stabiles-and-sculptures-by-alexander-calder/

APPENDIX (See Downloads)

- **Making a Stabile of the Moon, Sun and Earth Rubric**

CREDITS

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ArtsNow
Teaching and Learning Across the Curriculum

Making a Stabile of the Moon, Sun, and Earth Rubric

TASK: Eight Recorded Moon Phases and Informational Writing

Task	4	3	2	1
Design and construct a stabile model that depicts the relationship between Earth, the Moon and the Sun. Use paint to depict the Sun, Moon and Earth.	All pieces are correctly assembled and painted.	Most pieces are correctly assembled and painted.	Some pieces are correctly assembled and painted.	Two or less pieces are correctly assembled and painted.
Explain how the rotation and revolution of the Earth and Moon impact the cycle of day and night. Respond to the prompt: "Should the Sun cease to exist, what is your predicted outcome for the Earth and the Moon?"	Student clearly communicates his/her ideas and stays on topic, addressing the prompt.	Student most of the time communicates his/her ideas clearly and stays on topic, addressing the prompt.	Student some of the time communicates his/her ideas clearly and stays on topic, addressing the prompt.	Student rarely communicates his/her ideas clearly or stays on topic, addressing the prompt.
Accuracy of Science Content and Use of Vocabulary	All facts presented about the day/night cycle are complete and accurate. The science vocabulary is integrated into the writing fully.	Most facts presented about the day/night cycle are complete and accurate. The science vocabulary is integrated into the writing most of the time.	Most science content was neither complete nor accurate. The science vocabulary was rarely integrated.	The science content was incomplete or inaccurate. Science vocabulary was not integrated into writing.

Total Score: _____

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