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# UNIT: STARS & PLANETS
# EXPLORING PLANETS THROUGH TELESCOPES, EYES, & DANCE
**(Lesson 2 of 5)**
## Grade Band: 4
## Content Focus: Dance & Science

### LEARNING DESCRIPTION

In this lesson, students will compare and contrast the view of planets through a telescope and the naked eye. Opportunities will be provided for students to have a discussion about the importance of being able to see the planets through the lens of a telescope. The students will then use their observations to describe the physical attributes of the planets that have been observed through dance.

### LEARNING TARGETS

| Essential Questions | "I Can" Statements |
|---|---|
| How have changes in technology helped change the type of information we gain from the sky?<br><br>How can I describe the physical attributes of the planets in the solar system?<br><br>How can I demonstrate attributes of planets through the use of dance? | I can describe the distant objects that can be seen using various technological advances.<br><br>I can describe the physical attributes of the planets.<br><br>I can create a piece of choreography to model attributes of planets in the solar system. |

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## GEORGIA STANDARDS

| Curriculum Standards | Arts Standards |
|---|---|
| S4E1: Obtain, evaluate, and communicate information to compare and contrast the physical attributes of stars and planets. | ESD4.CR.1 Demonstrate an understanding of the choreographic process.<br><br>ESD4.CR.2.a Use movement to express an idea or feeling.<br><br>ESD4.PR.2.a Demonstrate attentiveness, full participation, and cooperation with others in the dance learning and performing environment. |

## KEY VOCABULARY

| Content Vocabulary | Arts Vocabulary |
|---|---|
| • (Composition) Gaseous - A planet composed of mostly gasses<br><br>• (Composition) Rocky - A planet composed of mostly rocks<br><br>• International Space Station - A large spacecraft that orbits Earth and serves as a multinational research laboratory. It is a collaborative project involving five participating space agencies: NASA (United States), Roscosmos (Russia), JAXA (Japan), ESA (Europe), and CSA (Canada)<br><br>• Orbit - The path an object takes in space<br><br>• Planet - Large natural objects that orbit around a star<br><br>• Relative size - How the size of one object compares to another<br><br>• Satellite - Any object that orbits another object | • Choreography - The sequence of steps and movements in dance<br><br>• Flowing - Energy in dance that is smooth, continuous, and graceful<br><br>• Percussive - Energy in dance that is sharp and typically rhythmic<br><br>• Vibratory - Energy in dance that consist of rapid, repeated, trembling, or shaking actions<br><br>• Suspended - Energy in dance that give the illusion of defying gravity<br><br>• Sustained - Energy in dance that are made with deliberate slowness<br><br>• Pathway - The direction that a dancer moves through space<br><br>• Locomotor - Movement that involves traveling from one location to another<br><br>• Non-locomotor - Movement that does not involve traveling across the space |

| | |
|---|---|
| • Star - A massive, luminous sphere held together by its own gravity<br>• Telescope - A tool used to observe far away objects | |

## MATERIALS

- Notebook
- Pencils
- Projector
- Computers/laptops/iPads/Chromebooks
- https://www.nasa.gov/topics/solarsystem/index.html
- https://hubblesite.org/resource-gallery/learning-resources/amazing-space.html
- https://www.discoveryeducation.com/programs/science/elementary/
- 4th Grade Science Teacher Notes
- Planets through the Naked Eye photograph
- Planets through a Telescope Video
- https://eyes.nasa.gov/apps/earth/#/
- https://eyes.nasa.gov/apps/solar-system/#/home
- https://science.nasa.gov/solar-system/planets/
- https://stellarium-web.org/

## INSTRUCTIONAL DESIGN

**Opening/Activating Strategy**

- Explore the night sky using this website.
- Ask students what they notice. Ask students: What could we use to get a clearer picture of the planets in our solar system?
- Show the students a picture of the planets from the view of the naked eye, pictures of the planets using various technologies (Hubble Space Telescope, Mars Rover, etc.), and a video of the planets using a telescope.
- While the students are viewing the video, students will jot down the similarities and differences that they notice among the planets.
- Students will share their notes and the teacher will record on an anchor chart.

**Work Session**

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- The teacher will lead the students on a solar system walk, using this website and these photographs to view planets in space.
- The teacher will pose the following questions to the class:
    - If you could be any planet in the solar system, which would you choose?
    - If you could share your favorite planet with a partner, but only use movements and not words, could you do it?
- As a class, create movements that represent Earth's attributes.
    - Using this website, project a current view of Earth from space.
    - Ask students:
        - Would our movements be flowing, percussive, vibratory, suspended, sustained? Show students examples of each.
        - Would our movements be locomotor or non-locomotor?
            - If our movement is locomotor, what pathway would we take?
    - Create five movements together as a class that represent the attributes of Earth for the Earth choreography.
- Allow students to choose their favorite planet and work with a partner to create a choreography of at least five movements.
    - Movements must represent the planet (i.e., size, color, shape, location, rotation, inner(closest), outer (farthest), gassy, rocky, etc).
    - Students should plan their choreography in their STEAM journals or on paper. Students should decide what type of movements they will use to communicate the attributes of the planet.
- Students will record their movements in their notebook.
- Partners will perform their choreography for another group. The other group will decide which planet they are representing and why (two guesses only).
    - As students identify which planet they think is being presented, ask students to use dance vocabulary like percussive or vibratory to support their answer.
- Allow groups to take turns presenting.

**Closing/Reflection**

- Invite partner-groups to share their movements with the class.
- Revisit the solar system walk; students should explain one of the movements they chose for their planet and which photograph they chose to use as the inspiration for their movements.
- Ask students why is it important to see a planet through the lens of a telescope versus with the naked eye?

## ASSESSMENTS

**Formative**

- Teachers will assess student learning through:
    - Observation of movements/dance vocabulary
    - Class discussion

| Summative |
| --- |
| • Rubric |

## DIFFERENTIATION

**Accelerated:** Students will construct an explanation of why they chose to use the image they did to represent the designated planet. Students will be asked to provide information as to when the technology used to photograph the planet was introduced, how the image has provided information about the planet, and what information was provided about the planet from the given instrument.

**Remedial:** Allow students to work in groups of four and create three movements for each planet instead of five.

## ADDITIONAL RESOURCES

## CREDITS

U.S. Department of Education- STEM + the Art of Integrated Learning
Ideas contributed by: SAIL Grant Teacher Leaders, Lybria Rivers, Brenda Williams

**This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.*