Grade 3 Out of This World Classroom Activity

The Classroom Activity introduces students to the context of a performance task, so they are not disadvantaged in demonstrating the skills the task intends to assess.

Contextual elements include:

- an understanding of the setting or situation in which the task is placed;
- potentially unfamiliar concepts that are associated with the scenario; and
- key terms or vocabulary students will need to understand in order to meaningfully engage with and complete the performance task.

The Classroom Activity is also intended to generate student interest in further exploration of the key idea(s). The Classroom Activity should be easy to implement with clear instructions.

Please read through the entire Classroom Activity before beginning the activity with students to ensure any classroom preparation can be completed in advance.

Throughout the activity, it is permissible to pause and ask students if they have any questions.

Resources needed:

- Chart paper, white board, or chalkboard
- Markers or chalk
- Paper and pencil for each pair/group
    - Students who need an accommodation may use their preferred tool for writing.
- Some method of displaying ancillary materials[1]

Learning Goals:

Students will understand the context of the key concepts related to the topic:

- The Sun, planets, and moons are parts of the solar system.
- Astronauts and astronomers study the solar system to help others learn more about the solar system.

Students will understand the key terms:

- **solar system**: the Sun and all the objects that travel around it
- **orbit**: the path an object takes as it travels around the Sun
- **astronomers**: scientists who study the solar system

Note: Definitions are provided here for the convenience of facilitators. Students are expected to understand these key terms in the context of the task, not memorize the definitions.

[1] Facilitators can decide whether they want to display ancillary materials using an overhead projector or computer/Smartboard, or whether they want to produce them as a handout for students.

Out of This World Classroom Activity

[Purpose: The facilitator's goal is to help students understand that the Sun, planets, and the planets' moons are parts of the solar system, and that the work done by astronauts and astronomers helps others know more about the solar system. This activity will allow students to be active participants as they further explore the concept of the solar system.]

Note: The following section can be modified to accommodate various teacher-student interaction types such as a teacher-led discussion with the entire class, a teacher-student discussion for remote locations with a single student, or small groups.

[Divide students into groups of 3–4.]

Facilitator says: "Today, we will get ready for the Out of This World Performance Task that is about the solar system. Let's start by discussing what is in the solar system."

[Draw a large circle on the chart paper, white board, or chalkboard.]

Facilitator says: "I have drawn a large circle. It is at the center of the solar system. I want you to talk to the people in your group and discuss if you think the circle that I've drawn is Earth, the Sun, a moon, or some other object in space. Once your group makes a decision, write your group's choice and why your group made that choice on a piece of paper."

[Give the students two minutes to discuss and record their decision. While students are discussing, write *Earth*, *Sun*, *Moon*, and *Other* on the chart paper, white board, or chalkboard. Tell students that you are recording these words so that they know their choices.]

Facilitator says: "Let's see what each group discussed. When I call on your group, someone should share what your group decided the circle represents. That person should also share why your group made that choice."

[Call on one group at a time.]

Possible student responses (*unscripted*):

- The circle stands for Earth because that is the planet that we live on.
- The circle stands for the Sun because it is bigger than Earth.
- The circle stands for a moon because the shape of a full moon is round like a circle.
- The circle stands for something else in space like a comet or asteroid.

Facilitator says: "I am going to give you a little more information, and I want to see if your group wants to change your answer or keep your answer. Remember, the circle that I have drawn is at the center of the solar system. Solar means

having to do with the Sun and a system is a set of parts that work together. I am going to give you one minute to discuss with your group if you'd like to keep your answer or change it."

[Give the students one minute to discuss. Walk around to ensure that the students are on task.]

Facilitator says: "Choose a different person from your group to share your group's final decision."

[Call on each group to share its final decision.]

Facilitator says: "The circle that I drew represents the Sun. It is at the center of the solar system. The Sun is larger than the planets; about one million Earths would fit inside the Sun. The solar system is the Sun and all of the things that travel around it. Now I want you to focus on what makes up the rest of the solar system. You have two minutes to discuss with your group the following question that I will write."

[Write and say the following discussion question on the chart paper, white board, or chalkboard.]

Discussion question:

- What travels around the Sun?

[Give students one to two minutes to discuss.]

Facilitator says: "When I call on your group, I want someone to share what your group discussed about what travels around the Sun."

Possible student responses (*unscripted*):

- Planets
  - Mercury
  - Venus
  - Earth
  - Mars
  - Jupiter
  - Saturn
  - Uranus
  - Neptune
- Moons
- Stars

Note: Students may list individual planets.

Note: If a student names Pluto, share the following information: Pluto is not included here due to a change in its identification as a planet. It is now considered a dwarf planet.

[Record student responses any place around the word Sun. Add any of the above responses that are not said by the students. Clarify any misconceptions by crossing off any ideas that are incorrect.]

Possible misconceptions (*unscripted*):

- clouds
- rain

Facilitator says: "The Sun is a star. The planets travel around the Sun and the moons travel around the planets. Every planet except Mercury and Venus has its own moons. Earth has only one Moon."

[Point to the list of planets.]

Facilitator says: "These eight planets travel around the Sun and that is known as orbiting the Sun. Orbit means the path that an object takes as it travels around a different object. Each planet has its own orbit around the Sun. I have a picture of the solar system."

[Show **Figure 1: Solar System**. Note: For students who are visually impaired, read the description below the picture.]

Facilitator says: "This picture shows an example of how the planets orbit the Sun. Each planet stays on its own path, shown by the rings in this picture."

[Point to the rings in the picture. Tell students that you are pointing to the rings in the picture.]

Note: For the following section, either the facilitator or student volunteers can point to the planets. The facilitator can decide to point out the planet if there are no volunteers or if students are unable.

Facilitator says: "The planets are closer to each other than they are to the Sun. I would like to know if you know the different planets. Mercury is closest to the Sun. Someone please come point to Mercury."

[Call on a student volunteer. Note: For students with mobility issues, bring the picture to the student(s).]

Facilitator says: "Someone please come point to Venus. This is the next closest planet to the Sun."

[Call on a student volunteer.]

Facilitator says: "The next planet is the planet we live on, Earth. Someone please come point to Earth."

[Call on a student volunteer.]

Facilitator says: "The next planet, Mars, has the nickname, 'the red planet'. Someone please come point to Mars."

[Call on a student volunteer.]

Facilitator says: "The next planet is the largest planet in the solar system. It is Jupiter. Someone please come point to Jupiter."

[Call on a student volunteer.]

Facilitator says: "The next planet, Saturn, is known for its rings. Other planets in the solar system have rings, but Saturn's rings are very bright and large. This makes them easier to see with a telescope. Someone please come point to Saturn."

[Call on a student volunteer.]

Facilitator says: "The seventh planet from the Sun is Uranus. Someone please come point to Uranus."

[Call on a student volunteer.]

Facilitator says: "The planet farthest from the Sun is Neptune. Someone please come point to Neptune."

[Call on a student volunteer.]

Order of planets from the Sun:

- Mercury
- Venus
- Earth
- Mars
- Jupiter
- Saturn
- Uranus
- Neptune

Facilitator says: "We have discussed that the Sun is at the center of the solar system. We also discussed that the eight planets and their moons are parts of the solar system."

Note: Make sure students arrive at the common understanding that:

- The Sun, planets, and moons are parts of the solar system.

[Say and record the common understanding on the chart paper, white board, or chalkboard.]

Facilitator says: "We know that the Sun, the planets, and their moons are parts of the solar system. How do we know so much about what is in the solar system?"

Possible student responses (*unscripted*):

- Movies about the solar system
- What we read in books and online
- What we learn in school
- Scientists who study space
- Astronauts who travel into space

Facilitator says: "The work of scientists who study the solar system, called astronomers, is a reason that we know so much about the solar system. Turn to someone sitting near you and discuss what you know about astronomers."

[Say and write the word *Astronomer* on the chart paper, white board, or chalkboard.]

[Give students one to two minutes to discuss. Walk around to ensure that the students are on task.]

Facilitator says: "I am going to record your responses under the word 'Astronomer', which I have written on the chart paper/white board/chalkboard. When I call on you, please share what you discussed."

[Call on student volunteers. Record student responses under *Astronomer*.]

Possible student responses (*unscripted*):

- They study the objects that are in the solar system.
- They ask questions and then search for the answers to their questions.
- They record what they learn about the solar system.

[Record the student responses. Add to the list any of the above responses not said by the students.]

Facilitator says: "Astronomers use tools like telescopes to get a closer look at the sky. They use the telescopes to find out more information about what is in the solar system. Once they learn new things about the solar system, they ask new questions and search for the answers. They are always learning new information and asking new questions."

Facilitator says: "What about astronauts? What do you know about astronauts? Turn to a different person sitting near you and discuss what you know about astronauts."

[Say and write the word *Astronaut* on the chart paper, white board, or chalkboard.]

[Give students one to two minutes to discuss. Walk around to ensure that the students are on task.]

Facilitator says: "I am going to record your responses under the word 'Astronaut', which I have written on the chart paper/white board/chalkboard. When I call on you, please share what you discussed."

[Call on student volunteers. Record student responses under the word *Astronaut*.]

Possible student responses (*unscripted*):
- They travel into space.
- They work on spaceships.
- They study things in the solar system to learn more about the solar system.

[Record the student responses. Add to the list any of the above responses not said by the students.]

Facilitator says: "Astronauts go through many years of training in order to learn how to live in space. Astronauts have many different jobs; they might search for answers to questions about the solar system or they might be a pilot on a spacecraft."

Facilitator says: "Now I want you to think about why the work of astronauts and astronomers is important. You have two minutes to discuss with your group why the work of astronauts and astronomers is important."

[Give students one to two minutes to discuss. While students are discussing, write the discussion question on the chart paper, white board, or chalkboard.]

Discussion question:
- Why is the work that astronauts and astronomers do important?

Facilitator says: "When I call on your group, I want someone to share what your group discussed."

Possible student responses (*unscripted*):
- People who do not study the solar system know more about the solar system because of the work that astronomers and astronauts do.

Note: Make sure students arrive at the common understanding that:
- Astronauts and astronomers study the solar system to help others learn more about the solar system.

[Say and record the common understanding on the chart paper, white board, or chalkboard.]

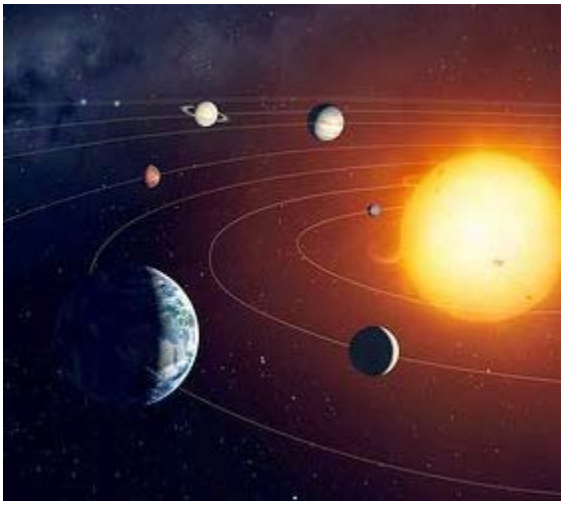
Facilitator says: "In your performance task, you will be learning more about the solar system. The group work you did today should help prepare you for the research and writing you will be doing in the performance task."

Note: Facilitator should collect student notes.

ANCILLARY MATERIAL

Figure 1

Solar System



Picture Description: This picture shows the solar system. The Sun, on the right-hand side of the picture, is the largest sphere, or ball-like shape. The Sun provides light and heat to the solar system. Eight spherical planets travel around the Sun. The planets are of varying sizes and distances from the Sun. The sides of the planets facing the Sun are lit up. The sides of the planets facing away from the Sun are dark. Each planet stays on its own circular path around the Sun. These paths, known as orbits, are represented as white rings in this picture. In the background, there are many distant stars.