

Navigating the Solar System with Planetary Robot Probes

GRADE LEVEL

K-1

SUBJECTS

Planetary order of the solar system

ESTIMATED TIME

50-minute session on planetary navigation

[Astronomy compels the soul to look upwards and leads us from this world to another.](#)
[Plato](#)

OVERVIEW

The purpose of this exercise is to give students a “hands on” fun activity that teaches the planetary order of the solar system and incorporates an educational robot to navigate through the solar system while improving hand eye coordination.

STATE SCIENCE STANDARDS

A number of the state standards for many states are met by the use of these exercises for grades K-1.

OBJECTIVES

In this series of lessons, students will

- Become familiarized with the planets and their positions within the solar system
- Develop hand eye coordination skills to navigate their robot probe among the planets
- Be able to speak out the names and share their knowledge of the planets with confidence

MATERIALS

- Educational Robot with a wireless controller (ideally one per student)
- A sheet of paper (brown or butcher block) 8' – 12' long and at least 24 inches wide
- Masking or scotch tape to attach the paper to the ground

SETUP

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1. Prior to the session, the teacher (or better yet the class) can paint, draw or use crayons to show the planetary order of the solar system. Alternatively, on separate sheets of paper each planet can be drawn by each participating student. If the school possesses other props such as different colored and sized balls these can be substituted for the paper/cloth.
2. Place a fully charged robot (and controller) at the starting point. Test it to make certain the wireless remote and robot are working properly.
3. Have the student drive the robot around to gain familiarity with starting, stopping, reversing and turning.
4. There should be a teacher or teacher's aide present to assist the student and if there are multiple set ups, there should be a person with each student.

LESSON

1. Prior to starting, a presentation and/or a video can be used to describe the solar system and each of the planets. Teachers can also include the moons of the various planets if so desired.
2. First, layout each of the planets starting from the Sun in order all the way out to Saturn. For the first time explain the "game" to the students as one of navigating their robot probe to the specified planet.
3. Then, have the student start the robot probe at Earth and give it a name (like "Pathfinder", "Voyager", or "Scout") and explain why that name was chosen.
4. Next, the teacher or student mentor will call out where the robot probe is to go and the pupil will fly their robot probe to the designated planet and circle it once and stop. Upon arrival, the pupil can be asked to say "We have arrived at Pluto and share a fact. Any specific fact(s) that the pupil is aware of with that destination is then expressed to the mentor/teacher.
5. The pupil should not run their probe into a planet.
6. The next planetary destination is chosen by the teacher/ mentor and the student flies the probe to the next destination, circles it and stops and repeats "We have arrived at" the explanation known about that planet.
7. This is repeated over again until all the planets and sun have been visited at least once.
8. Depending on time, resources available and number of mentors present the exercise can be repeated.

ASSESSMENT / EVALUATION

1. Can the pupil remember the order of the planets and relative sizes and show interest in astronomy?
2. Does the pupil have hand-eye coordination ability?

3. A question to be asked could be: would you like to be the pilot of an actual robot probe to explore one of the planets or moons?

ENRICHMENT

1. Knowledge of the planets, their attributes and relative locations is enhanced by pupils piloting their robot probes and learning about them.
2. Depending on time, knowledge about the moons can be presented as well.
3. Questions such as why there are planned probes to explore the ocean under Europa or to explore Titan's ethane oceans or to visit comets and meteorites serve to inspire the imagination.