SOLAR SYSTEM PLANETARIUM

A. OVERVIEW

Subject	Earth science
Age	6-10
Duration	120 minutes
Content	The Solar System as the Sun and its family of planets; the planets orbit the Sun
Goals	Students will understand : 1. The Sun is the central body in the solar system. 2. The solar system includes planet Earth, the Sun, seven other planets and their moons. 3. The planets move around the Sun in predictable paths (which approximate to circles). 4. The role of gravity in maintaining the shape of the solar system.
Objectives	Students will build a Solar System model, discuss the structure of the Solar System, the appearance of the planets and the importance of the Sun.
Materials	Solar System Planetarium Model
Introduction	Background reading — The Solar System and its components Class discussion — The Solar System, the planets and the Sun
Practical	Students will make and paint a planetarium.
Extensions	Investigations and discussion points

B. BACKGROUND READING

Set the background reading as a homework assignment the day before the planned lesson.

Review

Start the lesson by reviewing the reading material. Make sure that students understand:

- The structure of the Solar System
- The names of the eight planets
- That planets orbit the Sun roughly in circles

Reading material

The Solar System is made up of our Sun, the planets and other bodies in space.

The planets move around the Sun in paths called orbits. The orbits are roughly circular (in reality they are ellipses). The further a planet is from the Sun, the longer its orbit, and the longer its year (the time it takes to complete one orbit).

The force of gravity attracts all objects to all other objects. Gravity between the Sun and a planet keeps the planet in its orbit (i.e. so that it does not drift away from the Sun).

The Sun is a star, of which there are billions in our galaxy. It is a medium-sized, average star, about 4500 million years old, and will continue to shine for thousands of millions more years. It is made up of hydrogen and helium.

The four inner planets (Mercury, Venus, Earth and Mars) are rocky planets with solid surfaces. The four outer planets (Jupiter, Saturn, Uranus and Neptune) are made up of largely of gas and are known the gas giants.
All the outer planets have systems of rings made up of billions of chunks of ice.

Apart from the planets, other objects in the Solar System include moons that orbit the planets (the gas giants have dozens of moons), asteroids (large and small lumps of rock), minor planets (small planets beyond the orbit of Neptune) and comets (giant balls of ice and dust).

Students may see Pluto listed as a planet in older sources. Pluto was previously classified as a planet (according to the International Astronomical Union), but has been downgraded to a minor planet.

C. CLASS DISCUSSION

The Solar System
- What is it?
- What objects make it up?
- How do the planets move around the Sun?
- What other objects are there in the Solar System?

The planets
- What are the names of the planets?
- What are the planets like?
- Display images of the Solar System and planets

The Sun
- The Sun is a star
- How old is the Sun?

D. PRACTICAL

Each ground of students requires 1 kit and 1 instruction sheet. Select the relevant information from the instructions if necessary.
Go through the safety warnings advised in the instructions with the class before assembly.
Check the progress of the each group.
You may need one lesson to paint the planets (link to class discussion about the structure of the planets) and another to build the planetarium after the paint has dried (link to class discussion about the structure of the Solar System).

E. EXTENSIONS

- Are the Sun and planets in the mobile to scale?
- If they were to scale, which planet would be largest?
- Which planet is hottest and which is coldest? Why?
- Why can we see the Sun and other stars?
- Why can see the planets and moons in the Solar System?
- What is a year? Are the years on other planets the same as on Earth?
- Do other stars have their own planets?

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