

Medium term Plan for Science

Y5 Earth and Space

Summer 2

Class Text: Cosmic – Frank Cottrell-Boyce

Hook: Making solar system model

Topic Reflection: P4C discussion

Scientific Enquiry: Why do we have 24 hours in a day and 365 days in a year? Why does it get dark? Why does the moon change shape?

Scientific Strands:

Vocabulary

EYFS + KS1

Plants
Living things & their habitats
Animals including humans
Everyday materials
Light
Sound
Seasonal changes

KS2

Electricity
Earth and Space
Forces and Magnets
Sound
Light
States of matter
Properties & changes of materials
Rocks
Evolution and inheritance
Living things & their habitats
Animals including humans
Plants

Tier 1 Vocabulary

Earth
sun
moon
star

planets

Tier 2 Vocabulary

rotate
axis
spherical

Tier 3 Vocabulary

Mercury
Venus
Mars
Jupiter
Saturn
Uranus
Neptune
Solar system
Orbits
Universe
Lunar
Satellite

Scientific Concepts

- Organisation, cause and effect, systems, scale refers to quantity, models, change, structure and function, variation, diversity

Previous Skills

Observe and describe changes across the four seasons.

Observe and describe weather associated with the four seasons and how day length varies.

Look for and measure shadows, find out how they are formed and investigate what causes shadows to change

Follow their own lines of enquiry about the world around them, discussing possible enquiry method and making decisions about what to observe.

Previous Knowledge

Our four seasons are spring, summer, autumn and winter. In spring it begins to get warmer. Leaves grow on trees and some begin to blossom. Plants grow and you may see baby animals such as lambs. In summer, the weather gets hotter. The daytime is long and the nights are short. Summer has the longest days. The trees are full of leaves and there are lots of flowers, bees, butterflies and other insects. In autumn, the weather begins to get colder and leaves start to fall from the trees. The amount of daylight becomes less. In winter, the weather is much colder. Sometimes it is cold enough to freeze, leaving frost and ice on the ground. It sometimes snows. Many trees have bare branches as all their leaves have fallen off. The daytimes are the shortest in the year and the night times are the longest

The Earth's main source of light is the Sun.

The Sun and other stars, fires, torches and lamps all make their own light and so are examples of sources of light. A mirror is not a source of light, it merely reflects light. Similarly, the Moon is not a source of light because it reflects the light from the Sun.

Previous Understanding

Light from the sun can be dangerous but there are ways to protect ourselves from it e.g. sunglasses for your eyes and sunscreen to protect skin.

The amount of daylight hours changes with each season.

Shadows are made by blocking light from the sun or some other source of light.

	<u>Concepts</u>	<u>Learning Objective</u>	<u>Lesson Outcome</u>	<u>ARE Success Criteria</u>	<u>GD Success Criteria</u>	<u>SEND Success Criteria</u>
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Lesson 1	Questioning Planning Technical Knowledge Evaluating	L.O: To know the movement of the earth and the moon	Children can describe the movement of the Moon relative to the Earth	I can create a rotating Sun. Earth and Moon model I know the moon orbits the earth I know the earth orbits the sun I know how an eclipse happens	I can explain why the moon is important for life on earth.	See IEP/EHCP or Birmingham Toolkit for individual targets.
Lesson 2	Questioning Planning Technical Knowledge Evaluating	L.O: To know the phases of the moon	Children can use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky	I can use my Sun. Earth and Moon model to explain the phases of the moon I can complete a diagram demonstrating the phases of the moon	I can write a short explanation text explaining the phases of the moon	See IEP/EHCP or Birmingham Toolkit for individual targets.
Lesson 3	Questioning Planning Technical Knowledge Evaluating	L.O: To know the planets in the solar system	Children can describe the movement of the Earth, and other planets, relative to the Sun in the solar system	I can research information about a planet I can write down key information I can present this information clearly to the group	I can explain the Geocentric and Heliocentric models of the Solar System	See IEP/EHCP or Birmingham Toolkit for individual targets. classification tables
Lesson 4	Planning Collecting, Analysing & Interpreting Data Technical Knowledge Evaluating	L.O: To compare planets in the solar system	Children can record data and results of increasing complexity using scientific diagrams and labels, classification keys,	I can label the axis I can plot information on a bar chart I can answer questions about the data	I can infer from the data	See IEP/EHCP or Birmingham Toolkit for individual targets.

			tables, and bar and line graphs			
Lesson 5/6	Questioning Planning Collecting, Analysing & Interpreting Data Technical Knowledge Evaluating	L.O: To investigate and make first hand observations to explain why we have day and night Plan and carry out comparative and fair tests, making systematic and careful observations. Record data and results of increasing complexity	Children can investigate and make first hand observations of how shadows are caused by the sun and observe how they change throughout the day, Create a sun dial to observe how shadows are cast throughout the day and use this to interpret the time. Children can use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky	I can use my Sun, Earth and Moon model to explain day and night I can explain how the sun moves throughout the day I can use shadows to estimate the time	I can describe accurately the movement of the Earth relative to the Sun in the solar system I can write a short explanation text explaining day and night	See IEP/EHCP or Birmingham Toolkit for individual targets.
Endpoints:	Knowledge: The sun is a star at the centre of our solar system Planets travel round the sun in a fixed orbit Earth takes $365 \frac{1}{4}$ days to complete its orbit around the sun The earth rotates on its axis As the earth rotates on its axis, half faces the sun (here it is day) and half faces away from the sun (here it is night) As the earth rotates the sun appears to move across the sky					

The moon orbits the earth. It takes about 28 days to complete its orbit

The eight planets of the solar system are:

Mercury- The closest planet to the sun

Venus- Is the same size as the Earth but it rotates the other way and much more slowly

Earth- The place where we all live. The only place with water on the surface and is thought to be the only planet that can sustain life.

Mars- Known as the Red Planet and named after the Roman God of War

Jupiter- The largest planet in the Solar System with a huge storm that can be seen using a telescope

Saturn- Famous for the rings which are made of dust and ice.

Uranus- The coldest planet in the Solar System

Neptune- The furthest planet from the sun

Pluto used to be classified as a planet but in 2006 was renamed as a dwarf planet

The Geocentric Model of the Solar system is the theory that the Earth is the centre with the sun, moon and stars all orbit. This was theorised by Ptolemy and was the common understanding for more than a thousand years.

The Heliocentric Model of the Solar System is the astronomical theory that the sun lies at the centre while the Earth and other bodies revolve around it. This was discovered by Copernicus and supported by Galileo.

Skills:

Describe the movement of the Earth and other planets relative to the sun in the solar system.

Describe the movement of the moon relative to the Earth.

Describe the sun, Earth and moon as approximately spherical bodies.

Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Raise different types of scientific questions, and hypotheses.

Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models.

Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.

Use a simple mode of communication to justify their conclusions on a hypothesis. Begin to recognise how scientific ideas change over time.

Understanding:

Understand day and night

Understand the seasons

Understand the phases of the moon

Understanding of scale of the Solar System