Nailsworth C of E Primary School

Together, inspired by the challenge….

Curriculum Design

Science: Seasonal change, Earth & Space, Light

Areas of study	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Core substantive knowledge	Seasonal changes • explore, observe and understand some important processes and changes in the natural world around them, including the seasons • begin to explore recording changes	Seasonal changes • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies		Light • recognise that light is required in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect the eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change		Earth and Space • 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.	Light • recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. • explain that we see things because light travels from light sources to the eyes or from light sources to objects and then to the eyes. • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Cross-curricular links	Autumn is here What can you see in Winter? I love the Spring. What can you see in Summer?	*'The Bad-Tempered Ladybird.'* Are you a ladybird?				*The Astronaut Selection Test Book*	
Range and depth of scientific knowledge- substantive knowledge	Learn that there are different types of weather and four seasons. Understand that in the Autumn changes happen to trees that in the Spring there is new life, that in the summer it can be sunny and more time can be spent	Understand that in the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.		Learn that we see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Understand that some objects, for example the		Learn that the Sun is a star which is at the centre of our solar system. There are 8 planets These travel around the Sun in fixed orbits.	Recognise that light appears to travel in straight lines and we see objects when light from them goes into our eyes. The light may come directly from light sources but for other objects some light must be reflected

	outdoors, and that in the winter more layers of clothing are needed to keep warm.	Understand that the weather also changes with the seasons. In the UK, it is usually colder and rainier in Winter and hotter and dryer in the Summer. Recognise that the change in weather causes many other changes. E.g. the numbers of minibeasts found outside, seed and plant growth, leaves on trees and type of clothes worn by people.		sun, light bulbs and candles are sources of light. Objects are easier to see if it is lighter. Recognise that some surfaces reflect light and that objects are easier to see when there is less light if they are reflective. Be aware that the light from the sun can damage the eyes and it is dangerous to look directly at the Sun Recognise that wearing sunglasses or sunhats in bright light can protect the eyes. Understand that shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the source, object and surface.		Understand that Earth takes 365¼ days to complete its orbit around the Sun. The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (here it is day) and half is facing away from the Sun (night). As the Earth rotates the Sun appears to move across the sky. Learn that the Moon orbits the Earth. It takes about 28 days to complete its orbit. Recognise that he Sun, Earth and Moon are approximately spherical.	from the object into our eyes for the object to be seen. Understand that objects that block light (are not fully transparent) will cause shadows. Recognise that because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.

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Range and depth of disciplinary knowledge.	Completion of a daily weather chart and comparing weather. Observation of change in the seasons during outdoor learning.	Creation of tables or charts about the weather; Displays of what happens in the world around them, including day length, as the seasons change.		Identification of patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes		Comparison of the time of day at different places on the Earth through internet links and direct communication; Creation of simple models of the solar system Construction of simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day Research into why some people think that structures such as Stonehenge might have been used as astronomical clocks.	Design and construction of a periscope to demonstrate that light appears to travel in straight lines. Explanation of how it works. Investigation of the relationship between light sources, objects and shadows by using shadow puppets. Examination of a range of phenomena e.g. rainbows, colours on soap bubbles, and coloured filters.
Scientific enquiry- disciplinary knowledge	Observation Compare / contrast	Observation Record Compare / contrast, classify		Observation Pattern-finding Record		Observation Research and record Construction	Observation Compare / contrast, classify Research and record Explanation
Organisation and communication	Drawings, verbal communication	Charts, drawings, verbal communication		Drawings, labelling, verbal communication		Annotated diagrams Verbal communication	Annotated diagrams Verbal communication Explanation