Energy substantive knowledge end points

	Scientists	National curriculum	Key knowledge (Sticky knowledge)	**Vocab**	**Jobs**
EYFS **What weathers do we have in the UK?**	Aisling Creevey (Weather reporter) Irish female	Understanding the world Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps	The weather changes Things occur due to the weather such as leaves falling from trees Different places can have different weathers	Weather	Weather reporter Meteorologist Electrician Optician
Year 1 **What is it like in Winter, Spring, Summer and Autumn?**	John Dalton (British weather pioneer) British male	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.	Weather can change There are lots of different types of weather: Rain, Sun, Cloud, Wind, Snow, etc Days are longer and hotter in the summer Days are shorter and colder in the winter There are four seasons: Spring, Summer, Autumn, Winter	Spring Summer Autumn Winter Temperature	
Year 2					
Year 3 **What is a shadow?**	James Clerk Maxwell (Visible and Invisible Waves of Light) Scottish Male	Recognise that they need light 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 their eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object.	There must be light for us to see. Without light it is dark. We need light to see things even shiny things. Transparent materials let light travel through them, and opaque materials don't let light through. Beams of light bounce off some materials (reflection). Shiny materials reflect light beams better than non-shiny materials. Light comes from a source	Light source Reflect Opaque Transparent Translucent Shadow	

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		Find patterns in the way that the sizes of shadows change.			
Year 4 **How can we make different sound?**	Alexander Graham Bell (Invented the telephone) Scottish Male	Know how sound is made associating some of them with vibrating. Know what happens to a sound as it travels from its source to our ears. Know the correlation between the volume of a sound and the strength of the vibrations that produced it. Know how sound travels from a source to our ears. Know the correlation between pitch and the object producing a sound.	Sound travels from its source in all directions and we hear it when it travels to our ears. Sound travel can be blocked. Sound spreads out as it travels. Changing the shape, size and material of an object will change the sound it produces. Sound is produced when an object vibrates. Sound moves through all materials by making them vibrate. Changing the way an object vibrates changes its sound. Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds. Faster vibrations (higher frequencies) produce higher pitched sounds	Amplitude Volume Pitch Particles Wave	
Year 5					
Year 6 **Why does my shadow change length over the course of the day?**	Percy Shaw (The Cats Eye) British male	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 our eyes or from light sources to objects and then to our eyes.	Animals see light sources when light travels from the source into their eyes. Animals see objects when light is reflected off that object and enters their eyes. Light reflects off all objects (unless they are black). Non shiny surfaces scatter the light, so we do not see the beam. Light travels in straight lines.	Reflect Absorb Emitted Scattered Refraction	

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		Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.			