Science – Year 3

Light

Why do shadows change during the day?

NC objectives - **areas of study**	End point of area of study	Vocabulary		
		Basic	Adventurous	Technical
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 find patterns in the way that the size of shadows change.	Children explore light around them from different sources, they can talk about dark as the absence of light and know we need light to see things. Children are able to explain how light is reflected from surfaces and that shadows are formed when light is blocked by a solid object. Children explore shadows on the playground and talk about the pattern of change within them. Children can talk about the benefits of light and the dangers associated with it.	Light source, dark, mirror, absence of light, sun, sunlight, surface straight, shadow, dangerous	Reflect, travel,	transparent, translucent. opaque,

Knowledge

Substantive Knowledge

- Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments

  Lesson 1

  LO To know that we need light to see things.

  light, light source, dark, absence of light,
- Know that light is a form of energy

Disciplinary Knowledge

Working as Physicists and Sciographers children explore how light and shadows are produced and used in the world around them.

Similarities and differences

- Know that we need light to see things and that darkness is the absence of light
- What would happen if there was no light in the world?
- Lesson 2
- LO To know that light is reflected from surfaces.
- **reflect, mirror,**
- Know that light travels in straight lines
- Know that light is reflected when it travels from a light source and then 'bounces' off an object
- know that everything that we can see is either a light source or something that is reflecting light from a light source into our eyes
- lesson 3
- LO To know light from the sun can be dangerous.
- **light, light source, dark, Sun, sunlight, dangerous**
- Know that the Sun is a light source, but that the Moon is not and is merely reflecting light from the Sun
- Know that many light sources give off light and heat
- Know that sunglasses can protect eyes from sunlight but looking at the Sun directly – even with sunglasses – can damage the eyes
- How can the sun be so important yet also dangerous?
- Lesson 4
- LO To know that shadows are formed when the light from a source is blocked.
- **light, light source, shadow, transparent, opaque, translucent**
- Know that opaque objects block light creating shadows and that light passes easily through transparent objects
- Know that opacity/transparency and reflectiveness are properties of a material
- Lesson 5
- LO To know how shadow size changes.
- **light, light source, dark, absence of light, shadow,**
- Know that as objects move towards a light source, the size of the shadow increases
- Know how to show the changing of shadow size by drawing a diagram with straight lines representing light

Children know how shadows are created and look for similarities and differences in their formation and size. They explore what happens when light reflects off a mirror or other reflective surfaces, playing mirror games to observe how light behaves.

Evidence

Exploring first hand, they are able to seek evidence to support answers to questions about the formation of shadows and how they change throughout the day. They find shadows, measure them and discuss their findings using scientific vocabulary correctly.

Patterns

Children seek patterns in the formation of shadows throughout the day and how they change. They identify how shadows are produced and why they change. They know that when the light source moves, or the distance between the light source and object changes the shadow also changes.

- Know that a data logger can keep track of light levels and that this can be plotted on a graph to show how this changes over the course of a day
- Children track the size of shadows on the playground over the day
- Lesson 6
- LO To know Justin Von Liebig was a German chemist.
- **light, surface, reflect, mirror,**
- Know that Justus Von Liebig was a German chemist. In 1835 he developed a process for applying a thin layer of metallic silver to one side of a pane of clear glass. This technique was soon adapted and improved, allowing for the mass production of mirrors.

Concepts

Biology	Chemistry	Physics	

SKILLS

1. Compare	2. Explore	3. Identify	4. describe	5. classify
6. Question	7. observe	8. test	9. record	10. research

ASSESSMENT

KNOW MORE, REMEMBER MORE, DO MORE...

In this unit of learning, progress has been made when a learner knows more. This 'distance travelled' from the starting point is evidenced through them remembering more and doing more: in books, low stakes quizzes, retrieval, use of mind maps, answering the big question and being able to feel more confident about this unit.