



Helping Your Child with *Light*

Introduction

As part of this section of the National Curriculum for Science, children will learn a number of basic ideas. These may seem obvious to us, but the children need to use a lot of imagination to get them into their heads. Any activities that demonstrate or reinforce these ideas will help them develop the mental agility to deal with new ideas in the future.

This sheet points out the sort of mental blocks that children sometimes have when learning about Light. There are also 'Activities'. These are opportunities when you might talk about things they notice around them, at home or when they are out with the family. This will reinforce what they do at school and help them realise how their science lessons relate to everyday life.

KS1 Year 3: Light and Dark

Useful Vocabulary

Light, bright, dark, black, night, day, reflect, reflective strip.



Basic Ideas

- Light comes from light sources e.g. the sun, light bulbs, fires.
Children often think 'light is just there' and don't think about where it comes from. The fact that you can't see light travel from one place to another because of its speed reinforces this notion.
Activity: Noticing and naming sources of light – fun on bonfire night!
- It is impossible to see in the dark.
Children have probably not experienced absolute

dark so will insist they can see in the dark. The realisation that their sense of sight requires light to see is not obvious to them.

Activity: How can you find something in the dark? – Best done with blindfold rather than in a totally darkened room.

- To see an object, it either gives out, or reflects light.
Children often don't realise that reflective strips only shine because they are reflecting light (very efficiently because of the shapes of the tiny plastic 'crystals' embedded in the fabric that send ALL the light straight back out to the observer instead of spreading it out in all directions). Often reflective strips look so bright that the children will assume that they are sources of light.



KS2 Year 5: Light and Shadows

Useful Vocabulary

Transparent, opaque, shadow, blocking light.

Basic Ideas

- Shadows are formed when light is blocked and have the same shape as the object (but may be stretched or distorted). Many children confuse their shadows and their reflection in a mirror (and will often draw a shadow with a face on!). The idea of shadows forming helps them come to terms with the idea that light travels from a light source (building on KS1 ideas).
Activity: Draw a shadow of themselves and/or their pet and ask how they would get a shadow to form.
- Shadows change length over the day.
This ties in with work they will cover in the Earth in Space section of the curriculum (sheets available). The ability to observe that their shadow is



different at different times of that day is important as it requires that a sequence of observations is compared – which therefore requires observations to be recorded.

Activity: Put a shadow stick in the ground and mark out the shadow's length (and position) over a day (or more ambitious, over several months). Pay particular attention to the lack of shadow at noon – when the sun is directly overhead.

- Position of the sun changes over the day (again coinciding with Earth in Space sheet).
Activity: Predict the direction of a shadow of a tree from the sun's position in the sky (prediction is a very important part of science, it is important that they work out in their heads what they think will happen, if things turn out to be different, it helps them think through a new idea to explain it).



Web Resources

There is an enormous amount of material on the web. The site name may help give you an indication of the quality of the information. Sites ending in '.ac.uk' are usually UK universities, '.edu' are American (US) universities, whilst '.gov.uk', '.gov' and '.mil' are government or military organisations. You can find all sorts of things with a query to a search engine, but here are some to get you started:

- <http://www.phys.soton.ac.uk/>
- <http://www.chem.soton.ac.uk/>
- <http://www.ecs.soton.ac.uk/>
- <http://www.lightwave.soton.ac.uk/>
- <http://www.parents.dfes.gov.uk/discover/>

School of Physics and Astronomy
School of Chemistry
School of Electronics & Computer Science
The Lightwave Roadshow
Department for Education and Skills