Year 3 – Light



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| National Curriculum Outcomes: Knowledge* Recognise that they need light in order to see things and that dark is the absence of light
* Notice that light is reflected form 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 an opaque object
* Find patterns in the way that the size of shadows change
 | National Curriculum Outcomes: Working Scientifically* Asking simple questions and recognising that they can be answered in different ways
* Observing closely, using simple equipment
* Performing simple tests
* Identifying and classifying
* Using their observations and ideas to suggest answers to questions
* Gathering and recording data to help in answering questions
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| Children might work scientifically by:Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. (*Taken from the National Curriculum)* |
| Links to prior learning**Year 1:** identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense | Links to future learning**Year 6:** 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. |
| Key VocabularyLight, dark, light source, eye, shadow, reflect, reflection, shiny, dull, transparent, translucent, opaque | Common Misconceptions* Children sometimes confuse ‘reflection’ and ‘shadow’
* Children often think they can see in the dark, as they have never experienced a completely dark place
* Children can think that eating carrots will help them to see in the dark
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| Important Scientists **Justus von Liebig** – German scientist who invented highly reflective mirrors. His processes enabled the mass production of mirrors**Percy Shaw** – English inventor who invented cats eyes for roads to help motorists see where they are going in the dark | STEM Career Links**Optician** (a doctor specialising in light health)**Physicist** (studies physics) | Links to real life* Do you sleep in the dark? What can you see at night when your curtains are closed?
* Have you ever been somewhere that is completely dark?
* What shape is your shadow on a sunny day?
* What colour is your shadow?
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| Knowledge/facts that the children need to knowWe need light in order to see things. Dark is the absence of light.Some surfaces reflect light better than others. We call surfaces that are very reflective *shiny*.Light from the sun can be dangerous and that there are ways to protect their eyes (wearing a hat, sunglasses, not looking directly at the sun).Shadows are formed when the light from a light source is blocked by an opaque object. |
| Suggested Enquiry Activities |
| Identifying and Classifying* Sort materials according to how transparent they are or how reflective they are
* Which light sources are natural and which are man made?
 | Comparative and Fair Testing * Which is the best material to make sunglasses out of?
* Which is the best material for a coat that will help us be seen in the dark?
 | Observation over Time* How does the amount of light in our classroom/playground change over a day? (opportunity to use dataloggers)
 | Pattern Seeking* Do shadows get darker if there are two objects blocking the light?
* Are some colours easier to see when there is less light?
 | Research using Secondary Sources* Research inventors Justus von Liebig or Percy Shaw and how their inventions make our lives easier
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| **National Curriculum Statements** | **Outdoor Learning Activities** |
| * Compare how things move on different surfaces.
 | Pupils explore moving objects across different surfaces in the playground. |

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| Wow Factor Experiences* Use The Gruffalo’s Child book to create a piece of drama where a character is afraid of a shadow
* Investigate materials then build a product, such as sunglasses
* Create shadow art (see weblinks below)
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| Maths LinksUse a datalogger to gather data about how the amount of light in the classroom and on the playground changes over the course of a day, then discuss the findings and why it is different for different parts of school. | Literacy LinksCreate a story or piece of drama based on The Gruffalo’s Child, or write a letter to the Gruffalo’s Child explaining why she does not need to be afraid of the ‘Big Bad Mouse’. | Broader Curriculum Links**Design Technology:** Investigate translucent materials then build sunglasses**Art:** Create shadow art (see weblinks) |
| Story LinksThe Gruffalo’s Child – Julia DonaldsonCan’t You Sleep Little Bear? – Martin WaddellThe Owl who was Afraid of the Dark – Jill Tomlinson |
| Helpful WeblinksShadow Art ideas - <https://kidsactivitiesblog.com/137133/how-to-make-shadow-art-with-kids/>Assessment exemplification (could also be useful with planning ideas) – <https://www.planassessment.com/product-page/examples-of-work-light-y3-johnny>BBC Class Clips (useful videos) – <https://www.bbc.co.uk/bitesize/topics/zbssgk7/resources/1>Online CPD on this topic (free) – <https://www.reachoutcpd.com/courses/upper-primary/light/>STEM Learning’s online resource library for Forces & Magnets - <https://www.stem.org.uk/resources/community/collection/12719/year-3-light> |