

(Science Woodpeckers) - (Physics)

Key Stage/Year	Key Stage 3 / Year 8
Approximate Number of Lessons and Term	26 plus 2 for progress and revision, 1 for an assessment and 1 for feedback.
Qualification/Exam (if applicable)	N/A

Consideration of prior learning	Students do have gaps in their knowledge but have previously studied reflection, refraction and the law of reflection in simple terms. Students have also studied laboratory rules and did a BA Crest award on recycling and so do have an awareness of global warming and pollution.
How will learners' knowledge, skills and understanding be checked at the start of the unit?	Group discussion on key concepts about light such as 'how do we see?' Challenge misconceptions such as light coming out of our eyes and not into our eyes. Recap of key words such as reflection, refraction et cetera. Challenge of misconceptions around weight and mass and why we get the seasons.

How will learners' knowledge, skills and understanding be checked at the end of the unit?	End of term assessment on the work covered for that term. Regular progress checks too.
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Learning Outcome	Potential Activities	Behaviour/Safety/Personal Development/SMSC Opportunities
8Je Colour - I can explain how mixing the primary colours creates the secondary colours.	Use of colour mixing lights to create the colour wheel on the whiteboard. Challenge:	
8Kb Transferring Energy - I can explain how various objects transfer one type of energy into another and that energy is neither created nor destroyed.	Various household classroom objects such as a torch, a bunsen burner, a hairdryer et cetera look at the energy going into the object and the energy coming out. Challenge: recognise that some objects such as a torch transfer chemical energy into electrical energy and then light energy.	
8Kd Power and Efficiency - I can explain the differences between useful and waste energy and that waste energy is not always heat.	Various household classroom objects such as a torch, a bunsen burner, a hairdryer et cetera look at the energy going into the object and the energy coming out. Challenge: identify what the useful energy outputs are and the waste energy and identify that this is not the same for every object.	
8Ke - I can explain how an energy bill is calculated.	Look at energy bills from different companies and work through how a household is billed for their energy use. Challenge: explain what is meant by kWh.	
8Lb Seasons - I can explain how we get the seasons due to the tilt of the Earth and not distance from the Sun.	Use of animations on the computer to show how we get the seasons. Challenge: Investigate if other planets get seasons.	

<p>8Lc Magnetic Earth - I can explain how the Earth is like a giant bar magnet and how this helps to protect us from the Sun's rays.</p>	<p>Use of animation on computer and use of magnet kit and iron filings to show magnetic field of a bar magnet. Challenge: Identify where the magnetic field is strongest and where it is the weakest.</p>	
<p>8Ld Gravity in Space - I can explain that gravity is related to the mass of the object but weakens with distance from an object.</p>	<p>Look at mass and weight on other planets using computer simulation or a worksheet. Challenge: Be able to explain the difference between mass and weight and their units and perform simple calculations.</p>	
<p>8Ec Fire Safety - I can explain the fire triangle and how to reduce the risk of fire.</p>	<p>Look at the symbols on different fire extinguishers around the school and identify how they work to cancel a requirement of the fire triangle. Challenge: Explain how other objects such as a fire blanket reduce the risk of fire around the school and walk around school and identify risks/reductions.</p>	
<p>8Ec Fair Testing - I can give examples of how to make an experiment a fair test and what an independent and dependent variable are.</p>	<p>Plan an experiment from a workbook which involves burning calendars under a glass jar at different heights from the ground and timing how long it takes to go out. Challenge: Record results on a table and draw a line graph using the results.</p>	
<p>8Ed Pollution - I can give examples of different examples of pollution and the effect that they have on the environment.</p>	<p>Look at different types of pollution around the world using the chromebooks and the problems that it has caused the environment as a result. Challenge: Investigate effects of sulphur dioxide and nitrogen oxide on the environment.</p>	
<p>8Ee Global Warming - I can explain the causes of global</p>	<p>Use the Nova Labs online simulation to investigate global warming and how it is affecting the</p>	

warming.	environment. If it is not working then use the BBC bitesize website. Challenge: explain the greenhouse effect and get the students to draw a poster to illustrate it.	
8Fb Chemical Properties - I can explain the difference between chemical and physical properties of an element.	Use of interactive periodic table using the chromebooks, also examples of elements to look at in the lab if available focusing on shiny, smooth, rough, conduction of electricity, reactivity in water or acid.	
8Fc Anomalous Results - I can spot an anomalous mistake in a set of data such as a table or a line graph.	Use of text books to look at case studies of experiments with anomalous results. Challenge: Draw line graph first.	

Possible Adaptations for Higher and Lower Achievers	See challenge section for higher achievers. For lower achievers use differentiated worksheets and work with a trusted adult during the practicals. Use of computers for simulations if practicals are not appropriate to be carried out in the laboratory.
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