



## SAMPLE TEACHING AND LEARNING OUTLINE

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**SCIENCE**  
**PHYSICAL SCIENCES**  
**YEAR 5**

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Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their teaching and learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the learning area syllabus.

## Science understanding

Light from a source forms shadows and can be absorbed, reflected and refracted

Week	Syllabus content	Lesson content	Suggested resources
1–3	<p><b>COMMUNICATING</b></p> <p>Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts</p> <p><b>QUESTIONING AND PREDICTING</b></p> <p>With guidance, pose clarifying questions and make predictions about scientific investigations</p> <p><b>PLANNING AND CONDUCTING</b></p> <p>Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks</p> <p><b>NATURE AND DEVELOPMENT OF SCIENCE</b></p> <p>Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions</p> <p><b>USE AND INFLUENCE OF SCIENCE</b></p> <p>Scientific knowledge is used to solve problems and inform personal and community decisions</p>	<p><b>Characteristics of light</b></p> <p><b>Light sources</b></p> <ul style="list-style-type: none"><li>• How do we see? A brief look at the eye and how messages are sent to the brain. Explain this, using scientific representations</li><li>• Identify light sources, natural and man-made</li><li>• What is light pollution?</li><li>• How does a camera work?</li><li>• Explore how light is captured</li></ul> <p><b>ACTIVITY IDEA</b></p> <ul style="list-style-type: none"><li>• How does light travel? Asking this question to help consolidate the understanding that light travels in a straight line</li><li>• Simple activity using 3 to 4 pieces of sturdy card with holes in it – see resource Light Travels Ducksters Education Site</li><li>• Making a homemade projector, using a mobile phone, magnified glass and cardboard box. Students communicate concept of how light is working</li></ul>	<p>How your eyes work – Kids' Health <a href="https://www.youtube.com/watch?v=syaQgmx5i0">https://www.youtube.com/watch?v=syaQgmx5i0</a></p> <p>Eyes – how your eyes work, Kids' Health <a href="http://www.cyh.com/HealthTopics/HealthTopicDetailsKids.aspx?p=335&amp;np=152&amp;id=1730">http://www.cyh.com/HealthTopics/HealthTopicDetailsKids.aspx?p=335&amp;np=152&amp;id=1730</a></p> <p>BTN article – Light Pollution <a href="http://www.abc.net.au/btn/story/s4230574.htm">http://www.abc.net.au/btn/story/s4230574.htm</a></p> <p>How do cameras work? <a href="https://www.youtube.com/watch?v=l6f6obszzwE">https://www.youtube.com/watch?v=l6f6obszzwE</a></p> <p>How a Digital Camera work? <a href="https://www.youtube.com/watch?v=E_OsK5_sEIA">https://www.youtube.com/watch?v=E_OsK5_sEIA</a></p> <p>How to make a Pinhole camera for kids <a href="http://www.ehow.com/how_6697673_make-pinhole-camera-kids.html">http://www.ehow.com/how_6697673_make-pinhole-camera-kids.html</a></p> <p>Light Travels Ducksters Education Site <a href="http://www.ducksters.com/science/experiment_light_travel.php">http://www.ducksters.com/science/experiment_light_travel.php</a></p> <p>Homemade Projector <a href="https://www.stevespanglerscience.com/lab/experiments/homemade-projector/">https://www.stevespanglerscience.com/lab/experiments/homemade-projector/</a></p>

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Week	Syllabus content	Lesson content	Suggested resources
4–6	<p><b>QUESTIONING AND PREDICTING</b></p> <p>With guidance, pose clarifying questions and make predictions about scientific investigations</p> <p><b>PLANNING AND CONDUCTING</b></p> <p>Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks</p> <p>Decide variables to be changed and measured in fair tests, and observe, measure and record data with accuracy using digital technologies as appropriate</p> <p><b>PROCESSING AND ANALYSING DATA AND INFORMATION</b></p> <p>Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies, as appropriate</p> <p>Compare data with predictions and use as evidence in developing explanations</p> <p><b>EVALUATING</b></p> <p>Reflect on and suggest improvements to, scientific investigations</p>	<p><b>Shadows</b></p> <ul style="list-style-type: none"><li>• Review what is a shadow</li><li>• How can we make a shadow in the classroom?</li><li>• Explore making shadows, using a torch and items from childrens’ pencil cases, small toys or plasticine toys made by students</li><li>• Ensure items are solid and light cannot pass through them</li><li>• Discuss transparent, opaque and translucent</li><li>• Identify different materials in the home and at school that have these different properties</li></ul> <p><b>INVESTIGATION IDEA</b></p> <ul style="list-style-type: none"><li>• What happens when we move the torch further away from the item? Does the shadow become taller or shorter?</li><li>• Make predictions, conduct investigation and record information and findings. Ensure data collected uses a systematic method (e.g. torch is moved back in 5cm increments)</li></ul>	<p>Kinooze</p> <p>What is a Shadow?</p> <p>Information page <a href="http://kinooze.com/what-is-a-shadow/">http://kinooze.com/what-is-a-shadow/</a></p> <p>Primary Resources</p> <p>Light and Sound (varied resources) <a href="http://www.primaryresources.co.uk/science/science4c.htm">http://www.primaryresources.co.uk/science/science4c.htm</a></p>

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Week	Syllabus content	Lesson content	Suggested resources
6–8	<p><b>QUESTIONING AND PREDICTING</b></p> <p>With guidance, pose clarifying questions and make predictions about scientific investigations</p> <p><b>PLANNING AND CONDUCTING</b></p> <p>Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks</p> <p>Decide variables to be changed and measured in fair tests, and observe, measure and record data with accuracy using digital technologies as appropriate</p>	<p><b>How is light absorbed?</b></p> <ul style="list-style-type: none"><li>• How does the sun burn and damage our skin?</li><li>• Explore UV beads – see resource video</li></ul> <p><b><u>INVESTIGATION IDEA</u></b></p> <ul style="list-style-type: none"><li>• Develop investigation question about different colour clothing/fabric absorbing more light and heat from the sun</li><li>• Prediction, using different colour fabric swatches, with a thermometer under each of them</li><li>• Testing how hot school hats make students. Placing thermometers under hats to test temperature increases. Do hats stop UV or keep us cool? Do the hats absorb heat?</li></ul>	<p>Steve Spangler Science UV Beads <a href="https://www.youtube.com/watch?v=ZqNm1y4MIVU">https://www.youtube.com/watch?v=ZqNm1y4MIVU</a></p> <p>Experimenting with UV-sensitive Beads <a href="http://solar-center.stanford.edu/activities/UVBeads/UV-Bead-Instructions.pdf">http://solar-center.stanford.edu/activities/UVBeads/UV-Bead-Instructions.pdf</a></p>

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Week	Syllabus content	Lesson content	Suggested resources
8–9	<p><b>QUESTIONING AND PREDICTING</b></p> <p>With guidance, pose clarifying questions and make predictions about scientific investigations</p> <p><b>PLANNING AND CONDUCTING</b></p> <p>Identify, plan and apply the elements of scientific investigations to answer questions and solve problems, using equipment and materials safely and identifying potential risks</p> <p>Decide variables to be changed and measured in fair tests, and observe, measure and record data with accuracy using digital technologies as appropriate</p>	<p><b>Reflection</b></p> <ul style="list-style-type: none"> <li>• What is a reflection?</li> <li>• Which surfaces are used to reflect light?</li> <li>• How does light reflect?</li> <li>• Can we manipulate reflections?</li> </ul> <p><b>ACTIVITY IDEAS</b></p> <ul style="list-style-type: none"> <li>• Checking student reflections on the back of a spoon, and on the front. What happens and why?</li> <li>• Use mirrors in staggered positions to reflect an image from one point to another. Challenge students with mirrors at different heights, angles, and seeing around corners</li> </ul>	<p>Physics 4 Kids</p> <p>Reflections basics (information page)</p> <p><a href="http://www.physics4kids.com/files/light_reflect.html">http://www.physics4kids.com/files/light_reflect.html</a></p>
9–10	<p><b>QUESTIONING AND PREDICTING</b></p> <p>With guidance, pose clarifying questions and make predictions about scientific investigations</p> <p><b>PROCESSING AND ANALYSING DATA AND INFORMATION</b></p> <p>Compare data with predictions and use as evidence in developing explanations</p> <p><b>COMMUNICATING</b></p> <p>Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multimodal texts</p>	<p><b>Refraction</b></p> <ul style="list-style-type: none"> <li>• What is refraction?</li> <li>• What is reflection?</li> </ul> <p><b>ACTIVITY IDEA</b></p> <ul style="list-style-type: none"> <li>• The broken pencil</li> <li>• Apply understanding to simple tasks, as demonstrated in video, resource link provided</li> </ul>	<p>Experiments on refraction, reflection and total internal reflection</p> <p><a href="https://www.youtube.com/watch?v=gDA_nDXM-ck">https://www.youtube.com/watch?v=gDA_nDXM-ck</a></p>