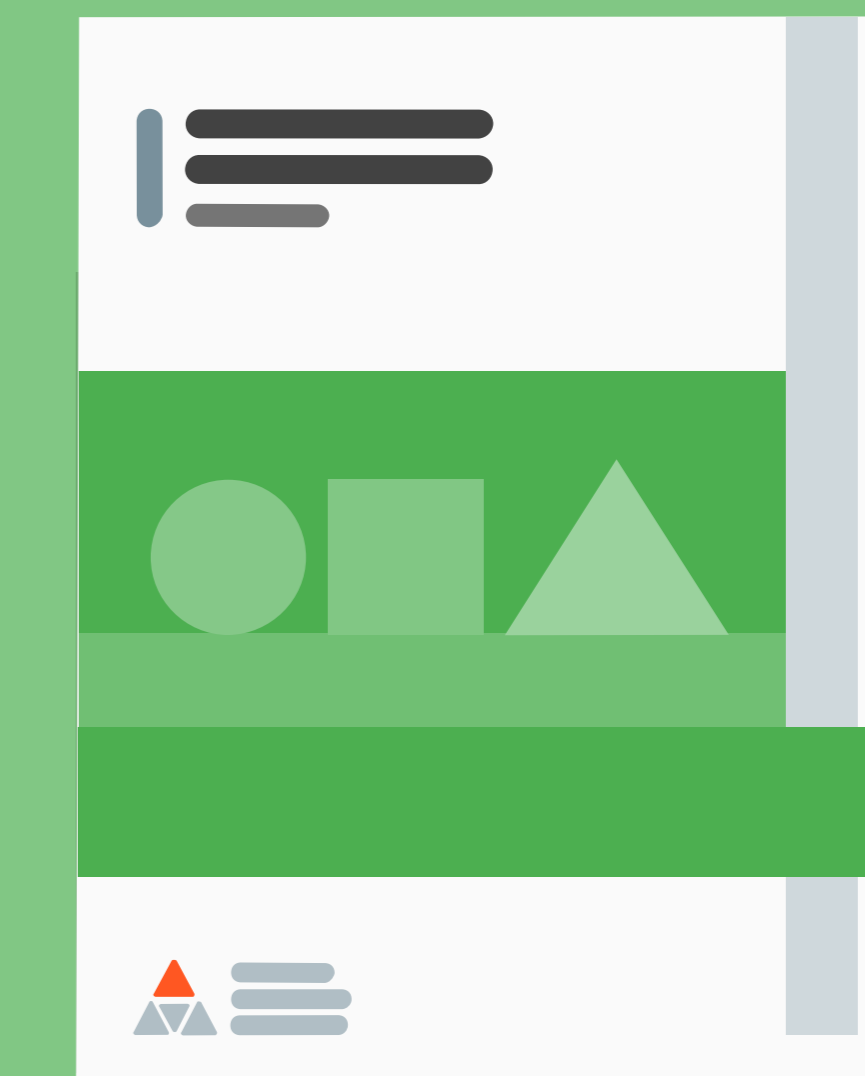


### Year 3 lesson series on the topic of 'light' alongside the skill of prediction

The seven-step model from Recommendation 3 of the Improving Primary Science guidance report (page 15) provides a useful framework to guide pupils to work scientifically. This example demonstrates how teachers could integrate the seven-step model into their lessons to support pupils. This content represents two to three lessons within a sequence of lessons. The arrows within the model highlight that, as with any model, the seven steps are to be used flexibly and in response to feedback from learners.



Find out more in the Improving Primary Science guidance report

Seven-step model	Exemplification
<p><b>1. Activating prior knowledge</b></p> 	<p>Show pupils a short video on shadow puppets as you continue your topic on 'light'. Ask pupils to discuss in groups of three: 'What can you see?', 'What do you notice?', 'What do you wonder?'</p> <p>Listen carefully as pupils reveal their understanding. Are you hearing misconceptions such as 'shadows are solid objects' or that 'shadows are reflections'? This will inform future learning and target questioning.</p>
<p><b>2. Explicit strategy instruction</b></p> 	<p>Teacher: 'Today, we are going to learn and define how shadows are formed. We are going to work scientifically by making predictions and making observations. Does anyone know what a prediction is?'</p> <p>'A prediction is when you explain what you think will happen—using what you already know and any evidence available to you—to explain why you expect that to happen. When we make predictions, it is important we use what we already know (our prior knowledge) to help us. We can use a sentence frame like this: "I predict that ... because ..."</p>
<p><b>3. Modelling of learned strategy</b></p> 	<p>'For example, if I see a lot of dark clouds in the sky, I might predict that it will rain soon because the last time I saw the dark clouds in the sky it rained.'</p> <p>'In the last topic, we focused on forces and magnets. Based on what I have learned, I would predict that if I held this magnet close to a paperclip, the paperclip would be attracted to the magnet. I know this because the paperclip is made from steel, which is a magnetic material.'</p>
<p><b>4. Memorisation of strategy</b></p> 	<p>Each trio has a concept cartoon. Each character on the concept cartoon has made a prediction of how they think a shadow is formed.</p> <p>'Read and discuss the predictions. Do you think all the statements are good examples of predictions? Why/why not?'</p> <p>Pupils might suggest that one of the predictions is not a good example because scientific vocabulary is not used.</p> <p>'Which one do you agree with and why?'</p>
<p><b>5. Guided practice</b></p> 	<p>Ask pupils to work together to form their own predictions of how a shadow is formed. Use a sentence frame to scaffold their prior knowledge and to select appropriate scientific vocabulary.</p> <p>Give each group a torch as a light source, white card on a stand, and a range of transparent and opaque objects. Guide pupils to set-up equipment, explore what happens when different objects are used, and to use scientific words such as 'transparent' and 'opaque'.</p> <p>'Let's reflect on our findings. Do our observations tell us how shadows are formed? Were our predictions correct? Why/why not? Clarify how a shadow is formed.'</p>
<p><b>6. Independent practice</b></p> 	<p>Pupils are given the opportunity to work more independently. They are presented with a new investigation: 'How can you change the size of a shadow?' Pupils are asked to make predictions (with reduced scaffolding or no scaffolding at all).</p> <p>Once they have made their predictions, pupils complete an investigation, making observations and recording their measurements.</p> <p>Again, reflect on findings with pupils. Were their predictions correct? Why/why not?</p>
<p><b>7. Structured reflection</b></p> 	<p>The suggestions within this seven-step model should take place over a sequence of lessons.</p> <p>Support pupils to reflect on what they have learned over the previous few science lessons. Pupils summarise their learning to another trio verbally. They can use torches, objects, and white card to aid their summaries. Encourage pupils to use their knowledge of how shadows are formed to support detailed explanations.</p>