

Video question script, KS2: Circus activity 3: How many beany beetles? – the evolution game

Question/Activity	Likely response	Rationale
<p>When teaching about the Earth we often use practical activities to explore Earth processes. This example looks at how some creatures inherit characteristics from their parents which give them a better chance of survival than others. So, in other words we shall be looking at the way in which evolution may occur.</p>		<p>Preparation for bridging from a table game to the way natural selection works in the natural world</p>
<p>What is this?</p>	<p>A set of 15 beany beetles coloured green and 5 coloured red. Two sheets of different coloured paper; a dice and a thrower pot</p>	<p>Concrete preparation = asking them to describe the items</p>
<p>Imagine that the beans represent beetles and that a hungry bird is coming along, which is trying to spot some beetles to eat. Which beetles are more easily seen and which therefore are likely to get eaten?</p>	<p>The beetles which are a different colour from the background are more likely to be eaten. The ones which are the same colour are better camouflaged and the bird might not spot them.</p>	<p>Reasoning is metacognition.</p>
<p>Now we are pretending that the bird hopping along will be shown by a throw of the dice. If we throw a 1, this means that one of the camouflaged beetles has been spotted and will be eaten. If we throw a number from 2 to 6, the more obvious beany beetles will be eaten. Which do you think is more likely to happen?</p>	<p>It is 5 times more likely that the badly camouflaged beany beetles will be eaten, since there are 5 sides of the dice compared to only one for the camouflaged ones.</p>	<p>Construction -describe how a pattern might develop. Reasoning is metacognition.</p>
<p>Now we'll try it. Throw the dice and take away the right number of beany beetles. Write the number on the chart. Repeat twice more and enter the results. After the third time allow the beany beetles to "reproduce" and add one new one for each of the surviving beetles of each colour.</p>	<p>Anything could happen!</p>	<p>Cognitive conflict regarding how many of each beetle might survive.</p>
<p>Play another round or two, maybe off camera and display results – will need to try it and see.</p>	<p>Display results</p>	<p>As above</p>
<p>Ask: • Which population increased? Can camouflage be con-</p>	<p>Answer will depend on what happened. Might be able to point out that some of the green beanies have red bits in</p>	<p>Reasoning is metacognition</p>

<p>sidered an advantageous or disadvantageous trait? Did the camouflaged population increase or decrease in proportion to the more visible population?</p>	<p>them, and this might show that they are changing gradually from the red type.</p>	
<p>This adaptation will be inherited by future generations of beany beetles. Thus the ones which are most suited to their environment will survive and others will not. This is often referred to as "the survival of the fittest".</p>		
<p>Look at this picture of 2 Peppered Moths on a birch tree. They are of the same species. Which one stands the better chance of survival, and why?</p> <p><i>Image: Peppered moths By Martinowksy, CC BY-SA 3.0, httpscommons.wikimedia.orgwindex.phpcurid=18556</i></p>	<p>The pale one, because the bark of the tree is also pale. Tell the story of the relationship to air pollution darkening the bark in the past.</p>	<p>Bridging from the table game to a living example</p>