

How Science Works: Natural Selection - Teachers' Notes

Class	Set	No. in Class	B:	G:	Staff
10 11	1 2 3 4 5 6 Mixed Ability	SEN:	EAL:		
<p><u>Learning Outcome(s)</u></p> <p>Pupils should learn:</p> <ul style="list-style-type: none"> ▪ How interpretation of data, using creative thought, provides evidence to test ideas and develop theories ▪ That variation within species can lead to evolutionary changes ▪ To recall, analyse, interpret, apply and question scientific information or ideas <p><u>Context and Starter</u></p> <ul style="list-style-type: none"> ▪ See Word-Search: Natural Selection: Evidence for Biological Change. Allow 10 minutes for this starter activity. A solution can be found on the separate sheet provided. <p><u>Main Activity</u></p> <ul style="list-style-type: none"> ▪ Explain the term adaptation, and comment on the way animals best adapted to their environment survive and reproduce, while those least well adapted do not. Use the words variation, over-production and competition. Emphasize that natural selection, just like artificial selection, appears to be incapable of generating new body plans. ▪ Carry out a simulation of selection. Use red and green plastic cocktail sticks - a hundred of each colour will be required. Randomly distribute the sticks in a 15 x 15 m square of grass before the lesson. ▪ In groups of 6 learners, ask pupils to act as 'song thrushes' predated the red and green '<i>Cepaea</i> snails'. They are allowed to predate for 30 sec's to collect as many snails as possible. Results are scored individually. Repeat a number of times and total the number of 'snails' predated for each of the 'birds'. ▪ The selective advantage of the green snails should be evident. Provide some real (second-hand) data to confirm this. Emphasize that this particular example does not involve the formation of any new species and note that this is not proper evidence for Darwin's hypothesis of universal common ancestry. <p><u>Transition</u></p> <ul style="list-style-type: none"> ▪ Hand round cartoon: 'The Galapagos Finches'. Explain that the finches are an example of natural selection because selection oscillates with cyclic fluctuations in climate. Explain they are going to be given 10 minutes to discuss this cartoon in their groups. <p><u>Second activity</u></p> <ul style="list-style-type: none"> ▪ Elicit a response to the cartoon from each group. Which scientist do they agree with and why? Do they agree with more than one? Ask them to write their thoughts down under an appropriate title. <p><u>Plenary</u></p> <ul style="list-style-type: none"> ▪ Round up the discussion. Ask three or four people to read out their written thoughts to the whole class. How far did Darwin get it right? 			<p>Date: Day:</p> <p>Period Length: 50 min</p> <p><u>Key Vocabulary</u></p> <ul style="list-style-type: none"> ▪ Adaptation ▪ Over-production ▪ Competition ▪ Variation ▪ Resistance ▪ Population ▪ Mutations <p><u>Resources</u></p> <ul style="list-style-type: none"> ▪ Word-Search sheets ▪ Cocktail sticks x 200 ▪ Concept cartoons ▪ Glue ▪ Laptop/Desktop PC ▪ Second-hand real data ▪ Internet access ▪ 15 m string marker <p><u>Differentiation</u></p> <ul style="list-style-type: none"> ▪ Less able pupils can design a poster about camouflage in head-lice. ▪ More able pupils can research a model of biological change called 'discontinuity systematics' using the Internet. <p><u>LSA Deployment</u></p> <ul style="list-style-type: none"> ▪ Can aid in the placing of the cocktail sticks. ▪ Can help pupils find the hidden message in the word-search. 		
<p><u>Homework</u> – Visit the Natural History Museum website and go to: Nature Online → Life → Birds. Make brief notes on the Darwin Centre Live web-cast: 'Pigeons versus Finches' by Jo Cooper.</p> <p><u>Homework Due in</u> – Set appropriate date.</p>					