

RATIONALE/GENERAL NOTES:

This free 6 lesson scheme of work covers the objectives as stated in the KS2 2014 National Curriculum for Science, as follows, but with more of an emphasis on Evolution rather than inheritance (which is briefly covered when teaching genetic variation):

- *Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago*
- *Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents*
- *Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.*

Y6 EVOLUTION AND INHERITANCE

BRING THIS TOPIC ALIVE WITH OUR ACCOMPANYING SCHOOL WORKSHOP FROM WWW.PRIMARYSCIENCEWORKSHOPS.CO.UK

Y6 EVOLUTION AND INHERITANCE SCHOOL WORKSHOP

LEARN ALL ABOUT EVOLUTION, HANDLE AND SORT AMAZING FOSSILS AND INVESTIGATE FOR YOURSELF HOW YOUR SKELETON HAS EVOLVED IN ONE OF OUR MOST VARIED WORKSHOPS

THIS SCIENCE WORKSHOP AT A GLANCE

Workshop duration:
A full day or a single 1 hr session
as part of a multi science day

NC objectives covered:
All of the objectives from the
Evolution and inheritance topic

The way that the human body and the bodies of other animals have evolved over the long history of life on Earth is a fascinating topic, and in this workshop we combine the best elements of our Human Body and Fossils workshops for a new experience tailored just for this new Y6 topic of Evolution and Inheritance.

This is taught with many wow moments (as per all our workshops) such as rare fossil handling, looking at fossils close up on the big screen microscope, and a fossil sorting task, where pupils get to practice the skills used by fossil hunters such as Mary Anning.

In addition, and quite unlike any other science workshop you may have had, we enable pupils to make a real connection between the evolution of the human skeleton by not only meeting and learning about our friendly skeleton, 'Stanley', but also taking several detailed joint models in to a PE 'stations' session to study how different bones have developed to suit different purposes.



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1	<p>CHANGES OVER TIME: how we know that the Earth and the living things on it have changed over its history</p> <p><i>Pupils will learn ..</i></p> <p>How fossils are formed</p> <p>What the fossil record is</p>	<p>INTRODUCTION:</p> <ul style="list-style-type: none"> Refer back to the pupils work in the Y3 rocks unit (it may help to revise briefly the different rock types – see link in notes). Revise how fossils are made using our powerpoint presentation of the same name (also lots of good youtube videos available that are child friendly or see BBC link in notes) <p>SUGGESTED MAIN ACTIVITIES:</p> <ol style="list-style-type: none"> Use the lesson resource ‘FOSSILS PICTURE PACK.PDF’ to play a matching game – can pupils match the fossils? (Can also be used on whiteboard at front of class) Ask pupils to draw a cartoon sequence of a fossil forming (links to Literacy instructions text) from dying to being dug up ART ACTIVITY: Make plaster casts to make 'fossils' of everyday objects - use damp sand to make an impression then fill it with plaster to make a cast. Display these in the classroom on a bed of sand, titled 'future fossils?'. This is a good opportunity to discuss how materials degrade. For example, plastic can take thousands of years to rot away, so how would this affect future fossils of our modern life? Would there be more modern materials left behind? HOMEWORK SUGGESTION: research how the way the fossil record is layered creates an ongoing chronological record of the changes in living things over time – draw a diagram of a cross section of a cliff with the fossils changing as it goes higher through the layers Wordsearch – use the supplied ‘how fossils are formed.pdf’ wordsearch from our y6 evolution wordsearch pack <p>PLENARY:</p> <p>Ask pupils what fossils will be left behind in the future – will it be different than the current fossil record? Give reasons for their answers.</p>	<p>LESSON RESOURCES, AVAILABLE FROM OUR WEBSITE:</p> <p>Lesson 1 ‘How fossils are made’ powerpoint fossils picture pack.pdf how fossils are formed wordsearch (available as a full wordsearch pack on website)</p> <p>EXTERNAL RESOURCES:</p> <p>Types of rocks link (optional): http://www.kidsloverocks.com/html/types_of_rocks.html BBC fossils page: http://www.bbc.co.uk/nature/fossils</p>

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2	<p>MARY ANNING: the unsung hero of the story of Evolution</p> <p><i>Pupils will learn ..</i></p> <p>Who Mary Anning was and what she did</p> <p>Why her work was so important to our understanding of evolution</p>	<p>INTRODUCTION:</p> <ul style="list-style-type: none"> Allow pupils to research Mary Anning on the internet, or use our Lesson 2: Mary Anning powerpoint to introduce her <p>SUGGESTED MAIN ACTIVITIES:</p> <ol style="list-style-type: none"> DESIGN A PERSUASIVE POSTER: (INSTRUCTIONS TO PUPILS CONTAINED IN POWERPOINT) ask pupils to design a poster using persuasive language, to encourage people to visit Mary's stall CARTOON STRIP: Draw a cartoon strip of Mary's life, using either the powerpoint or other information gathered (the BBC has a really good section, in notes) WRITE AN INSTRUCTION TEXT: work as a group to plan a set of instructions for uncovering a fossils from the ground. Discuss what you would need to include e.g. take care to uncover it gradually; don't use hammers when you get close to the fossil; log down exactly the position of every piece and where it was found. Then write the instructions independently and come back to compare the versions. GEOGRAPHY/ICT: Find Lyme regis on the map and see where it is along the 'Jurassic Coast' heritage site. Find out why the coast is called this and draw it on a map of Britain. The website http://jurassiccoast.org has some good information on this. WORDSEARCH: use the supplied Mary Anning pdf wordsearch from our y6 evolution wordsearch pack <p>PLENARY:</p> <p>Work through the Mary Anning quiz at the end of the powerpoint</p>	<p>LESSON RESOURCES, AVAILABLE FROM OUR WEBSITE:</p> <p>Mary Anning lesson 2 powerpoint Mary Anning wordsearch</p> <p>EXTERNAL RESOURCES:</p> <p>BBC Mary Anning page - http://www.bbc.co.uk/schools/primaryhistory/famouspeople/mary_anning/</p> <p>http://jurassiccoast.org</p>

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3	<p>PART 1 of CHARLES DARWIN: The Voyage Of The Beagle</p> <p><i>Pupils will learn ..</i></p> <p>Who Charles Darwin was and what he did About his famous voyage on board The Beagle</p> <p>What his “Theory of Evolution by Natural Selection” is and why it is so important</p>	<p>INTRODUCTION:</p> <ul style="list-style-type: none"> Ask children if they know who Charles Darwin is and what he is famous for Work through our lesson 3 Darwin powerpoint, which outlines Darwin’s theory and the voyage of the Beagle <p>SUGGESTED MAIN ACTIVITIES:</p> <ol style="list-style-type: none"> GEOGRAPHY/LITERACY - MAP THE BEAGLE VOYAGE: Use the lesson 3 ‘Beagle’ activity pdf resource as either an individual or small group activity, which challenges pupils to reconstruct the key points of Darwin’s voyage on the enclosed Beagle voyage map. <p>DIFFERENTIATION OPTIONS for our resource:</p> <p>LOW ABILITY: cut out and label the voyage of the Beagle map with the supplied labels. MED ABILITY: use the pre filled labels and also the additional images and quotes. HIGH ABILITY / EXTENSION: fill the blank text boxes with your own descriptions, possibly with further internet or book research</p> <ol style="list-style-type: none"> ICT: measure the length of the voyage of the Beagle using Google earth’s ‘path’ tool, which measures distance using a clickable path DT/LITERACY - MAKE A PASSPORT: make a voyage of the Beagle 'passport' with pages listing each of the countries and places that Darwin visited, with details and pictures of each discovery. <p>EXTERNAL RESOURCES:</p> <p>Challenge the pupils to independently research either the life of Charles Darwin, the voyage of the Beagle, or both and feedback this to the class in the form of a mini-presentation</p> <p>PLENARY:</p> <p>Discuss questions at the end of the powerpoint with your partner</p>	<p>LESSON RESOURCES, AVAILABLE FROM OUR WEBSITE:</p> <p>lesson 3 powerpoint Darwin Beagle voyage activity pdf</p> <p>EXTERNAL RESOURCES:</p> <p>http://www.bbc.co.uk/time/lines/zq8gcdm plus many other resources on google search for “Darwin”</p> <p>pretend to be Darwin on his voyage: http://www.sedgwickmuseum.org/index.php?page=darwin</p>

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<p>NOTE ON THE MENTION OF CREATIONISM IN THIS LESSON (please read): Please be aware that the lesson powerpoint addresses the issue of religious creationism, both in Darwin’s time and now, which sets the Earth’s age to between 5,000 to 7,000 years old. Although it is a statutory NC requirement to teach evolution as scientific fact, I mention this so that you are able to take this into account if you are teaching pupils who might have encountered this point of view in their home or cultural background, for example, if their parents hold creationist views. Unfortunately I can’t offer further advice on what to do if this is the case, except to reiterate that it is a statutory requirement to teach Evolution as scientific fact rather than creationism which, in curriculum terms at the least, is delivered as a religious viewpoint in RE.</p>			
4	<p>PART 1 of CHARLES DARWIN: On the Origin of Species by Natural Selection</p> <p><i>Pupils will learn ..</i></p> <p>Why Charles Darwin’s Finches were such an important part of his Theory Of Evolution</p> <p>How Evolution by Natural Selection really works</p>	<p>INTRODUCTION:</p> <ul style="list-style-type: none"> Remind pupils of what was learned in the last lesson about Darwin’s voyage on the Beagle (revisit the powerpoint if required) Work through the lesson 4 powerpoint <p>SUGGESTED MAIN ACTIVITIES:</p> <ol style="list-style-type: none"> DIARY ENTRY: imagine you are Charles Darwin when he received the letter from Alfred Russell Wallace saying he was about to publish. Write a diary entry about how you feel and what you intend to do about it. NEWSPAPER REPORT: write a newspaper report about the publication of the book and Darwin’s ideas (NOTE: higher ability could include mention of the religious reaction to the theory, or even write from the pov of a creationist at the time). ICT or HOMEWORK: research the Theory of Evolution in more detail and find more examples of how it has been proven by scientists. http://www.sedgwickmuseum.org/index.php?page=darwin <p>PLENARY:</p> <p>Discuss questions at the end of the powerpoint with your partner</p>	<p>LESSON RESOURCES, AVAILABLE FROM OUR WEBSITE:</p> <p>lesson 4 powerpoint</p> <p>EXTERNAL RESOURCES:</p> <p>http://www.bbc.co.uk/time/lines/zq8gcdm plus many other resources on google search for “Darwin”</p> <p>Evolution BBC explanation</p> <p>http://www.bbc.co.uk/schools/gcsebiteize/science/21c/life_on_earth/theory_evolutionact.shtml</p>

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5	<p>The adaptation of animals and plants</p> <p><i>Pupils will learn ..</i></p> <p>How the features of animals and plants have adapted to their environments over millions of years by the process of Natural Selection</p> <p>What variation is and why it is so important to Darwin's Theory of Evolution</p>	<p>INTRODUCTION:</p> <ul style="list-style-type: none"> • Work through the powerpoint for this lesson • GENERAL TEACHING TIP FOR THIS LESSON: using the phrase “nature selects/selected” when referring to successful life forms consolidates the process of natural selection, e.g. “nature selected the white furred animal because it was more successful at survival in the snow than the brown furred animal.” <p>SUGGESTED MAIN ACTIVITIES:</p> <ol style="list-style-type: none"> 1. ANIMAL ADAPTATION PICTURE ACTIVITY: print out, laminate and use the “lesson 5 animal adaptation pictures pack.pdf” in a group as follows (differentiated): <ul style="list-style-type: none"> LOW ABILITY: match the adaptation labels with the correct animal (there are some crossovers) MED ABILITY: use the harder labels where pupils complete the descriptions by themselves HIGH ABILITY: as above but also write as many of their own labels as possible 2. RESEARCH PLANT ADAPTATIONS: ask pupils to research the ways in which plants have adapted to suit their environment e.g. leaves designed to gather water, venus fly traps, moss which absorbs moisture 3. DESIGN A NEW ANIMAL OR PLANT: ask pupils to work in small groups or pairs to design an animal or plant to survive in particular conditions. They could do a drawing, a description and a list of its adaptations. <p>PLENARY: feedback the work from the lesson at front of class to assess learning</p>	<p>LESSON RESOURCES, AVAILABLE FROM OUR WEBSITE:</p> <p>Lesson 5 Darwin powerpoint</p> <p>Lesson 5 animal adaptation pictures pack.pdf</p> <p>EXTERNAL RESOURCES:</p>

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6	<p>Human evolution</p> <p><i>Pupils will learn ..</i></p> <p>How and why Homo Sapiens (the species that you belong to) evolved</p> <p>The differences and similarities between Homo Sapiens and other living things</p>	<p>INTRODUCTION:</p> <ul style="list-style-type: none"> • Watch the lesson powerpoint which introduces the subject to pupils <p>SUGGESTED MAIN ACTIVITIES:</p> <ol style="list-style-type: none"> 1. ENGLISH: draw a labelled diagram of the human body, listing reasons why the different features have evolved (can be easily turned into an ART activity if you make a jointed cardboard skeleton 2. PE: design a fitness circuit with one or more stations that test each part of the human body to see how it works, such as a jumping section (to show springy foot arches) or a throwing section (to show opposable thumbs). NOTE: this is very similar to a task in the full day version of our Evolution and Inheritance science workshop, where pupils complete a PE circuit activity whilst looking at model body joints. Then present your station(s) to the class. 3. HOMEWORK/ICT: research more information about the differences in the human body to present to the class in a mini project (NOTE TO TEACHERS: remember to emphasise to pupils that EVERY feature of the human body has evolved for a reason, no matter how unlikely it seems) <p>PLENARY:</p> <p>Feedback work/presentations/pe station to class and complete the questions at the end of the presentation</p>	<p>LESSON RESOURCES, AVAILABLE FROM OUR WEBSITE:</p> <p>Lesson 6 powerpoint presentation</p>