

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

<p>Year 3 NC Links:</p> <ul style="list-style-type: none"> describe in simple terms how fossils are formed when things that have lived are trapped within rock <p>Year 4 NC links:</p> <ul style="list-style-type: none"> explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things 	<p>Year 6 NC Links:</p> <ul style="list-style-type: none"> 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
--	--

At the end of this science unit of work pupils will

Know:

To know that the Earth is millions of years old.
 To know what fossils are.
 To know that there are different types of fossils.
 To learn what fossils tell us about past life – palaeontology.
 To learn about Charles Darwin and his life.
 To learn about Mary Anning and how she struggled to become recognised as a female scientist.
 To learn what environmental and inherited characteristics are.
 To know that plants and animals have adapted over time to survive.

Can do: tables, charts and branching and sorting data.

Understand the vocabulary listed below – able to explain and discuss it without reading it from their science workbook

Disciplinary knowledge: Classifying fossils. Planning investigations, collecting and interpreting results and applying to knowledge.
 Substantive: Knowledge and vocabulary of evolution and inheritance

The expectation is that ALL pupils can learn, explain and write coherently about the aspects below.

Trip and Visit: Bird Of Prey Centre - Helmsley

Reading of books at home and in school about evolution, inheritance and key scientists in this field of science.

Progresses To KS3 Biology:

- Heredity as the process by which genetic information is transmitted from one generation to the next.
- A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model.
- The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection.
- Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.

<p>Links to Y3 and Y4 learning</p>	<p>Pupils will learn</p>	<p>Vocabulary pupils will learn</p>	<p>Writing using a genre/tables Scientific skills and knowledge</p>	<p>Fundamental principles and teaching techniques to ensure that work is of a high standard from all pupils</p>
---	---------------------------------	--	--	--

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

<p>Y3: how fossils are formed.</p>	<p>Week 1: 2 hours</p> <p>To know that the Earth is millions of years old.</p> <p>To know that humans are very new to Earth yet our impact upon the planet is immense.</p>	<p>Fossils Evolution Inhabited Chronology</p>	<p><u>Vocabulary in books.</u></p> <p>Tell chn that living things have changed over time (and are still changing). Can they think of any animals or plants that used to live on Earth but no longer exist? E.g. lots of different dinosaurs, Dodo, Great Auk, Sabre-toothed cat, Quagga, etc. It's not so easy to think of plants, but an example is the St Helena Olive. These animals and plants are extinct (none of that species is alive anywhere in the world any more). Point out that although some became extinct 65 million years ago (dinosaurs) or thousands of years ago (sabre-toothed cats), others have only become extinct in more recent years (quagga).</p> <p>Read about extinction at http://www.oum.ox.ac.uk/thezone/animals/extinct/define.htm.</p> <p>Show pupils some fossils (and photographs of fossils on YPTE PowerPoint EI file slides 5-12). Do they have any fossils that they can bring in to share with the class? What do they know about fossils and what they can teach us about living things? Record their ideas in a mind map on the board.</p> <p>Living things change over time and fossils give us information about the animals and plants that inhabited the Earth millions of years ago. For many pupils, the concept of such long periods of time may be difficult to grasp – so explore.</p> <p>Look at comic strip timeline – go through together on IWB and <u>stick version in books.</u></p> <p>http://web.primaryevolution.com/?page_id=99</p> <p>Read page 8-13 Horrible Science – Evolve or Die. History of planet Earth.</p> <p>Use orange sheets in EI folder – toilet roll activity in hall. (Photograph)</p>	<ul style="list-style-type: none"> • Clear expectations for listening – repeating and learning the information. Clear bite-size instruction and explanation from the teacher using parts of videos where appropriate. • Behave from all pupils is exemplary and comments are made on sitting and listening. • Bite sized chunks of knowledge making time for repetition discussion and rehearsing in pairs. • Emphasis on learning and exploring key vocabulary. Repetition in oral WORK AND INSISTENCE THAT THE CORRECT TERMS ARE USED IN WRITING. • Drafting process for tables and writing • Writing of date and modelling of key letters e.g., in January. • Demonstration and insistence on high standards of construction and presentation
------------------------------------	--	---	---	---

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

			<p>Cut out slips on orange worksheet and order them in science books / <u>make a flow chart in science books.</u></p> <p>Teach order that the animal groups evolved in and why this was so. Revise MRS GREN and characteristics of animal classifications.</p> <p><u>Make spirals to display.</u></p>	<ul style="list-style-type: none"> • Finger under words to copy words – insist accurate. • The vocabulary is broken down into the weekly learning, it is revised and used in writing • Pupils write their own vocabulary into their books putting their finger under the words to copy correctly. • End products – handwriting and colouring is beautifully presented.
Y3: how fossils are formed	<p>Week 2 and 3: 2 hours and art time</p> <p>To know what fossils are.</p> <p>To know that there are different types of fossils.</p> <p>To learn what fossils tell us about past life – palaeontology.</p>	<p>Fossils Preserved Trace Ancestors Palaeontology</p>	<p>** READING TIME IN MORNING - READ PEBBLE IN MY POCKET. LOOK AT TIMELINE FOR THE STORY.</p> <p>What Are Fossils?</p> <p>Fossils are the preserved remains or traces of once living animals and plants. All living organisms are potential fossils, but only a few are preserved. When an animal or plant dies, its remains usually rot away to nothing and leave no trace. But sometimes, when conditions are just right and its remains can be buried quickly, it may be fossilised. Fossils represent the ancestors of animals and plants that are alive today. They provide us with a record of organisms that lived a long time ago and evidence that animals and plants can change over a long period of time. The study of fossils, called palaeontology, is crucial to our understanding of life.</p> <p>Watch fossils PowerPoint and check understanding. <u>Order 6 pieces of information about how a belemnite became a fossil.</u></p> <p>https://www.geobus-london.org.uk/primary-fossils-page Watch short video ... Types of fossils. https://www.youtube.com/watch?v=TVwPLW0o9TE</p> <p><u>Write explanation about how fossils are formed. Draft and copy up.</u></p>	

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

			<p>Look at what body fossils and trace fossils are – <u>stick in information.</u></p> <p>What are transitional fossils? Research the archaeopteryx - https://kids.britannica.com/kids/article/Archaeopteryx/390011</p> <p><u>Make information file about the archaeopteryx with illustration at the centre of page.</u></p> <p><u>Art link:</u> Ammonites are a group of extinct marine mollusc animal. These creatures lived in the seas from at least 400 to 65 million years ago. Ammonites' widely known fossils show a ribbed spiral-form shell, in the end compartment of which lived the tentacled animal.</p>	
	<p>Week 4: 1 hour and trip to Bird Of Prey Centre in Helmsley</p>	<p>Bill Carnivore Carrion Down / Downy Keratin Nocturnal Pellet Plumage / Plume Preening Prey Raptor Regurgitated Roosting Scavenger Talons</p>	<p>Match trip vocabulary for bird visit – photo with word and definition.</p>	
	<p>Week 5: 2 hours+</p> <p>To know that birds have evolved over millions of years.</p>	<p>Evolution Competition Survival Finches</p>	<p>Go back to archaeopteryx. Consider how birds have evolved over time. Birds and Beaks – look at shape and use of beaks. Match beak to its use.</p> <p>Complete science investigation: Battle Of The Beaks (Darwin Display) See English policy</p>	

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

	<p>To know that birds continue to evolve to survive.</p> <p>To learn about Charles Darwin and his life.</p>		<p>Watch video https://www.bbc.co.uk/bitesize/topics/zvhhvcw/articles/z9qs4qt</p> <p>Charles Darwin was an English naturalist who set off in 1831 on a five-year voyage around the world to study and collect animal, plant and rock samples. His findings would eventually change the way people thought about the world. Refer back to birds work.</p> <p>READ CGP CHARLES DARWIN TEXT IN READING TIME complete map with missing spaces and answer short questions from pack</p>	
	<p>Week 6: 1 hour</p> <p>To learn what palaeontology is.</p> <p>To learn about Mary Anning and how she struggled to become recognised as a female scientist.</p>	Palaeontologist	<p>People who study fossils are called palaeontologists. Anning was a fossil collector and palaeontologist. Although she was not trained as a scientist, the fossils she found changed scientific thinking about prehistoric life and the history of the Earth. She is credited with finding the first specimen of Ichthyosaur.</p> <p>Complete short questions and spider diagram about Mary's character CGP resources.</p> <p>** TAKE IT IN TURNS TO READ SET OF SIX MARY ANNING BOOK & STONE GIRL BONE GIRL</p>	
Y4: how environment change and pose dangers to living things which creates the need for adaption.	<p>Week 7: 2 hours</p> <p>To learn why we are all different.</p> <p>To learn why twins share characteristics.</p> <p>To learn what environmental and inherited characteristics are.</p>	<p>Inherited</p> <p>Environmental Characteristics</p> <p>Breeding</p> <p>Family tree</p>	<p>How Are We Different?</p> <p>Ask pupils to put their hands up if they possess a particular characteristic. Start with those that all humans share e.g., two eyes, hair on the top of their head, two arms, two legs etc. Then move on to characteristics that are not shared by all e.g., blue eyes, red hair. Now ask pupils to make their own lists of variations between class members. This can include observable characteristics such as hair colour, as well as hidden differences e.g., ability to roll the tongue, taste preferences, fingerprint patterns. Use these observations to highlight that we are all different.</p> <p>Watch video https://www.bbc.co.uk/bitesize/topics/zvhhvcw/articles/zp9f4qt</p>	

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

			<p>Mr Man and Little Miss baby sheet. Record in family tree format. Give Little Miss and Mr Men pictures. To create two more family trees.</p> <p>Ask the pupils to choose a famous family e.g., the royal family or a celebrity family. They will need to find/print out photographs of the mother, father and child(ren). List the characteristics that are common between a child and their mother and father.</p> <p>Sort inherited and environmental characteristics.</p> <p>READ INHERITANCE OF TRAITS – WHY IS MY DOG BIGGER THAN YOUR DOG DURING READING TIME put photo of book read in exercise book</p>	
<p>Y4: how environment change and pose dangers to living things which creates the need for adaption</p>	<p>Week 8 and 9: 4 hours</p> <p>To know that plants and animals have adapted over time to survive.</p>	<p>Adaptation Environment Offspring Theories Plant</p>	<p>Animal Adaptations</p> <p>Evolving adaptations to a particular environment can help animal species to survive. It is important for pupils to understand that adaptation is a gradual process which happens over a very long period of time through evolution and does not occur in the lifetime of one individual. An animal has no control over how it may adapt to survive; it cannot adapt to new conditions in its lifetime and then pass this adaptation onto its offspring.</p> <p>Look at horse evolution and sort cards.</p> <p>Make sheets about evolution of giraffe, polar bear, cactus and camel.</p> <p>Case Study: The Giraffe Slide 34: There aren't many fossils of early giraffes, but enough for scientists to come up with theories of how they evolved. Early giraffes probably looked like deer and there are a number of theories explaining how they evolved to look how they do today. Two key theories are: Evolution Theory 1: Some believe that giraffe's necks grew slowly due to the trees in the areas they lived in getting taller. They</p>	

Evolution And Inheritance: YEAR 6 SCIENCE MEDIUM TERM PLAN (9 weeks work)

Curriculum links to previous science learning in Year 3 about fossils and Year 4 work about living things and their habitats.

acquired the characteristic to allow them to continue feeding from these trees. It is possible that food on the ground was scarce, so they were instinctively raising their necks as high as they could to reach the leaves on the trees. But this theory that their long necks developed as generations of giraffes strove to reach the leaves of tall trees has now been rejected by many scientists.

Evolution Theory 2: Most scientists now believe the giraffe's neck arose through natural selection. They believe some giraffes had a genetic mutation (a change in form or qualities) that allowed them to develop longer necks. These giraffes were able to eat more, so they were stronger and more able to breed, passing their genetic material onto their offspring. Those giraffes with shorter necks couldn't get enough to eat, so were not strong enough to mate and eventually died without passing along their genetic materials.

Slide 35: A long neck is not the only way in which a giraffe is adapted to suit its environment - they have many other adaptations. The most amazing thing is that the giraffe's internal anatomy was able to be modified to allow for their longer neck. They developed strong shoulders and muscles and a complex heart and cardiovascular system so that blood didn't rush to their brains as they bent to drink.

Other Animal and Plant Adaptations

Slide 36: Polar bears live in the Arctic where it is very cold. Can pupils suggest ways Each click of the mouse will in which they are adapted to living in such a cold climate?

Slides 37-38: What about animals and plants that live in the desert, where it is very hot and dry during the day? (Camel and cactus)