Year 6 – Evolution



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| National Curriculum Outcomes: Knowledge* 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
 | National Curriculum Outcomes: Working Scientifically* Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
* Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
* Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
* Using test results to make predictions and to set up further comparative and fair tests
* Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
* Identifying scientific evidence that has been used to support or refute ideas or arguments.
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| Children might work scientifically by:Observing and raising questions about local animals and how they are adapted to their environment. Comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers. (Taken from the National Curriculum) |
| Links to prior learning**Year 2:** identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Notice that animals, including humans, have offspring which grow into adults**Year 3:** describe in simple terms how fossils are formed when things that have lived are trapped within rock.**Year 4:** Recognise that environments can change and that this can sometimes pose dangers to living things**Year 5:** Describe the life processes of reproduction in some plants and animals | Links to future learning**Key Stage 3:** chromosomes, genes & DNA. Differences between species. Natural selection. Changes in environments which may lead to extinction. |
| Key VocabularyEvolve, evolution, inheritance, offspring, parent, similar, similarity, same, identical, different, difference, adapt, adaptation, environment, habitat, fossil, variation, characteristic  | Common Misconceptions* Children may think animals can evolve within their lifespan.
* Children often think animals have chosen to live in certain environments because they are suited to them i.e. polar bears choose to live in the Arctic because they can hide on snow.
* Children may also think that animals choose certain features, for example a caterpillar chooses to be green so it can’t be seen easily on a leaf.
* Children will likely associate the term ‘inheritance’ with things we inherit from deceased relatives
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| Key knowledge/facts that the children need to know* A fossil is the preserved remains or traces of a dead organism. The process by which a fossil is formed is called fossilisation.
* After an animal dies, the soft parts of its body decompose leaving the hard parts, like the skeleton, behind. This becomes buried by small particles of rock called sediment.
* Fossils can teach us about animals that lived in the past and changes to the earth. For example, rocks that once formed the seafloor might be forced up to form a mountain range. This means that you can sometimes find the fossils of sea creatures at the peak of a mountain.
* When living things reproduce they pass on characteristics to their offspring. This is known as inheritance. This is why children often look like their parents, or why a mix of two dog breeds will produce offspring which has some characteristics from each parent.
* Adaptation means how living things are specialised to suit their environment. An African elephant, for example, lives in a hot habitat and has very large ears that it flaps to keep cool.
* Evolution is the way that living things change over very long periods of time.
* Charles Darwin came up with the theory of evolution - he published it in a book called ‘The Origin of the Species’ in 1859.
* The theory states that animals adapt over time- the most successfully adapted animals are the ones which survive and procreate. This leads to changes in animal species over time (evolution).
 | Links to real life* How can farmers use the science around inherited traits to grow the best crops or rear the best animals for food?
* How has local wildlife changed in response to changes in the environment?
* What traits do we share with our families? (Be careful to be sensitive to any looked after children if looking at this question)
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| Important scientists**Mary Anning** – English fossil collector who discovered many fossils in the cliffs at Lyme Regis**Charles Darwin** – An English geologist, naturalist and botanist, best known for his contributions to the science of evolution**Alfred Russel Wallace** – A Welsh naturalist who played a major role in developing the theory of evolution (before Darwin!) | STEM Career Links**Archaeologist** (studies history using artefacts)**Geneticist** (studies genes)**Geologist** (studies the Earth and what it is made of, including rocks)**Naturalist** (studies natural history)**Oceanographer** (studies the physical and biological aspects of the oceans)**Paleobotanist** (studies plant fossils)**Paleontologist** (studies fossils) |
| Suggested Enquiry Activities |
| Identifying and Classifying* Identify

similarities and differences between living things that all live in a similar habitat, for example polar or desert animals, or rainforest plants.● Design a new plant or animal to live in a particular habitat.● Identify features in plants and animals that are passed on to offspring.● Make observations of fossils to identify living things that lived on Earth millions of years ago | Comparative and Fair Testing* Which beak shape is best for different types of food?
 | Observation over Time | Pattern Seeking | Research using Secondary Sources* Many people know male peacocks use their impressive plumage to attract females, but what other animals use courtship displays? (the bowerbird, birds of paradise and the peacock spider are some examples)
* Research the work of Mary Anning and how this provided evidence of evolution (check this has not already been done when children were in Year 3)
* Compare the ideas of Darwin and Alfred Wallace on evolution
* Use secondary sources to find out about how the population of peppered moths changed during the industrial revolution.
* Research different types of a species and their characteristics making them suitable for different habitats, e.g. penguins (not all of them live in cold climates!).
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| Wow Factor Experiences* Borrow and use a Linnean Society Discovery Kit (free, see link below)
* Create a toilet paper timeline to show how long ago dinosaurs roamed the Earth
* Visit a farm or use the Farmer Time program (link below) to find out about how farmers use the science around inherited traits to create the best produce
* Visit Harewood House – the bird garden has penguins which are adapted to warmer climates than the arctic and there are a broad range of plants from different environments in the gardens
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| Maths Links* Use an understanding of scale and measurement skills to create a toilet paper timeline showing how long ago dinosaurs were alive on Earth
 | Literacy Links* Create a creature and write a non-chronological report explaining how it is adapted to its environment (you could cover how it moves, what it eats, what it looks like, how it escapes predators, body covering, etc.)
* Create a David Attenborough style documentary about your created creatures using iPads and video editing software
 | Broader Curriculum Links**ICT:** Children could create a David Attenborough style documentary about an existing animal or one they have created using iPads and video editing software**Art:** Create a clay model of a creature that is adapted to a certain environment. Explore what might happen to this creature if the environment changed, for example if it became very hot and dry, or if it flooded.**Geography:** Not all penguins live in cold climates! Research all the places they can be found and learn about their different adaptations**History:** Create a toilet paper timeline to show how long ago dinosaurs roamed the Earth. Include other key historical civilizations children have studied during their time in primary school |
| Story LinksMoth – Isabel Thomas The Molliebird – Jules Pottle & Rufus ThomasOne Smart Fish – Chris Wormell The Arrival – Shaun TanDogs – Emily Gravett What Mr Darwin Saw – Mick Manning |
| Helpful WeblinksAssessment exemplification (could also be useful with planning ideas) – <https://www.planassessment.com/product-page/examples-of-work-evolution-and-inheritance-y6-muharem>Online CPD on this unit (free) – <https://www.reachoutcpd.com/courses/upper-primary/evolution-and-inheritance/>BBC Class Clips (useful videos) – <https://www.bbc.co.uk/bitesize/topics/zvhhvcw>STEM Learning collection of resources for planning and teaching evolution– <https://www.stem.org.uk/resources/community/collection/12648/year-6-evolution-and-inheritance>Farmer Time program (fortnightly Skype sessions for your class with farmers) - <https://leafuk.org/farmertime/home>Linnean Society Discovery Kit Loan (free resource loans with activity ideas that can also be downloaded separately) – <https://www.linnean.org/learning/teaching/primary/discovery-kits/evolution-kit> |

NB: It would be useful to teach this unit after the unit on **Living Things and their Habitats,** as children will be able to apply the vocabulary they have learned when describing animals in this unit.