Science

Year 6 - Spring 2 – Evolution and Inheritance

	National Curriculum / End Point statement
	Evolution and Inheritance • 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. **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 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.

Week 1	Week 2 [Conclude]	Week 3	Week 4	Week 5	Week 6
Reactivate learning: animal and their offspring Year 2, Fossils Year 3, How are offspring produced Year 5. WALT recognise that living things produce offspring of the same kind	WALT identify how animals adapt to suit their environment (Peppered moths)	WALT identify how plants adapt to suit their environment (see Cambridge botanical powerpoint)	WALT identify how animals adapt to suit their environment (Bird Beaks)	WALT describe theories of evolution	WALT understand that fossils provide information about living things that inhabited the Earth millions of years ago
In Focus - https://explorify.uk/en/activities/what-if/all-humans-looked-the-same	In Focus - https://explorify.uk/en/activities/odd-one-out/if-you-see-me-now	In Focus - https://explorify.uk/en/activities/zoom-in-zoom-out/orange-and-waxy	In Focus - https://explorify.uk/en/activities/odd-one-out/perfect-pinchers	In Focus - https://explorify.uk/en/activities/odd-one-out/half-and-half	In Focus - https://explorify.uk/en/activities/odd-one-out/how-old-is-that-chicken
Success Criteria					
I can explain what a living thing is. I know what offspring are and how they are produced.	I can explain what adaptation means. I can explain how animals adapt to suit their environment. I know that living things change over time.	I know what adaptation means. I can explain how some plants have adapted to suit their environment. I can describe how plants may change to suit their environment.	I can explain what adaptation means. I can explain how animals adapt to suit their environment. I know that living things change over time.	I know what adaptation means. I know what evolution means. I know that living things change over time.	I know what a fossil is. I know that living things have changed over millions of years I can explain what we can learn from fossils.

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I know that animals produce offspring but they are not always identical. *I can discuss characteristics that may be inherited from parents.*		*I know that living things change over time.*				
	Suggested Outcome					
Children use characters from Mr Men and Little Miss to show what offspring from different pairings may look alike.	*Children could record their findings from an investigation – throw different coloured strands of wool around outside and children have 30 seconds to collect. Repeat this and compare the colours collected each time – greens, browns etc should be harder to find. Reds, purples should be easy to see in that environment. Repeat in the hall. Link to camouflage.*		*Children look at the shape of beaks of birds and use tools to see how many seeds they can collect in 30 seconds.* *Link to ideas about beaks adapting to suit the food available.*	*Children use what they have learned over the last sessions to support/refute claims about adaptation and evolution.*	*Children could watch the following and write a report based on the evolution of whales* [*https://ocean.si.edu/through-time/ancient-seas/evolution-whales-animation*](https://ocean.si.edu/through-time/ancient-seas/evolution-whales-animation)	

Vocabulary	*NC links*
fossils, inhabit, offspring, identical, adapted, evolution, characteristics, palaeontologist, cactus, extreme conditions, advantages, disadvantages	*Living things* *Fossils and rocks in Yr3* *Animals including humans*

Key Learning

All living things have offspring of the same kind, as features in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other. Plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. Over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution. Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.

Possible Evidence	*Common Misconceptions*
• *Can explain the process of evolution* • *Can give examples of how plants and animals are suited to an environment*	*Some children may think:* • *adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life*

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• Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth • Give examples of living things that lived millions of years ago and the fossil evidence we have to support this • Can give examples of fossil evidence that can be used to support the theory of evolution • Can identify characteristics that will make a plant or animal suited or not suited to a particular habitat • Can link the patterns seen in the model to real examples • Can explain why the dominant colour of the peppered moth changed over a very short period of time	• offspring most resemble their parents of the same sex, so that sons look like fathers • all characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited • cavemen and dinosaurs were alive at the same time.

Notable Scientists
Charles Darwin - https://www.nhm.ac.uk/discover/charles-darwin-most-famous-biologist.html Alfred Russell Wallace - https://www.nhm.ac.uk/discover/who-was-alfred-russel-wallace.html Richard Owen - https://www.nhm.ac.uk/our-science/departments-and-staff/library-and-archives/collections/owen-collection.html Mary Anning – year 2 recap
CPD opportunity
https://www.reachoutcpd.com/courses/upper-primary/evolution-and-inheritance/
Useful Links
• https://www.bbc.co.uk/bitesize/topics/zvhhvcw • https://app.discoveryeducation.co.uk/learn/channels/channel/e8b39095-4ec6-4f28-91f4-51a216c86649?embed=false&embed_origin=false

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Evolution and inheritance

Early learning goal	• Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.
Year 1	
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. (Y2 - Living things and their habitats) • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)
Year 3	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Year 4	• Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)
Year 5	• Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)
Year 6	• 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.
KS3	• 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.

Red is linked from other topics