

National Curriculum Objectives:*(Statutory Requirements)*

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

Experimental and investigative work focuses on:

Planning an investigation:	Obtaining and evaluating evidence:
<ol style="list-style-type: none"> 1. Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 	<ol style="list-style-type: none"> 2. Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 3. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. Using test results to make predictions to set up further comparative and fair tests. 5. 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. 6. Identifying scientific evidence that has been used to support or refute ideas or arguments.

Most children will:

Identify inherited traits and adaptive traits.

- Understand that adaptations are random mutations.
- Examine fossil evidence supporting the idea of evolution.
- Identify the difference between selective and cross-breeding.

Some will progress less and will:

Develop an understanding of the development of evolutionary ideas and theories over time.

- Explain how human evolution has occurred and compare modern humans with those of the same genus and family.
- Understand that adaptation and evolution is not a uniform process for all living things.
- Give examples of selective and cross-breeding.

Others will progress further and will also:

Explain the terms adaptation, evolution and natural selection and use these in context.

- Describe how living things evolve via the process of natural selection.
- Explain in simple terms what genes and DNA are.
- Investigate the ethical issues of human intervention in the process of evolution by natural selection.

Key vocabulary:

Previously taught: vertebrate, invertebrate, survival, senses, feeding, digest, absorb, breathing, skeleton, habitat, environment, reproduce

New: Adaptations, generations, inherit, breeding, Darwin, evolve (change), evolution, environmental change, population, survival of the fittest

Session	Learning Objectives	Introduction	Main activity	Application and review	Resources
1	<p>LO: To recognise that characteristics are passed from parents to offspring, and that living things change over time.</p> <p>Assessment: a, b</p>	<p>Explain to the children that this term, they will be learning about 'Evolution and Inheritance'.</p> <p>Q: What does 'evolution' mean? Q: What does 'inheritance' mean? Q: Do these words have different meanings in different contexts?</p> <p>Allow children to discuss their thoughts. Ensure children understand that evolution is essentially change over time – it is more complicated than that, but that is a good starting point. Inheritance is when something is passed on to the next generation. e.g. eye colour, skin-colour, height etc. Some children may already know about genes and chromosomes, but a full understanding of inheritance with regard to genes is not necessary at this stage.</p>	<p>Explain to the children that when living things produce offspring – reproduce – they pass on characteristics to their offspring.</p> <p>Ask children what breeds of dogs they know about, and make a list.</p> <p>Q: What would happen if a Labrador crossed with a poodle? Q: What would you expect the puppy to look like? Why?</p> <p>Show picture of labradoodle and discuss. Repeat with other examples of cross-breeds.</p> <p>Ask children to design their own breed of dog.</p> <p>Scientists think that humans and chimpanzees descended from a shared ancestor between 5 and 8 million years ago. Since then, the human skull has gradually changed shape due to inheritance, and evolution.</p>	<p>Discussion about what characteristics would be inheritable and which would not be. If a woman has dyed her hair purple, might her baby have purple hair? Why or why not? If Usain Bolt had a son, would he be a fast runner?</p>	<p>Children to bring in photos of their parents and themselves.</p>
2	<p>LO: To understand that changes can be an advantage or a disadvantage.</p> <p>Assessment: c, 5</p>	<p>Review learning from previous session – that parents produce offspring, but the offspring are not normally identical to the parents. Sometimes, the changes in the next generation (ensure children understand the term generation) can be an advantage – they are better suited to their environment, but other times it can be a disadvantage – it is harder for them to survive in their</p>	<p>Q: What is the term for the environment where a living thing lives? Habitat.</p> <p>Tell the children that different habitats require different adaptations.</p> <p>Explain Activity 1</p> <p>Activity 1 (On mixed ability tables) Children to look at the pictures of different animals and habitats and brainstorm to answer the questions: What are the challenges in this habitat? How have the animals which live here adapted to</p>	<p>Maladaptations Explain that sometimes adaptations that were beneficial, become disadvantages. For example, when the climate changes and gets warmer somewhere, an animal which was adapted for cold weather</p>	<p>Images of animals and habitats. These should be printed and stuck onto A3 – one page for each habitat on each table (polar, jungle, ocean, woodland, desert) Worksheet</p>

		environment.	<p>survive?</p> <p>Children should rotate around the different tables so they can see all habitats. They could make notes as they go on the challenges and adaptations for each.</p> <p>Class discussion of the challenges and adaptations in different environments.</p> <p>Explain Activity 2</p> <p>Explain to the children about who Darwin was.</p> <p>It is important that the children understand that Darwin did not come up with the idea of evolution by himself.</p> <p>Explain that Darwin travelled to the Galapagos Islands.</p> <p>Explain to the children that today we will be looking at the beaks of finches.</p> <p>We will be playing battle of the beaks.</p> <p>Play battle of the beaks and then continue with the rest of the flipchart. Children to write an explanation of evolution, including the terms on the flipchart.</p>	will overheat. Discuss the story of the dodo (see information sheet) and and show image. Ensure children understand the term 'extinct'.	Activity 1 Key questions Picture of Dodo Skeleton Dodo information sheet (from Wikipedia)
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3	LO: To research an animal in depth Assessment: a, c	Tell the children that you will be completing a class fact-file on animals and how they have evolved to thrive in their habitats. You could also include some animals whose adaptations are now proving to be a disadvantage. Maybe make into a class book. Model finding information either using books or the internet. Model taking notes on key information e.g. Habitat, appearance – how is this suited to the environment? diet – what does it eat, and how does it catch/find its food? defence – how does it protect itself?	Activity (Mixed ability pairs or individually) Children to research an animal of their choice in depth and create a fact-file on the evolutionary history of that animal, and how it has adapted to suit its environment.	Children to share their research findings. They could do presentations including slides. They could then discuss and compare the advantages and disadvantages of specific adaptations.	Netbooks/ books from library
Session	Learning Objectives	Introduction	Main activity	Application and review	Resources
4	LO: To be able to write a biography of a famous	Explain to the children that they are going to be learning more about a famous scientist figure. They can choose between Charles	Children to write biography LA: timeline available of Mary Anning's life.	Children to share interesting stories from the biographies they have researched.	Anning time line Netbooks books

	<p>scientist. Assessment: 6</p>	<p>Darwin 1809-1882, Mary Anning 1799-1847 Q: What do we call writing that tells the story of someone's life? Q: What features would you expect this text to have? Contents, Index, subheadings, photographs, glossary Suggest that the children think about possible subheadings for their biography as they continue their research. Some modelling of writing may be required.</p>		<p>This could be expanded into drama, re-enacting scenes from their lives.</p>	
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