

KS2: MEDIUM TERM PLANNER

Evolution and Inheritance Y6

Pupils should be taught to:


- 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


The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships, and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping, and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.





'Working and thinking scientifically' is described separately at the beginning of the programme of study but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell, and pronounce scientific vocabulary correctly. During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes, and skills through the teaching of the programme of study content:

- 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 a 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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| <p>Prior Learning:</p> <ul style="list-style-type: none"> 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) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5) | | <p>Future Learning:</p> <ul style="list-style-type: none"> Heredity as the process by which genetic information is transmitted from one generation to the next. (KS3) 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. (KS3) The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. (KS3) 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. (KS3) | |
| <p>Key Questions (<i>show how content and concepts link</i>) Differentiated Learning Objectives</p> | <p>Teaching and learning activities (<i>linked directly to objectives</i>)</p> | <p>Resources (<i>to help pupils reach the learning objectives</i>)</p> | <p>Written and non-written outcomes (<i>assessment including homework's</i>)</p> |
| <p>1) What is evolution theory? SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? What theory do you know of that is still relevant today?</i> Science Working scientifically Skills: </p> | <p>Science reasoning task: explorify: What if: Humans had never lived on the Earth? - Explorify</p> <p>Activity 1: PowerPoint: What is adaptation? TP What is evolution? TP Have your ideas changed? If so, how? Who are the key scientists that came up with the theory of evolution</p> <p>Activity 2: evolution ideas to read and order in historical timeline.</p> | <p>Activity 1: PowerPoint</p> <p>Activity 2: ideas cards of different people in history.</p> <p>Activity 3- true and false sheet with statements</p> <p>Activity 4- question cards prompt sheet</p> <p>Activity 5: Darwins Theory of Evolution – Biology for Kids </p> | <p>Assessment: Pupils able to ask questions/ pupils able to research</p> <p>Homework: Research other key historical figures where evolution theories have evolved from.</p> |


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| <p>Science Enquiry Type</p> <p>Research  Asking Questions</p> <p><i>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.</i></p> <p><i>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.</i></p> <p><i>Fossils give us evidence of what lived on the Earth millions of years 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</i></p> | <p>Activity 3: evolutionary ideas true and false statements using research.</p> <p>Activity 4: Question cards to discuss the different theories over time.</p> <p>Activity 5: Research the theory of evolution using secondary sources.</p> <p>Misconception: Some children may think:</p> <ul style="list-style-type: none"> • 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 • 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. | <p>Mocomi Charles Darwin - Kids Britannica Kids Homework Help 15 fun facts about evolution for kids (penguin.co.uk)</p> | |
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| <p><i>varieties with their own characteristics.</i></p> | | | |
| <p>2) Who is Darwin and why is he significant? SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? What other scientist do you know of and why was their work important?</i> Science Working scientifically Skills:  Science Enquiry Type Research/ observation/ asking questions <i>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</i></p> | <p>Science reasoning task: explorify: What's going on? Soak up some rays - Explorify</p> <p>Activity 1: Discuss questions may ask of a picture of this person (show Charles Darwin)</p> <p>Activity 2: PowerPoint- identify key facts about Darwin. Research facts and find answers to own questions.</p> <p>Activity 3: Write key facts in a biography.</p> <p>Misconception: Some children may think:</p> <ul style="list-style-type: none"> • 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 • 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. | <p>Activity 1: Picture – question stem cards.</p> <p>Activity 2: PowerPoint What is evolution? - BBC Bitesize History KS2 The Victorians: Charles Darwin BBC Teach - YouTube</p> <p>Activity 3: Writing prompt sheet/ template.</p> | <p>Assessment: Pupils able to ask key question, research and find answers to them.</p> <p>Homework: What is evolution? - BBC Bitesize</p> |

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| <p>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 years 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.</p> | | | |
| <p>3) Can we identify inherited characteristics in living things?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? How do you look similar to family members?</i></p> <p>Science Working scientifically Skills:</p>  <p>Science Enquiry Type</p> <p>Comparative</p> <p>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.</p> | <p>Science reasoning task: explorify: Odd one out In a flap - Explorify</p> <p>Activity 1: PowerPoint- explain scientific concept of inheritance and variation.</p> <p>Activity 2: classify inherited and acquired characteristics- do a mini test with class of variation- ear wax, taste, eye colour, hand clasping etc.</p> <p>Activity 3: Research dog breed variations.</p> <p>Misconception: Some children may think:</p> <ul style="list-style-type: none"> • 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 • 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. | <p>Activity 1: PowerPoint What is inheritance? - BBC Bitesize What is Variation? - YouTube</p> <p>Activity 2: class table template to record results</p> <p>Activity 3: websites given for research</p> | <p>Assessment: Are pupils able to use working scientifically skills?</p> <p>Homework: observe how they are similar and different to their family members.</p> |

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| <p><i>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 years 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.</i></p> | | | |
| <p>4) How are different animals adapted to their environment? (extreme as well) SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? What animals do</i></p> | <p>Science reasoning task: explorify: Odd one out How old is that chicken? - Explorify</p> <p>Activity 1: PowerPoint to understand the scientific meaning of adaptation.</p> | <p>Activity 1: PowerPoint</p> <p>Activity 2: How have different animals adapted to their habitats? - KS1 Science - BBC Bitesize Adaptation of plant life to extreme cold temperatures - KS3 Biology - BBC Bitesize</p> | <p>Assessment: Able to explain how animals are suited and adapted to their environments?</p> <p>Homework: research different animals and how they have adapted.</p> |

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| <p><i>you know have adapted to their environment?</i></p> <p>Science Working scientifically Skills:</p>  <p>Science Enquiry Type</p> <p>Research/ ask questions</p> <p>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.</p> <p>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.</p> <p>Fossils give us evidence of what lived on the Earth millions of years ago and provide evidence to</p> | <p>Activity 2: How have different animals adapted to their environment-use secondary sources to research.</p> <p>Misconception: Some children may think:</p> <ul style="list-style-type: none"> • 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 • 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. | <p>24 Animals That Adapted To Their Environments - Wildlife Informer</p> | |
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| <p>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.</p> | | | |
| <p>5) How is adaptation important to the survival of species?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? How are different Science Working scientifically Skills:</i></p>  <p>Science Enquiry Type comparative</p> <p>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.</p> <p>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</p> | <p>Activity 1: Reading comprehension about birds' beaks.</p> <p>Activity 2: set out an experiment to test out the adaptation of beaks.</p> <p>Misconception: Some children may think:</p> <ul style="list-style-type: none"> • 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 • 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. | <p>Activity 1: differentiated reading, comprehension questions.</p> <p>Activity 2: planning template-choice of resources to choose from.</p> | <p>Assessment: Are pupils able to use working scientifically skills to set up a comparative experiment?</p> |

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| <p>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 years 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.</p> | | | |
| <p>6) Are there any advantages to adaptation? SCIENCE CAPITAL: <i>How does this lesson connect with children in my class?</i> Science Working scientifically Skills:  Science Enquiry Type</p> | <p>Scientific reasoning: Penguins could fly? - Explorify</p> <p>Activity 1: PowerPoint – true and false about adaptation</p> <p>Activity 2: Pupils sort adaptive characteristics and discuss advantages and disadvantages to those.</p> <p>Activity 3: PowerPoint to go through genetic modification and cross breeding.</p> <p>Misconception:</p> | <p>Activity 1: PowerPoint go through,</p> <p>Activity 2: advantages and disadvantages characteristic statements with animal picture.</p> <p>Activity 3: PowerPoint- use secondary research to complete information.</p> | <p>Assessment: Are pupils able to identify advantages and disadvantages to adaptation.</p> |

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| <p>Comparative</p> <p>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.</p> <p>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</p> | <p>Some children may think:</p> <ul style="list-style-type: none">• 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• 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. | | |
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