

## Summer Term 1 Overview Year 5 and 6 – Science

### Summer Term 1 – Mortal Engines

Topic: Evolution and Inheritance		Guide Time = 7 Weeks
<b>Assessment:</b>	End of unit Assessment: Year 6 – Evolution and inheritance Twinkl Assessment. Regular VIP quizzes. Ongoing teacher assessment, based on AfL throughout each lesson.	<p><b>Very Important Points (VIPs):</b></p> <ul style="list-style-type: none"> <li>- Offspring inherit characteristics from both of their parents such as eye and hair colour.</li> <li>- Fossils are the preserved remains of ancient animals and plants and provide scientists with proof that living things have evolved over time.</li> <li>- Evolution is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years.</li> <li>- Natural selection is where organisms better adapt to their environment to survive and produce more offspring. (The idea of 'survival of the fittest' – the 'fittest' meaning the best adapted to the surroundings/habitat.)</li> <li>- Evidence of this can be found in fossils and adaptive traits in animals.</li> </ul> <p><b>Key vocabulary:</b></p> <p><b>Cells</b> - Cells are the building blocks of all living things. All living things are made up of cells. Amoebas have one cell. Humans have trillions of cells!</p> <p><b>DNA</b> - DNA carries the characteristics that we inherit. It is located in two places in the cell: the nucleus and the mitochondria. DNA can replicate and make copies of itself. When cells divide, each cell needs to have an exact copy of the DNA in the old cell.</p> <p><b>Chromosomes</b> - Chromosomes are tiny structures inside cells made from DNA and protein. The information inside chromosomes acts like a recipe that tells cells how to function and replicate. Every form of life has its own unique set of instructions, including</p>
<b>Links to prior learning (sequencing) and canon book</b>	Children will use and apply their existing knowledge from prior learning in Year 3 on Rocks: <ul style="list-style-type: none"> <li>• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> </ul> <p>Children will also build upon their prior learning throughout KS2, on Living Things and their Habitats focusing on how living things pass on characteristics to their offspring as well as that they can become adapted to their habitats.</p>	
<b>Links to other learning (cross fertilisation)</b>	<p><u>English</u>: Make links with Kipling's Just So Stories - creation myths. Contrast these with the actual process of natural selection. Audio versions via the Storynory site: <a href="http://www.storynory.com/category/rudyard-kipling/">www.storynory.com/category/rudyard-kipling/</a></p> <p>The children could present a report about the peppered moth, or enact this as a drama to illustrate what happened. A good story book on evolution would be Our Family Tree: An Evolution Story by Lisa Westberg Peters or Inside The Beagle with Charles Darwin by Fiona Macdonald.</p> <p><u>Computing</u>: Model evolution in various games. The children could produce an audio or video presentation, depending on equipment and time available, or could produce a regular presentation using PowerPoint, Prezi or similar.</p> <p>Collect data and enter it onto a database to allow for frequency graphs to be drawn and produced. The children could use 2Investigate (Purple Mash).</p>	

**Maths:** Produce graphs and charts from the data collected, including simple bar charts of height and pie charts of hair and eye colour. The children could carry out investigations such as is our height related to our arm length? Is our hand size and foot size related?

**Outdoor learning:** Take the children to observe some animals and how they have adapted to their habitats as they walk around school.

**History:** Learn about Charles Darwin and the conditions aboard the ship, comparing between then and now.

**RE:** Discuss creation myths of various religions and why Darwin's theory caused such a stir in Victorian times, for example.

**Thematic Questions:**

**The World Beyond Us:**

Explore how evolution in our solar system has changed over time.  
 Could evolution on Earth effect and impact how other planets evolve?

**The World Around Us:**

How can our knowledge of evolution continue to help us learn more about how our world will continue to adapt and evolve in the future?  
 How does our knowledge of evolution of plants and animals link to how our world has evolved?

**Modern Britain:**

How do you think that modern day humans might be influencing evolution, both positively and negatively?

**Healthy Bodies & Healthy Minds:**

Consider how our lifestyles have changed over time; has this impacted on evolution and how humans have adapted over time?

**Culture:**

How have different cultures defined evolution? Do different religions and cultures believe and define evolution in the exact same way?  
 Explain your reasons.

**Technology in Action:**

How has technology evolved over time?  
 Consider how the evolution of technology, in particular engines and motor vehicles, has impacted our lives for the better.

you. Your chromosomes describe what colour eyes you have, how tall you are, and whether you're a boy or a girl. The nucleus of a cell contains chromosomes, which are made up of DNA.

**Genes** - Genes are short sections of DNA that contain specific information. This is often called the genetic code. All the genes in the whole cell are called the genome.

**Variation** - The differences between individuals within a species.

**Inheritance** - This is when characteristics are passed on to offspring from their parents.

**Adaptation** - An adaptation is a trait (or characteristic) changing to increase a living thing's chances of surviving and reproducing.

**Variety:** Differences between things as part of a whole group.

**Fat Questions:**

How will the world's response to climate change impact on adaptation, evolution and extinction?

How vital is current scientific research in continuing to develop our understanding of adaptation and evolution?

**Links to future learning**

Children will use their knowledge and understanding of evolution and inheritance in Year 6 as an 'introduction'; applying their learning from this unit to new learning in Key Stage 3 Biology.



	<p>Children will learn and develop more in-depth knowledge through the unit on Genetics and evolution, which will focus on Inheritance, chromosomes, DNA and genes.</p> <p>They will also explore and apply this knowledge to their Science unit on 'Structure and function of living organisms', when learning new concepts and developing a more in-depth understanding of Cells and organisation.</p>	
<b>Character/ Wider Development ('50 things', cultural capital, skills)</b>	<p>Children will explore their own schools '50 Things' and how this could support their understanding and development of evolution and inheritance.</p> <p>Children can explore and raise awareness of World Earth Day – April 22nd and how adaptation has changed / quickened due to global warming and climate change.</p> <p>Children could explore how the solar system and space exploration has evolved over time on Space Day – May 7th.</p> <p>Children can take part in time travel by visiting a Science / History museum where children can see and examine a range of fossils and artefacts linked to evolution and inheritance.</p>	

## Overview of Teaching Sequence

Key Facts / Learning	Learning Focus or Key Question	Learning Outcomes (NC)	Key Words/ Vocabulary	Greater Depth/SEND	Misconceptions	Activities and Resources
<p><b>Lesson 1</b></p> <p>Offspring inherit characteristics from both of their parents such as eye and hair colour.</p>	<p>To explain the scientific concept of inheritance and how inherited characteristics can lead to variation.</p>	<p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p>	<p>inheritance inherited characteristics acquired characteristics physical environmental factors adaptation variation DNA offspring parents genes evolution</p>	<p><b>GD:</b></p> <p>Mr Potato Head – Focus on three or four variables, e.g. size of ears, size of nose, size of eyes, moustache or not, etc.</p> <p>Encourage children to make comparisons and provide reasonable, scientific suggestions as to why this may be.</p> <p>Children to further explore information on genetics and chromosomes and how inheritance occurs, to gain a more in-depth understanding, click <a href="#">here</a></p> <p>Children are able to explain and make links with prior scientific learning and apply to current and future learning,</p>	<p><b>Children may think...</b></p> <p>Boys will look like their father's side of the family and girls like their mother's side.</p> <p>Particular features are identical, such as mother's nose and father's eyes, rather than them being a blend of the two.</p> <p>You are only offspring when you are a child.</p> <p>Inheritance is what is passed on to you when a relative die.</p> <p>Your inherited characteristics are not always part of your DNA and you can lose these characteristics over time.</p>	<p>Vocabulary Check! Children will explore and define key vocabulary that will be used throughout this unit.</p> <p>Children to carry out an activity that allows them to identify and discuss similarities between themselves and others or themselves and their parents / siblings. Simple matching games would help here; matching children to parents/animal offspring to their parents – how are they similar? Different? Horses work well for this as they have different white markings.</p> <p>Children will continue to identify and explore inheritance, through discussions and exploring additional pictures and videos to aid their understanding. They must understand the difference between inherited characteristics and environmental factors.</p> <p>Discuss what the twins would inherit – BBC video. Children to discuss and understand the difference between inherited and acquired characteristics. CT to model and address misconceptions.</p> <p><b>Year 5:</b> children will explore and record the differences, carrying out a survey on the way they look (take care with children's feelings and sensitivity about the way they look). Data should be collected in a tally chart on the board for children to then draw a bar chart of their results. Discuss if there is a 50:50 split. Or is one characteristic more common? Where did you get them from? Can your parents roll their tongue if you can/can't? Children will then use this to explain inheritance in their own words.</p>



				<p>with in-depth explanations given.</p> <p><b>SEND:</b></p> <p>Sort and explain characteristics which are inherited and acquired.</p> <p>Children to identify and explain inherited characteristics based on the photographs provided.</p> <p>Children explore and match a range of offspring to their parents and discuss how they know. Mr Potato Head – Focus on two variables, e.g. big or small eyes, big or small nose. Children to fully explain their understanding based on these variables before applying them to more.</p> <p>Bar chart templates provided to support.</p>	<p>Children may become confused with identifying and understanding the difference between environmental factors / acquired factors and inherited features.</p>	<p><b>Year 5: Deepen the moment...</b> Prove or disprove. No two members of a species are identical.</p> <p><b>Year 6:</b> children to complete the Mr Potato Head activity – exploring different combinations of inherited characteristics and how they can make us look different. Children will fully explain inheritance drawing upon the activities and discussions carried out in the lesson. Children can then expand on this and explain how inheritance then leads to variation in humans / species. Examples provided to fully explain their explanations / understanding.</p> <p><b>Year 6 Deepen the moment...</b> Explain why variation is and always has been important in our world. How does this help us now and in the future?</p> <p>Children could further explore famous families' common features that makes them very recognisable. The Habsburgs were one. The Tudors were another example. What features do they share? What is the recognisable characteristic? Why is it there?</p> <p><b>Websites to support further learning:</b> <a href="http://www.scienceprofonline.com/genetics/ten-human-genetic-traits-simple-inheritance.html">www.scienceprofonline.com/genetics/ten-human-genetic-traits-simple-inheritance.html</a> has further information on genetic traits that you can see, such as cleft chins and dimples.</p> <p><a href="http://www.wartgames.com/themes/science/dna.html">www.wartgames.com/themes/science/dna.html</a> has games and activities for children on genetics and DNA.</p>
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<p><b>Lesson 2</b></p> <p>An adaptation is a trait (or characteristic) changing to increase a living thing's chances of surviving and reproducing.</p>	<p>To demonstrate and understand the scientific meaning of adaptation.</p>	<p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p>adaptation evolution adapt environment change animals species extinct genetic engineering</p>	<p><b>GD:</b> Children identify and explain the adaptations of a chosen animal and plant, which is of rarer form, e.g. Leaf Tailed Gecko.</p> <p>Children to create their own animal / plant and explain its adaptations to its environment.</p> <p>Children provide further in-depth explanation as to how and why animals and plants have adapted in the way they have and how the changing climate has impacted this.</p> <p>The adaptation of the polar bear and a grizzly bear into a pizzly (or grolar) bear.</p> <p><b>SEND:</b> Children to match adaptive characteristics to the animal and their environment.</p> <p>Children record the adaptations to the</p>	<p><b>Children may think...</b> That adaptations never change and once an animal is adapted to its environment it can no longer change.</p> <p>Adaptation and environment are the same thing.</p> <p>Animals do not change over time; therefore, their adaptations remain the same over time.</p> <p>Climate change has no impact on how an animal adapts to its environment or the change in their environment.</p>	<p>Revisit and review prior learning and VIPs. Explore prior learning on plant adaptation. CT to explain the term adaptation and model responses using examples. Discuss how this is different to environments and whether this can lead to variation.</p> <p>Explore plant and animal adaptations together as a class / in pairs. CT to model and discuss the fish and then explore a polar bear. How and why is this adapted in the way that it is, to its environment?</p> <p><b>Year 5:</b> children will explore the adaptations of a penguin and a cactus. They will identify the adaptations of these species, providing explanation as to why.</p> <p><b>Year 5 Deepen the moment...</b> Explore the impact on our world, if animals can no longer adapt to their ever-changing environments.</p> <p><b>Year 6:</b> children explore, identify and explain the adaptations of selected / chosen animals and plants. They will locate and identify the adaptive features and provide explanation as to why these adaptations are needed to help them survive. This will be a written task where they provide information about the animal and plant, explain their adaptations and how they help them to survive in their environment.</p> <p><b>Year 6 Deepen the moment...</b> Sam is a keen scientist and understands that if a species cannot adapt to its surroundings, it will become extinct and is therefore gone forever. He hopes that through genetic engineering, scientists might bring back some extinct species. Explore the advantages and disadvantages of genetic engineering and its impact on our world today.</p>
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				<p>correct places on the animal and plant.</p> <p>Children could select another animal or plant from a different kind of environment and record how it has adapted.</p>		<p>Children could further explore how humans across the world have adapted to their environments and habitats.</p> <p><b>Websites to support further learning:</b>  <a href="http://www.arkive.org/royal-penguin/eudyptes-schlegeli/video-06b.html">www.arkive.org/royal-penguin/eudyptes-schlegeli/video-06b.html</a></p>
<p><b>Lesson 3</b></p> <p>Evolution is the gradual process by which different kinds of living organisms have developed from earlier forms over millions of years.</p>	<p>To identify and understand the key ideas of the theory of evolution.</p>	<p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p>adaptation evolution adapt animals species extinct theory of evolution science natural selection</p>	<p><b>GD:</b>          Children will make links and provide more in-depth explanations and justifications for the theories given.</p> <p>Children will draw upon prior learning (fossils, plant adaptation) to support their explanations and make pertinent links to provide justifications.</p> <p>Children explore Natural Selection and provide in-depth explanation and evidence.</p> <p><b>SEND:</b>          Children to use the given word banks to support their explanation.</p> <p>Children to have images/names of</p>	<p><b>Children may think...</b></p> <p>That evolution can only happen over millions of years.</p> <p>That we can no longer evolve, as evolution has already taken place.</p> <p>Charles Darwin is the only scientist with a theory of evolution.</p> <p>Evolution doesn't exist.</p>	<p>Revisit and revise prior learning on inheritance and adaptation. Make links and review 'The Moth' story.</p> <p>Explore and discuss the theory of evolution, making links to the Reading for Productivity text. Children will consider their own views in response to those of others. CT to model the views of key, scientific figures and explain how they came to their conclusions of evolution.</p> <p>Children will explore the theories of evolution given over time. Children will work in groups, with each group given a specific time period of theories. They are to examine the different theories from their given time period and make comparisons to theories and our knowledge of evolution now: Are there any similarities? Differences?          Children will feedback and summarise the overall theories of their given time period.</p> <p>CT to record whole class findings and provide a brief summary of each time period and their theories. Model and discuss the key theories of Charles Darwin and his study / findings of his Galapagos Finches.          Make comparisons to the Alfred Wallace's theory of Natural Selection.</p> <p><b>Year 5:</b> children will summarise and explain the key ideas of the theory of evolution based on the discussions in the lesson. They will use the information to support their explanations.</p>



				<p>each time period's theory of evolution and they provide a brief summary of the theory.</p> <p>Children to match the period of time to the key figure's theories.</p> <p>Children complete a 'closed' procedure filling in the sentences with the correct words based on their understanding of the key ideas of evolution.</p> <p>Children will focus on the explanation of the adaptations and natural selection process, omitting the theories explored.</p>		<p><b>Year 5 Deepen the moment...</b>          Consider and evaluate Alfred Wallace's theory of evolution.</p> <p><b>Year 6:</b> Children will summarise the key ideas of the theory of evolution over time and then explain, in their own words compare Darwin's and Wallace's theories and findings of evolution.</p> <p><b>Year 6 Deepen the moment...</b>          Debate the theories of Charles Darwin and Alfred Wallace to one other. Do you agree / disagree with their theories? Justify your reasons.</p> <p><b>Websites to support further learning:</b>  <a href="http://www.sciencenetlinks.com/lessons/bird-beaks/">www.sciencenetlinks.com/lessons/bird-beaks/</a> can help with the bird seed eating activity.  <a href="http://www.truthinscience.org.uk/content.cfm?id=3118">www.truthinscience.org.uk/content.cfm?id=3118</a> gives information on the peppered moth story and how it evolved. This can be linked to 'The Moth' story read at the beginning of the unit.  <a href="https://www.nhm.ac.uk/schools/teaching-resources/evolution-and-inheritance-resources.html">https://www.nhm.ac.uk/schools/teaching-resources/evolution-and-inheritance-resources.html</a></p>
<p><b>Lesson 4</b></p> <p>Fossils are the preserved remains of ancient animals and plants and provide scientists with proof that living things have evolved over time.</p>	<p>To examine fossils and evidence demonstrating how plants and animals have evolved over time.</p>	<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>	<p>fossilisation          fossil          prehistoric          living things          plants          animals          evolution          Charles Darwin          Alfred Wallace          evolve          inheritance          adaptation</p>	<p><b>GD:</b>          Children will make links to prior learning, using key vocabulary accurately to provide in-depth explanations and justifications as to what fossils tell us about plant and animals evolution over time.          Children can explore and justify, with evidence, whether they believe</p>	<p><b>Children may think...</b>          Fossils are only of dinosaurs.</p> <p>Fossils are very large.</p> <p>Fossils only exist from millions of years ago.</p> <p>Children struggle to recognise changes</p>	<p>Revisit and revise prior learning on inheritance, adaptation and evolution. Children will revisit key terminology and its meaning.</p> <p>CT to discuss and explain the process of fossilisation. Children will explore the process and spend time discussing and ordering images based on the fossilisation process.          Children will recap prior knowledge on fossils and key terminology.          CT to explain and discuss with the class how fossilisation links to Charles Darwin's theory of evolution.</p>





			<p>evolution is still happening today. <i>(Yes it is! Bacteria continue to mutate and evade antibiotics, while Darwin's finches and other animals continue to be studied).</i></p> <p><b>SEND:</b> Children match the fossils of the horses to their correct time period. They will then examine and explain the differences over time. What has happened to the fossils over time?</p> <p>Children to focus on examining the fossils of horses to gain a secure understanding of how animals have evolved over time.</p> <p>Children can use key terminology for reference.</p>	<p>and how these changes / adaptations have helped us in understanding evolution over time.</p>	<p><b>Year 5:</b> children will examine fossils of horses and explain what this tells us about the evolution of them. They will need to ensure they look at what has changed and why this could be; thinking about the characteristic's horses need now and why. GD - They will then explore the fossils of plants and explain what this tells us about evolution over time.</p> <p><b>Year 5 Deepen the moment...</b> Outline and explain how fossils have helped our scientific and historical knowledge of evolution overtime.</p> <p><b>Year 6:</b> children will examine and analyse the fossils of horses and plants. They will need to analyse what has changed and fully explain why this could be, making references to characteristics now. They can make comparisons by identifying similarities and differences between the evidence and why at least one of these adaptations would be an advantage.</p> <p><b>Year 6 Deepen the moment...</b> True or false? The role of an archaeologist and scientist is vital in preserving and learning from history, our ancestors and our world before us.</p> <p><b>Websites to support further learning:</b> This <a href="#">website</a> provides information to remind children about fossil formation. This <a href="#">website</a> has some games and activities (some low level) linked to differences between carnivores and herbivores and also building a dinosaur from parts. <a href="#">Here</a> has some images and information about change over time. <a href="http://www.fossilsforkids.com/">www.fossilsforkids.com/</a> is great for children to use. If you are really keen on setting up a dinosaur dig, then this link has some very clear instructions and is really great to bring it alive</p>
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<p><b>Lesson 5</b></p> <p>The known stages in human evolution are: Australopithecus, Homo neanderthalensis and Modern humans.</p>	<p>To identify adaptive traits in humans to understand and describe how humans have evolved over time.</p>	<p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>	<p>adaptation adaptive traits evolution evolve humans Charles Darwin theory natural selection environment</p>	<p><b>GD:</b> Children will identify similarities and differences in-depth, making clear references to prior learning on natural selection and Charles Darwin's theory of evolution.</p> <p>Children can fully justify and explain how humans have evolved over time; linking both of their physical appearance and skeletons together.</p> <p><b>SEND:</b> Children will match the pictures to the evolved species and then identify / explain the adaptive traits of physical appearance.</p> <p>Children can match the physical appearance adaptive traits to the species. Children are provided with a key vocabulary bank to support their spelling and explanations.</p>	<p><b>Children may think...</b></p> <p>Evolution doesn't exist and has no impact on how humans have adapted.</p> <p>Evolution can only happen over millions of years.</p> <p>Adaptive traits are within them and developed.</p> <p>Adaptations cannot happen accidentally and cannot mutate and be passed on to their offspring.</p> <p>Animals and plants only become extinct because they have all been killed.</p>	<p>Children will revisit prior learning and make links to the learning in the lesson. Key terminology will be used and built upon.</p> <p>Children apply and build upon their knowledge of human adaptation and evolution to identify and explain how humans have evolved over time. A further exploration of human evolution will be conducted as a class, with teacher modelling of Charles Darwin's theory and why it was controversial. They will understand why from the 20<sup>th</sup> century we were able to provide more evidence to support human evolution through the use of fossils.</p> <p><b>Year 5:</b> children will identify the adaptive traits of Modern humans and an Australopithecus Afarensis based upon their physical appearance. They must explore the similarities and differences in order to provide an overall judgement of how the physical appearance has evolved over time.</p> <p><b>Year 5 Deepen the moment...</b> Thinking about the human traits that have evolved over time, why do you think this has happened?</p> <p><b>Year 6:</b> children will examine and identify the adaptive traits of Modern humans and an Australopithecus through identifying the similarities and differences between their physical appearance and their skeletons. They will ensure they have compared both of these to provide a full, overall explanation of how adaptive traits have helped humans evolve over time.</p> <p><b>Year 6 Deepen the moment...</b> Consider why human traits have evolved over time and why humans look so different in our modern-day world.</p> <p><b>Websites to support further learning:</b></p>
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<p><b>Lesson 6</b></p> <p>Natural selection is when organisms that are best suited to their environment survive and pass on their genetic traits. At the same time, organisms that are less likely to survive tend to be eliminated from the ecosystem. <i>The fittest, most adapted organisms survive and multiply whilst the least adapted die out.</i></p>	<p>LO: To explore advantages and disadvantages of adaptations and how human intervention affects evolution.</p>	<p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>	<p>living things animals plants evolution adaptation selective breeding genetic modifications cross breeding cloning</p>	<p><b>GD:</b> Children will explore the advantages and disadvantages but recognise the impact humans can have by intervening in evolution.</p> <p>Children will explore the future impact if humans continue to intervene.</p> <p><b>SEND:</b> Children will match the advantages and disadvantages to the living things. They will then provide further explanation.</p>	<p><b>Children may think...</b> Humans have no impact on evolution.</p> <p>All living things have adapted and evolved to the same extent.</p> <p>Selective breeding is a modern-day form of breeding and hasn't existed before.</p> <p>Selective breeding has an evolutionary advantage to living things and their selective breeding process.</p>	<p>Children will revisit prior learning and make links to the learning in the lesson; drawing upon their understanding of adaptation and how this leads to evolution. Key terminology will be used and built upon.</p> <p>Children will explore and identify advantages and disadvantages of adaptations. They will then explore and examine the different ways in which humans can intervene in adaptation. They will understand the different effects this can have on evolution. Year 6 children will discuss the advantages and disadvantages of adaptation.</p> <p><b>Year 5:</b> Children will identify the advantages and disadvantages of adaptations in living things, fully explaining their reasons. They will explore the affect that humans can have on evolution if they intervene. Children will then imagine and suggest an adaptive trait that humans might evolve in the future and explain the advantages and disadvantages this adaptation would cause.</p> <p><b>Year 5 Deepen the moment...</b> Consider how technology could impact and intervene in the future of evolution.</p> <p><b>Year 6:</b> Children will use their knowledge and identified advantages and disadvantages of adaptations to explore the different interventions humans can have and their effect on evolution. They will research and debate the different interventions, explaining the affects before concluding with their final judgements.</p>



						<p><b>Year 6 Deepen the moment...</b> Consider the future of human, animal and plant adaptation. How will our evolving world impact on this?</p> <p><b>Websites to support further learning:</b>  <a href="https://www.bbc.co.uk/bitesize/guides/ztn9y4j/revision/1">https://www.bbc.co.uk/bitesize/guides/ztn9y4j/revision/1</a>  <a href="https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-what-is-selective-breeding/z6cs382">https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-what-is-selective-breeding/z6cs382</a>  <a href="https://www.yourgenome.org/facts/what-is-selective-breeding">https://www.yourgenome.org/facts/what-is-selective-breeding</a></p>
<b>Lesson 7</b>	LO: To apply my knowledge and understanding to complete an assessment.	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.  Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.	evolution inheritance fossils changed over time living things plants religion science adaptation fossils fossilisation natural selection	<b>SEND:</b> Break the assessment down in to smaller steps for the children.  Allow them to answer the 'match' and 'tick' questions, where selective choice is an option first.  Provide a reader / prompter to the children so they can access the assessment.	<b>Children may think...</b> Children cannot retain key knowledge.  Children become confused between adaptation and evolution.  Children may not be able to identify key adaptive traits in humans, animals and plants.  Children may misinterpret how religion and science views can link or how they can differ; not being able to consider and reflect on both viewpoints.	Children will revisit and summarise their prior learning throughout all lessons over the past 6 weeks. They will draw upon and retain VIPs to support their theories and use of scientific terminology. Children will carry out their end of unit assessment and identify next steps in learning that may need further revisiting / support.  <b>Year 5 Deepen the moment:</b> Do you think it is right in our modern-day world, that all people's views and opinions are not considered?  <b>Year 6 Deepen the moment:</b> Consider the religious and scientific views of evolution over time. Can they work together?

					Children do not recognise that there are many different views / theories of evolution and do not consider these in their writing.	
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**Context (big picture learning):**

Science is a vital, creative subject that enables all children to explore, examine and think; understanding the world around and beyond us and allows us to discover and change the world. Science is a core subject that fosters children's learning across all others and allows children to link and build upon core skills, flourish and thrive as well as continue to develop their sense of curiosity of the subject, its importance to develop others as well as the world in which we live in.

Science is more than just a subject, it is our world and life; it is discovery, questioning and challenging; testing theories and problem-solving; determination and resilience; and we want our children to explore and learn this so they can go home and apply it throughout their lives, as a life-long scientist.

This unit not only builds, secures and embeds prior learning that has taken place throughout their primary life but allows them to explore in more depth these key scientific concepts which are vital in their knowledge of the world around and beyond them. It provides them context to everything we produce and use in our daily lives and helps children to consider changes they could make to support national and global changes that will help improve our environment and improve our climate.

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# Evolution and Inheritance

## Very Important Points (VIPs)

**Evolution by Natural selection** – Organisms within a species show a wide range of variation, due to their genes (inherited by their parents) and their environment. Natural selection occurs through the following steps:

- Individuals within a species show a genetic variation.
- The individuals with the characteristics that means they are better adapted to their environment will survive.
- These useful genes are passed onto the next generation. This process occurs over a large number of generations.

Fossils of giraffes from millions of years ago show that they used to have shorter necks. They have gradually evolved through natural selection to have longer necks so that they can reach the top leaves on taller trees.

**Fossils** are on the preserved remains, or partial remains, of ancient animals and plants. Fossils let scientists know how plants and animals used to look millions of years ago. This is proof that living things have evolved over time.






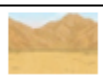


**Evolution** is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years. Scientists have proof that living things are continuously evolving - even today!

**Artificial selection** occurs when people choose which individuals to breed from because they are selecting for certain traits. This is the reason we have many crops and farm animals.

## Important People: Charles Darwin

**Charles Robert Darwin** (12 February 1809 – 19 April 1882) was an English naturalist. He is most famous for his work on natural selection, the idea that all species of life have evolved over time from common ancestors. This process involves favourable traits becoming more common in successive generations of living things while at the same time unfavourable traits become less common. Not only did Darwin develop the idea of natural selection, he also presented compelling evidence from his detailed research which included a five-year voyage on the HMS Beagle. On this voyage, Darwin visited ecologically diverse regions such as Brazil, Chile, Australia, the Falkland Islands and the Galapagos Islands. His 1859 book 'On the Origin of Species', detailed much of his research on natural selection, it contained a large amount of evidence to back up his ideas and became a landmark work in the field of evolutionary biology.



Living Things		Habitat		Adaptive Traits
Polar bear		Arctic		Its white fur enables it to camouflage in the snow.
Camel		Desert		It has wide feet to make it easier to walk in the sand.
Cactus		Desert		It stores water in its stem.
Toucan		Rainforest		Its narrow tongue allows it to eat small fruit and insects.

## Curriculum intent:

To further enhance and support children's understanding and knowledge of the world and how living things have evolved over time. This will support their future learning and wider world context alongside key, scientific and historical figures and their impact on our world and lives today.



## Key vocabulary

**Offspring** - The young animal or plant that is produced by the reproduction of that species.

**Inheritance** - This is when characteristics are passed on to offspring from their parents.

**Variations** - The differences between individuals within a species.

**Characteristics** - The distinguishing features or qualities that are specific to a species.

**Adaptation** - An adaptation is a trait (or characteristic) changing to increase a living thing's chances of surviving and reproducing.

**Habitat** – refers to a specific area or place in which a particular plant or animal could live.

**Environment** – an environment contains many habitats and includes areas where there are both living and non-living things.

**Evolution** – adaptation over a very long time.

**Natural selection** – the process where organisms that are better adapted to their environment tend to survive and produce more offspring. Darwin also referred to this as '**survival of the fittest**' a term which denotes that some animals survive to breed and some don't. Animals with a slight advantage have a better chance of survival.

**Fossil** – the remains or imprint of a prehistoric plant or animal, embedded in rock and preserved.

**Adaptive traits** – genetic features that help a living thing to survive.

**Inherited traits** – these are traits you get from your parents. Within a family, you will often see similar traits, e.g. curly hair.

**Mutation** – a mistake in the copying of the DNA.