

## KS4 Biology – Environment - Evolution and Inheritance

Students will be able to explain how living things have changed over time. Students will be able to identify the features of different environments and describe how living things have adapted to their environment. Students will understand how different features are inherited from parents to their offspring. Students will understand how fossils contribute to scientific research to explain how animals and plants have evolved over time.

Students will 'work scientifically' to achieve these goals, learning the key features of scientific enquiry; observing over time, pattern seeking, identifying, classifying, investigating (fair tests) and researching.

### **RRS Articles:**

This unit of work is linked to Articles of the UN Convention on the Rights of the Child.

Article 13 (freedom of expression)

Article 29 (goals of education)

|  | <u>OU P 5-6</u>   | <u>OU P 7-8</u>   | <u>OU Step 1</u>   | <u>OU Step 2</u>   | <u>OU Step 3</u>  |
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| <b><u>Subject specific knowledge</u></b> | <p>Can identify things that are old and new.</p> <p>Sort animals into the correct habitat e.g. camel lives in the desert.</p> <p>Can describe the features of different animals and how they move e.g. a bird has a beak and can fly.</p> <p>Know that animals have babies.</p> | <p>Can identify things from the past and present.</p> <p>Can identify key features of an environment e.g. hot/cold, dry/wet.</p> <p>Know that different animals live in different habitats.</p> <p>Know that different plants can be found in different habitats.</p> <p>Know some of the characteristics of different animals to</p> | <p>Know that things can change over time.</p> <p>Can identify changes to themselves over time.</p> <p>Can describe an environment using its key features.</p> <p>Know the names of different habitats and names of some animals and plants that can be found in those habitats.</p> <p>Know that animals have adapted to suit their environment e.g. camel</p> | <p>Understand that evolution is adaptation over a long period of time.</p> <p>Can explain how living organisms have changed over time.</p> <p>Can identify different types of environments from around the world e.g. rainforest, polar regions, deserts.</p> <p>Can explain why different animals and plants are suited to their environment.</p> | <p>Can explain how humans have evolved over time.</p> <p>Can make links between evolution and natural selection e.g. giraffes having shorter necks and have evolved through natural selection to reach the top leaves on trees.</p> <p>Knows the names of different environments from around the world and what habitats are found and the animals and plants that live in those habitats, giving a reason why.</p> |

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|  | <p>Know people are different.</p> <p>Know that a fossil is old.</p> <p>Can suggest what a fossil may have been e.g. fish, leaf</p> | <p>explain why they are suited to their environment.</p> <p>Know animals and humans can be different.</p> <p>Know that a fossil is from the past.</p> <p>Can identify what the fossil is from.</p> | <p>has wide feet to walk on sand.</p> <p>Knows animals can belong to different species.</p> <p>Know that animals in the species have different characteristics.</p> <p>Know that fossils are remains of animals and plants from the past.</p> <p>Can describe a fossil.</p> | <p>Know that animals and plants have adapted to suit their environment e.g. camel has wide feet to walk on sand.</p> <p>Know that variation is the difference between individuals within a species.</p> <p>Know that animals and plants produce offspring that are similar but not the same as their parents.</p> <p>Know that fossils are remains of animals and plants from the past. Can make comparisons between fossils.</p> <p>Know that fossils are found in rocks.</p> | <p>Know that adaptive traits are characteristics that are influenced by the environment.</p> <p>Know that adaptive traits can be a result of their environment e.g. food and climate.</p> <p>Know that inheritance is when characteristics are passed on to offspring from their parents.</p> <p>Know some of the traits offspring can inherit from their parents e.g. eye colour.</p> <p>Know that fossils are remains of animals and plants from the past. Know that fossils can prove things have changed over time.</p> <p>Know that fossils are found under layers of rocks.</p> |
| <p><b><u>Subject specific skills</u></b></p> | <p>Is able to identify differences between themselves and a peer.</p>  | <p>Is able to identify similarities and</p>  | <p>Is able to identify similarities and</p>   | <p>Is able to identify similarities and</p>  | <p>Is able to give reasons why when identifying</p>   |

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|   | <p>Is able to classify animals into 2 groups.</p> <p>Follow a set of demonstrations to carry out a simple investigation.</p>   | <p>differences between animals.</p> <p>Is able to classify animals into 2 or more groups.</p> <p>Is able to identify similarities and differences between themselves and a peer.</p> <p>Follows a picture method to carry out a simple investigation.</p> | <p>differences between animals and plants.</p> <p>Is able to classify animals into their different species.</p> <p>Follows a word and picture method to carry out a simple investigation.</p> | <p>differences within a species.</p> <p>Is able to classify animals and plants using different criterion.</p> <p>Follows a written set of instructions to carry out a simple investigation.</p> <p>Records results in a suitable table.</p> | <p>similarities and differences.</p> <p>Is able to classify animals and plants using their own criterion.</p> <p>Follows a written set of instructions to carry out a simple investigation.</p> <p>Records results in a suitable table.</p> <p>Is able to draw conclusions from their results.</p> |
| <p><b><u>Personal development</u></b></p> | <p><b><u>Problem solving</u></b><br/>Investigations and matching exercises</p> <p><b><u>Communication skills</u></b><br/>Working as pairs in investigations, asking and answering questions</p> <p><b><u>Self-belief</u></b><br/>Learning new skills, practising them and demonstrating them.</p> <p><b><u>Self-management</u></b><br/>Working with new equipment</p> <p><b><u>Teamwork</u></b><br/>Working as groups to solve problems or find out new information</p>  |   |   |   |  |
| <p><b><u>Suggested activities</u></b></p> | <p>Research Charles Darwin and his Theory of Evolution.</p> <p>Explore &amp; compare how different animals and plants have adapted to their environment.</p> <p>Explore characteristics off different animals and how it helps them survive their environment.</p> <p>Identifying inherited traits between parents and their offspring.</p> <p>Similarities and differences between peers.</p> <p>Inherited traits and environmental traits.</p> <p>Animal and plant classification.</p> <p>Comparing animals and plants.</p> <p>Make fossils.</p> <p>Explore &amp; compare different fossils - use microscopes.</p> |   |   |   |  |

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|  | Explore how humans have evolved over time.<br>Explore how animals have evolved over time e.g. history of the giraffe's neck.                                    |
| <b><u>Possible Investigations</u></b>  | Huddling experiment.<br>Investigating why birds have different shaped beaks.  |
| <b><u>Key Words</u></b>  | Offspring, inheritance, variations, characteristics, adaptation, habitat, environment, natural selection, evolution, fossil, adaptive traits, inherited traits. |
| <b><u>Online resources</u></b><br>Twinkl<br>CLEAPPS for risk assessments<br>BBC bitesize for video resources.  |   |
| <b><u>Evidencing Work</u></b><br>All work / evidence sheets need to be printed off, annotated by staff, self-assessed by pupils and stored in student folders. |   |