Burton Road Primary School

Science Topic: Evolution and Inheritance

Objectives

- Living things have changed over time and fossils give us information about living things from millions of years ago.
- Adults produce offspring that normally differ to their parents.
- Identify how animals have adapted to their environment and how this leads to evolution.

Key Scientists

Charles Darwin
Mary Anning

Phase: Year 6 **Autumn Term 1**

Key Vocabulary

Evolution & Inheritance	Working Scientifically
Change	Hypothesis
Fossils	Variables
Inhabited	Systematic
Offspring	Prediction
Identical	Justify
Adapted	Evidence
Suitable	Precision
Environment	Classification
Evolution	Scatter/Bar/Line Graphs
Inheritance	Comparative
Breeds	Support/Refute
Variation	
Survival	

Knowledge acquisition →	Enhancement of knowledge → (Deeper understanding of facts)	Development/refinement of skills → Lessons, activities + resources	Independent application of knowledge and skills in a meaningful or purposeful context
Lesson 1: Mary Anning To know who Anning was and why she is famous. To know when/where Anning worked. To understand that fossils give us information about living things from millions of years ago.	Palaeontologist who unearthed an entire skeleton of a plesiosaur which proves evolution. During Anning's time, most thought humans were created by God in their finished form. Born 1799 Died 1847 Lyme Regis, Great Britain Understand that fossils helped scientists to work out what living things may have looked like in the past. This is based	**Lesson 1** **LO: To know who Mary Anning was and how Scientists can make predictions about living things from millions of years ago based on fossils.** • Cold Task: Mind map questionnaire. • Explain to children that they should be able to answer some of the questions from the cold task by the end of this unit. • Introduce Key Vocabulary for this lesson: Fossil, Prediction, Adaptation, Evidence, Preserve, Habitat. • Begin by introducing Mary Anning. Give the children the photocopied pages 14/15 from Women in Science and 18/19 from Super Scientists. Read through the information as a class. Encourage children to talk about what they are reading. Do they have some prior knowledge? Have any of them found/seen a fossil before? Discuss as a class. • Watch Video https://www.bbc.co.uk/teach/class-clips-video/true-stories-mary-anning/zn7gd6f Mary Anning mind map in books.	**Cold Task:** Questionnaire – children to complete task in mixed ability table groups.

	upon predictions using what they know.	• History of fossils (myths and legends) • Activity 1 from Standing on the Shoulders of Giants. Children make up their own name for given fossils. Then give them the names given by people of the time to match up. Then give scientific names and show where the fossils came from. Discuss why scientists started to believe the fossils had come from living things. In books, children record a sketch, their name, the common name and scientific name in a table for each fossil. • Activity 2 from Standing on the Shoulders of Giants. Making predictions using the evidence. Children draw a series of skeletons using the pieces given. After three pieces, show children the real plesiosaur. Discuss how their opinions may have changed. Why? When they gathered more evidence, they could make better judgements. • Show Mary's timeline and discuss with children enquiry questions. Children answer these questions.	**Lesson 1:** Enquiry Questions on fossils.
Lesson 2: Inheritance To recognise the things that they have inherited from their parents. To know that offspring normally differ from their parents.	Children to use their investigation skills to understand that some things are inherited and some are developed through 'nurture' or environment. Children should know that these can differ from parents. To develop understanding of dog species and breeds and how crossbreeds can be created.	**Lesson 2** **LO: To investigate which characteristics living organisms inherit from their parents and how offspring can differ to their parents.** • Introduce Key Vocabulary for the Lesson: Offspring, Characteristics, variation, inheritance, environmental, genes, organisms. • Guess Who Games with Class Photos – how many differences/similarities can you spot? Children make a list. E.g. Hair colour, Eye colour. Explain that some characteristics (features) and hidden, such as blood group. Why does everyone look different? What about twins? Explain that some characteristics come from our parents (genes) whereas others are environmental. Environmental factors affect all living things – hydrangeas. • Play inherited or environmental sorting game. Children to record this in their books in two columns. • Dog Top Trumps – Children note that dogs are one species but there are many dog breeds. Identify similarities and differences between pictures of dogs. • Children to make their own top trumps cards for dog breeds. Use iPads to research https://www.pets4homes.co.uk/dog-breeds/ is a useful website with information on. • https://www.coop.co.uk/insurance/hub/crossbreeds/index.php Children can experiment with different cross breeds of dogs. Look at	

		characteristics. Can you predict what the dog will look like? What characteristics does the crossbreed take from the two parent dogs? • Big Question: Why are we all different?	**Lesson 2:** Big Questions: Why are we all different?
Lesson 3: Charles Darwin To know who Charles Darwin was and why he was famous.	1809-1882 Great Britain. 'Evolutionary Revolutionary' Zoology/Biology Contradicted the biblical account of mankind's creation. Life has slowly transformed over time. Humans/Monkeys share a common ancestor. Founded Ethology – observation of animal behaviours. Evolution of Species.	**Lesson 3** **LO: To know who Charles Darwin was and how he changed the world's understanding of Evolution.** • Key Vocabulary: Evolution, Biology, Naturalist, Ethology, Observation, Species. • Display picture of Charles Darwin. Do you know who this man is? • Display the phrase 'Evolutionary Revolutionary' What do you think these words might mean? They are to describe CD. Discuss the meaning with the children to ensure all are familiar with exactly what this phrase means. • Place key facts about Darwin around the room. The children work in groups to discover the facts and write them into their enlarged answer table. • Play race game. All groups have all the facts in front of them. Teacher asks a question and the group have to find the correct answer and race to give it to the teacher. Awards points for first group to complete. • Read first few pages of 'On the Origin of Species' by Sabina Radeva. Share with the class to give some background information on Darwin. • What challenges did Darwin face? Why does that make him 'revolutionary'? Children to answer questions about Darwin. • Independently, children create a comic strip that pictures Darwin's understanding of Evolution. Children to use iPads for research if necessary. • Assessment: Children to order events on a timeline of Charles Darwin's life.	**Lesson 3:** Children to order events on a timeline of Charles Darwin's life.
Lesson 4: Galapagos Finches Food and Utensils activity and types of beaks.	When did Darwin travel to the Galapagos? Why did he study the finches? What did he notice? Why was this important in his understanding of evolution?	**Lesson 4** **LO: To understand the importance of Darwin's discoveries on the Galapagos Islands.** • Key Vocabulary: Finches, Galapagos, Survival, Adapted, Environment, Suitable, Offspring, Habitat, Variation, Inheritance. • Bird Beak Natural Selection investigation activity.	

	The beaks of the finches varied depending on the island that they lived on as well as the food that was available for them to eat. Survival of the Fittest or Natural Selection (leading into the following lesson).	• Three different food types and three different types of utensils. 30 seconds for children to pick up as much food as they can using the utensil. Then separate the food types and give each food type, the three utensils. The children have another 30 seconds to pick up as much food from their table. Some utensils may not work as well. Study the contents of the cups on the different island and decide which utensil would be best and survive. • Make the link to the finches. Only the finches that ate enough food and had the correct beak would survive and be able to reproduce. • Why did Darwin find different finches on different islands? • Children to write up their findings about the Galapagos Finches in a paragraph answering these questions: When did Darwin travel to the Galapagos? Why did he study the finches? What did he notice? Why was this important in his understanding of evolution?	**Lesson 4:** Investigation write up on the Galapagos Finches.
Lesson 5: Natural Selection	Give an appropriate and full definition of Natural Selection. *The process whereby organisms better adapted to their environment tend to survive and produce more offspring. The theory of its action was first fully expounded by Charles Darwin, and it is now regarded as be the main process that brings about evolution.* Understand how animals need to adapt in order to survive. Understand that different climates require animals to have different characteristics and features.	**<u>Lesson 5</u>** **<u>LO: To identify what Natural Selection is and how this can lead to Evolution</u>** • Children match the creature to its habitat/climate based on key features. Explain that most environments, however extreme, have some form of life in them – living things that have evolved to survive in those conditions against the odds (and often monopolise them). Explain that today's survival challenge is to explore extreme survival and the adaptations that enable living things to thrive in such conditions. • Show children cactus, camel, penguin and giraffe. How have these animals survived in extreme climates? Watch videos. http://www.bbc.co.uk/education/clips/z8sjxnb - *Adaptation of plant life to extreme cold temperatures;* https://www.bbc.com/bitesize/clips/z8fpyrd - *How are camels adapted to live in the desert?;* https://www.bbc.co.uk/bitesize/topics/zvhhvcw - *Animal & plant adaptations and behaviours, BBC;* • Children to annotate a picture of each of these organisms and explain how they have adapted and evolved to be able to survive in their habitat. Natural Selection. • Children to design a powerful living thing that can survive in the given climate. Desert, Forest, Mountain, Icy, Water. Annotate how your animal will survive.	**Lesson 5:** Individual annotated animal designs to survive in a specific environment.

Lesson 6 : Giraffes' Neck	Understand how animals have adapt to their environment and be able to communicate this information in a short story to a younger audience.	**<u>Lesson 6</u>** **<u>LO: To identify how animals have adapted to their environment and how this leads to evolution.</u>** • Vocabulary for Final lesson – ALL words should be at least familiar to the children now. Check knowledge and give the children a match up game for them to match the word to the definition. • Play BBC video on why Giraffe's have a long neck. https://www.bbc.com/bitesize/clips/zwcg9j6 What does this video tell you? • Children are to write their own short story for young children to tell them when the Giraffe has a long neck. • They could also pick a number of other animals to include in their story. e.g. tiger - stripes, zebra - stripes, elephant – trunk, crocodile - teeth, duck-billed platypus – beak, mole – front legs, peacock – tail feathers, deer – antlers).	**Lesson 6:** Children to write their own story for younger readers about how the animals have adapted.