

Year 6 – Spring 2 – ‘Evolution and Inheritance’

I can explore how fossils, and how they give us information about living things that lived many years ago

NC Science – Evolution and Inheritance

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 parent.
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

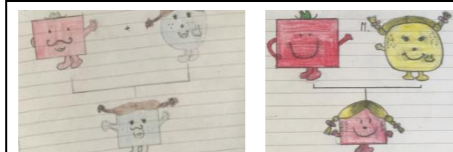


I can make enquires about Charles Darwin

Who is Charles Darwin? What do we know about him? What do we want to know about him? Record and share ideas on flipchart. On post-it notes ask the children to write down any questions they have about him e.g. what did CD study? Attach the post-it notes to another sheet of flipchart paper. Share selected parts of a podcast related to CD. Do the children have any further questions? Ask the children to record in their books at least 8 of their best questions. Give the children an opportunity to research Charles Darwin using fact sheets and iPads. Give the children an allotted time. The children will have a picture of CD and around it they will write some facts about him based on what we have discussed and discovered. The points should be short and succinct. Share an example on the Smart Board. At the end of the lesson, ask the children to share three things that they have learn about CD today.

What can explore inheritance and offspring

Display the first slide on the ppt. and ask the children what they think they will be learning about today. Now share the ‘I can’. Discuss and explore the children’s understanding of the words evolution and adaptation. Ask questions like: ‘what animals have adapted over time?’ Share the video that explores inheritance: <https://www.bbc.co.uk/bitesize/topics/znhbvco/articles/zp9ffag> Share the images on the ppt. of the Little Misses and Mr Men and discuss features offspring of theirs would inherit. Next, share the slide that includes images of the imagined Little Misses and Mr Men’s offspring – **predict** and discuss who would be their parents and why. **Present** the results and record the ‘family trees’ in books. Use this to explain that some features we will inherit from parents e.g. eye colour but others are a product of environment e.g. hairstyle. Explain the basic science behind genetics (chromosomes/ DNA/genes). Ask the children to discuss who they look like in their family and why. Introduce the idea of inherited and acquired characteristics. Share examples, are there any others? Organise and **present** these in a table and record. Children are to write a scientific explanation of inheritance and offspring. Children to have a vocab mat.



I can describe animal adaptations and mutations in relation to their environment

On tables, children to uncover the pictures of breeds of foxes. **Predict**. They will describe the environment that they think their fox lives in and how they think their fox has adapted to the environment. **Pose** questions and record on flipchart. Explain these adaptations are essential for survival. Discuss common ancestors and how in certain environments certain features would have helped specific foxes to survive, passing on their genetic characteristics – natural selection. Highlight that this links to changing environment. Explain that mutations (changes to genetics) are essential. Species will also adapt at different speeds because rate of reproduction (insects evolve quicker than humans). Show picture of the peppered moth and link to the Industrial Revolution. Watch Darwin clip and his theories related to adaptation and mutation: https://www.phlearningmedia.org/resource/tdc02_sci_life_evo_dar/evolving-ideas-who-was-charles-darwin/ What conclusions did he make? Children will research (QR codes) other given animals of the same species, found in different environments. Pictures will be glued in books and will **publish** their conclusions, identifying variations and possible advantages of certain variations in the adaptations. Children must make links to Darwin, environment. Scientific vocab mat to support. Plenary: some variations might seem negative, they may prove beneficial – in parts of malarial Africa. Ext. Variation game (see resources).



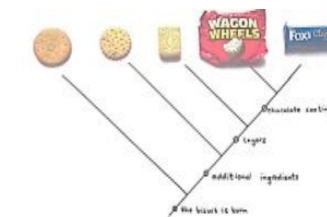
I can understand how extreme physical aspects of an environment impact living things

5mins, play ‘Extreme Survivor’ game. Match the creature to the conditions. **Pose** the question – ‘why do even extreme conditions have life?’ Show image of a cactus. How has it adapted to living in desert areas? Discuss/share responses. Share clip about adaptation of plant life to extreme cold temperatures: <https://www.bbc.co.uk/bitesize/clips/z8t9jmb> Show picture of a camel – how has it adapted? Discuss/share. <https://www.bbc.co.uk/bitesize/clips/z8t9jmb>. **Pose** the question: ‘How have other animals adapted to extreme environments?’ Discuss penguins and share slide. Children to **present** their results writing the adaptations, using scientific language around a picture of the given animal. Introduce next part of learning (this make roll over into the next lesson). **Design your own survivor**: Share sample environment to groups and carefully consider each aspect of the environment first so as to plan out the kinds of features that will ideally allow their animal and plant to survive successfully. Using the design questions, plan then draw a technical illustration of both animal/plant. Feedback and imp. E.g. eats insects that would otherwise damage the trees, potentially to extinction). Plenary: ‘How have giraffes adapted to their environment?’ ‘Does this always help them or can it be a hindrance too?’



I can recognise and explore how living things have changed over time

Pose the question – ‘how would you feel about walking around on all fours?’ Would they feel comfortable? Is this the norm? Link – before humans evolved, early common ancestors walked on fours, but that the fossil record tells us that early humans ‘evolved’ to walk on two legs. In groups, get chn to suggest advantages/disadvantages that this might have given early humans. Use the IWB to make some suggestions. Use a set of weighing scales, and pop in multi-link for each – illustrating how the advantages literally outweigh the disadvantages. Explain ‘great apes’/ humans/ primates and evolution – we share a common ancestor. Use diagram to illustrate this. Explain evolution, extinction and relation. Share <http://www.bbc.co.uk/programmes/p005ip0j> then give groups a set of biscuits. They must order them by complexity (simple digestives to biscuits with an added ingredient; then maybe layers; and eventually layers and chocolate coated). Come back together and **present** results using an evolutionary tree (cladogram) for them, drawing a ‘v’ between the most complex (and closely related) biscuits and then drawing relative links between all biscuits. Chn to then write an explanation about cladograms and link them to the evolution of birds etc using the link <https://ucmp.berkeley.edu/education/explorations/reelab/flight/Special/SAI.htm>



Recap vocab – inheritance, adaptation and evolution. **Pose** the questions – ‘what is a fossil?’ ‘How are fossils formed?’ ‘Are they all formed in the same way?’ Share and discuss how fossils are formed e.g. in tree sap, in ice, in layers of mud and rock. In small groups, chn will explore the time line of fossil formation. Give the chn printouts of the different stages, they must order them. Share responses and ask the chn to explain why they ordered them in that way.

Over TWO lessons chn can make their own fossils. An extra Science lesson this week. The chn will become fossils hunters, making then excavating fossils of their own! Use the link to the edenproject.com for access to lesson plan and resources:

<https://www.edenproject.com/learn/schools/lesson-plans/great-fossil-hunters>

If there is time, at the end of the lesson, play ‘whose bones are they anyway?’ using the pictures of dinosaurs and there skeletal/fossil remains.



NC Working Scientifically (UKS2)

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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