ST LAWRENCE C.E. PRIMARY SCHOOL LEARNING JOURNEY

SUBJECT: Science UNIT: Evolution and Inheritance TERM: Spring 1 YEAR GROUP: 6

THE BIG QUESTION	
How have plants and animals evolved over time?	
END OF UNIT OUTCOME	Create a Quiz for another member of the class to check their knowledge of the topics studied.
OBJECTIVES	• 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.
Working Scientifically	• Ask relevant questions and use different types of scientific enquiries to answer them • Make systematic and careful observations • Gather, record, classify and present data in a variety of ways to help in answering questions • Report and present findings from enquiries
Safety in Science	**CLEAPPS**
CONCEPT: Legacy	What legacy has Charles Darwin left on the scientific community?
LESSON 1 QUESTION	**What important information do fossils provide?**
KEY KNOWLEDGE	**What Do Fossils Tell Us?** Fossils are the remains or traces of plants and animals that lived millions of years ago. They are usually found in rocks. **1.Fossils tell us about living things from the past:** Fossils show us what plants and animals used to look like We can learn about their size, shape, and body parts Some fossils are of animals that are now extinct (no longer living on Earth), like dinosaurs **2. Fossils tell us about how living things have changed:** - By comparing fossils with modern animals and plants, scientists can see how living things have changed over time - This shows evolution, where species slowly change to adapt to their environment **3. Fossils tell us about past environments:** - Fossils help us understand what the Earth was like long ago - Sea creature fossils found on land show that the area was once underwater - Plant fossils can show if a place used to be hot, cold, wet, or dry **4. Fossils tell us how old rocks are:** - Fossils help scientists work out the age of rocks - Older fossils are usually found in lower layers of rock - This helps scientists create a timeline of life on Earth **5. Types of Fossils** - Body fossils: actual parts of plants or animals (bones, teeth, shells) - Trace fossils: marks left behind, such as footprints, burrows, or droppings
RICH TASK	Introduce The Big Question – what do they already know? **Explore KO – copy in book after title page and paper copy home.** **Main Task** – Scenario: Scientists have discovered fossils in a new rock layer near your school. They need your help to work out what lived there, what the environment was like, and what has changed over time. You are part of a palaeontology team. Using their

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<table>
<tr><td></td><td colspan="3">knowledge of fossils, children to investigate, reason, and explain what the fossils tell us about the past.
Fossil Evidence - give pictures or descriptions of these fossils:
• A fish fossil
• A leaf fossil
• A large animal footprint fossil
• A shell fossil
For each fossil get children to explain the following:
• What type of fossil is it? (body or trace)
• What does it tell us about the living thing?
• What does it tell us about the environment?</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">Support – Use of sentence Starters to support explanations:
This fossil tells us that…
This animal probably lived in… because…
Scientists know this because…
The environment was likely…
Challenge - Use because and therefore in explanations and give challenge question: Why might scientists not have fossils for every living thing that has ever lived?</td></tr>
<tr><td>KEY VOCABULARY</td><td>Fossil remains trace body Extinct environment evolution Evidence palaeontology</td><td>RESOURCES</td><td>How are dinosaur fossils formed? | Natural History Museum</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>LESSON 2 QUESTION</td><td colspan="3">How do living things inherit features from their parents?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">1. Inheritance
• Inheritance is the process by which living things pass on features (characteristics) from parents to their offspring.
• Characteristics passed on can include eye colour, hair colour, height, or even certain diseases.
• Offspring usually inherit a combination of features from both parents.
2. Variation
• Variation is the differences between individuals of the same species.
• Variation can be genetic (inherited from parents) or environmental (caused by lifestyle or surroundings).
• Examples of variation: Eye or hair colour (genetic), Height (genetic + environmental), Scars or muscle strength (environmental)
3. Offspring
• All living things produce offspring of the same kind.
• Offspring are not identical to their parents; variation makes each individual unique.
• This variation can help species adapt and survive in changing environments.
4. Species
• A species is a group of living things with very similar characteristics.
• Members of the same species can breed together to produce fertile offspring. Examples: humans, dogs, oak trees.
5. Humans and Inheritance
• Humans do not inherit everything from their parents; environment and lifestyle also play a role.
• Some traits are strongly inherited (like blood group), others are influenced by nutrition, exercise, or learning.
6. Why Variation Matters</td></tr>
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	• Variation is important because it helps species survive changes in their environment. • Over many generations, helpful variations may become more common in a species — this is part of evolution.		
RICH TASK	**Retrieval practice activity- Fossils – Give children a new fossil and ask them to jot down evidence that they notice and what they can infer from it** **Revise KO – Inheritance Section** **Main Task** - Mr Men and Little Miss Inheritance. • Pupils create the children of Mr Men and Little Miss characters. • They must describe which features have been inherited from the "parents" and which variations have occurred. • Pupils to draw their character illustrations. • Encourage full sentences and scientific vocabulary (inheritance, variation, offspring, species).		
SUPPORT AND CHALLENGE	**Support** – provide sentence starters: "This child has inherited … from the parent." "This variation is different because …" **Challenge** – Detailed description of new character using the key vocabulary from the lesson to demonstrate understanding.		
KEY VOCABULARY	Inheritance offspring Variation species genetic environmental	**RESOURCES**	Mr Men and Little Miss stickers Mr Men and Little Miss images Pupil books / worksheet for drawing characters Sentence starters sheet (support)
LESSON 3 QUESTION	**How are plants adapted to survive in different environments?**		
KEY KNOWLEDGE	• Adaptation occurs in Plants so that they can grow in particular environments. • Adaptation is how living things are specialised to suit their environment. • Living things are adapted to their habitats, which means that they have special features that help them to survive. • Stems carry water to different parts of a plant • Roots absorb water and nutrients from the soil • Leaves absorb light to make food for the plant • The flower helps the plant to reproduce • In desert habitats, water can be lost through leaves. Most cacti do not have 'true' leaves as they have adapted to survive in hot desert habitats. Some cacti have thick waxy stems, long roots and spines. Spines reduce water loss through evaporation and protect the plant from animals. A cactus's spines help to reduce air flow around the cactus reducing water loss. Aloe plants have thick waxy leaves to help it store water which helps it to survive long periods without rainfall. Their long roots help the plant source water and nutrients from deep underground too. The Seguro cactus has thick stems to store water and wide-reaching roots help it to absorb water and nutrients too – reducing water loss. • Plants in polar habitats grow near to rocks to reduce impacts of extreme weather. They also have short root systems, so their roots do not freeze in the ground.		
RICH TASK	**Retrieval practice activity – Inheritance – 4 Puzzle Pieces (four images, eye, Mr Men, the word variation, hair) – explain how each of the four images are linked** **Revise KO – Adaptation key vocabulary and plant section** **Main Tasks –**		

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<table>
<tr><td></td><td colspan="3">Blooket Quiz:
After discussing the images and different plant adaptations, children to complete quiz to check their understanding of how plants have adapted to desert and polar regions.
Design a Plant Activity:
Give pupils a specific habitat and the challenges a plant might face there.
Pupils use their knowledge to design a plant with adaptations suited to that environment.
Encourage drawing and labelling adaptations (stems, roots, leaves, flowers) and explaining why they are helpful.</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">Support – Provide a template for plant design with labelled parts (stem, leaf, root, flower).
Challenge - Ask pupils to justify each adaptation using scientific vocabulary.</td></tr>
<tr><td>KEY VOCABULARY</td><td>Adaptation environment
Desert polar
Specialised stem
Root leaf flower</td><td>RESOURCES</td><td>Blooket
Whiterose powerpoint, teacher notes and worksheet ideas
Images of desert and polar plants</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>LESSON 4 QUESTION</td><td colspan="3">How are animals adapted to survive in their environments?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">• Adaptation occurs in animals so that they are suited to their environment.
• Animals develop features that help them find food, survive predators, and reproduce.
• Example: The different finch species on the Galápagos Islands are closely related but show wide variations in beak shape, size, and feeding behaviour.
• Changes in beak size and shape enable species to specialise in different types of food:
- Seeds
- Insects
- Cactus flowers and fruits
- Bird blood
• Adaptations allow animals to survive in their specific habitats and make the best use of available resources.</td></tr>
<tr><td>RICH TASK</td><td colspan="3">Retrieval practice activity – Plant Adaptations - Quick Quiz
What is an adaptation?
Name one plant adaptation that helps survive in hot deserts.
Give an example of a plant adaptation for wet environments.
Why do plants have different leaf shapes?
Explain how roots help plants survive in dry areas.
Revise KO – Animal Adaptations
Main Tasks:
1. Introduction to adaptation and mutation
Read the story “Moth” and discuss how changes in the species occurred over time. Highlight that these adaptations can arise over generations through mutation.
2. Darwin’s finches
Explore how the different finch species have adapted their beaks for specific foods. Children to research the other 6 finch species using resources and note how their beaks suit their environment and diet.
3. Hands-on adaptation experiment
Different kinds of birds eat different kinds of foods because they are specialised.</td></tr>
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	Pupils predict which 'beak' tool will be best for each food type. Experiment with different beak tools and food items: • Beaks: chopsticks, spoons, tweezers, clothes pegs, small flat stones • Food: pipe cleaners, rice, raisins, playdough, bird seed		
SUPPORT AND CHALLENGE	**Support** – provide a table template for pupils to record: Finch species, Beak type, Food type, Observed adaptation **Challenge** - Ask pupils to explain why each beak shape is most effective for the food type.		
KEY VOCABULARY	Adaptation mutation Specialised environment Species beak evolution	**RESOURCES**	Evolution teaching resource: spot the adaptations in Darwin's finches | Natural History Museum Bird 'food': pipe cleaners, rice, raisins, playdough, bird seed Bird 'beaks': chopsticks, spoons, tweezers, clothes pegs, small flat stones
LESSON 5 QUESTION	**How have plants and animals evolved over time?**		
KEY KNOWLEDGE	Revise knowledge learnt from the unit so far. Cops and Robbers activity to revise key facts that can be used for the end of unit outcome. • Evolution is the gradual change in species over many generations. • Adaptation can lead to evolution if beneficial traits become more common over time. • Fossils, inheritance, and observed adaptations provide evidence for how living things have changed. • Charles Darwin proposed natural selection, explaining how species evolve to survive in their environment. • Evolution helps explain why species look different, behave differently, or survive in specific habitats. • Humans, plants, and animals are all examples of species that evolve over time. • Unit recap: pupils should connect fossils → inheritance → plant adaptations → animal adaptations → evolution.		
END OF UNIT OUTCOME	**Retrieval / Revision of key knowledge – Cops and Robbers Task including animal adaptations from last lesson.** **KO quiz** Outcome linked to The Big Question - Create a Quiz for another member of the class to check their knowledge of the topics studied. Pupils should include questions about: • Fossils and past environments • Inheritance and variation • Plant adaptations (desert, polar, wet habitats) • Animal adaptations (Darwin's finches, beaks, survival features) • Evolution and natural selection • What links to our concept have you found? – have some questions specific to our concept of Legacy		
SUPPORT AND CHALLENGE	Support – Give a list of key facts from each lesson for reference / quiz template Challenge - Pupils must include at least one 3-mark SATs style question: e.g ***"Explain why cacti have spines and thick stems. How might this help them survive climate changes?"***		
KEY VOCABULARY	evolution, adaptation, inheritance, variation, offspring, species, fossil,	**RESOURCES**	Cops and robbers sheet Quiz template

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	environment, mutation, specialised, natural selection, legacy		List of key facts from the unit