Year 5 Biological Science: Evolution and Inheritance — Unit 4

Scientific Model (KS2):

Big Picture Model

- Focuses on ensuring children see the bigger picture in order to understand why something happens. They need to see the purpose of a system to understand the importance of the parts of that system.
- Ensure children understand what evolution is before they look at how it works, and the way individual species have evolved.
- Look at the evolution of man model.

Scientific Investigations:

- Looking for Naturally- Occurring Patterns and Relationships
- Identifying and Classifying Things
- Researching Using Secondary Sources

Scientists:

- Mary Leakey - discovered many fossils of early hominins and their tools. These fossils provide evidence for the evolution of humans.

Scientific Skills Taught:

ASK
- To ask different kinds of questions
- To identify appropriate secondary sources to research ideas and ask questions
- To make predictions based on evidence

BREAKDOWN
- To recognise and control variables in tests
- To plan different enquiries to answer questions
- To recognise when to use comparative and fair tests
- To plan when to take repeat readings

CAPTURE
- To choose and use a range of equipment precisely
- To decide how to record data
- To create classification keys
- To decide what observations and measurements to make

DESCRIBE
- To use evidence from enquiry to support or refute ideas being tested
- To use varied ways to present data
- To explain how scientific ideas develop over time
- To identify and comment, using appropriate language, on patterns they notice
- To use relevant scientific language and illustrations in reports and when drawing conclusions

Prior Learning:

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. (Y2 - Living things and their habitats)
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)
- Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

Curriculum	Learning Intention	Knowledge and Key Vocabulary
Making links to learning and discuss the model (if needed) Ensure children understand what evolution is before they look at how it works, and the way individual species have evolved.	What is evolution? • Discuss the model of evolution of man • Recognise that evolution is a gradual change over time	**Knowledge:** - Evolution is the gradual development of a living species over a period of time. **Vocabulary:**

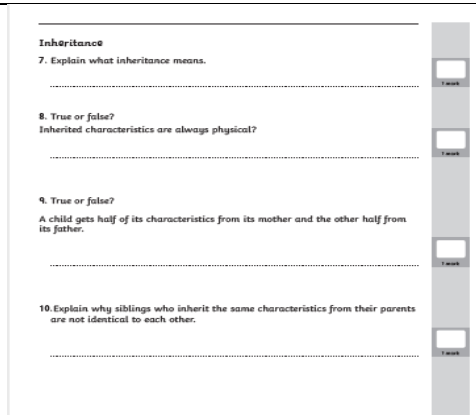
<table>
<tr><td></td><td></td><td>Evolution, inheritance, characteristics, generation, variation, offspring, parents, life cycles</td></tr>
<tr><td rowspan="2"><u>Knowledge and skills through investigations</u>
Pupils should be taught to:
- recognise that living things have changed over time and that 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 parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Notes and guidance (non-statutory):
- Building on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time.
- They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles.
- They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox.
- Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.
- Note: At this stage, pupils are not expected to understand how genes and chromosomes work.
Pupils might work scientifically by:</td><td rowspan="2">How are we different? How are we the same?
• Discuss similarities and differences between myself and my family members
• Explain the difference between inherited and acquired features

How are living things adapted to their environment?
• Complete an investigation to find out how different beak shapes are suitable for catching different food-types.
• Discuss the best type of beak to have for different food-types
• Consider what the birds on an island would look like in 50 years time if they settled on a new island and had to survive on a given food source

How do living things change?
• Research how different animals have adapted to their environment
• Create a presentation about how animals have adapted to suit their environment

How Did humans evolve?
• Explain why adaptations of humans needed to occur

Why are fossils so important?
• Explain how fossils are formed
• Explore and analyse fossils to see which living thing they could be from
• Compare ancient fossil remains to images of animals from today
• Draw a sequence of possible versions of an animal to show how it may have evolved over the years</td><td><u>Knowledge:</u>
- explain that all living things have offspring of the same kind
- Can identify at least three inherited traits
- identify at least 3 acquired traits
- Mutations are random changes which are not inherited from a parent
- identify and explain how a specific animal has adapted to suit their environment (e.g. giraffe, polar bear)
- explain that evolution occurs when there is natural competition to survive
- explain how fossils can show the evolution of a species over time</td></tr>
<tr><td><u>Vocabulary:</u>
Geology, palaeontologist, Jurassic, Triassic, Carboniferous, Cretaceous, Mesozoic,
Genes, DNA ,identical, variation, reproduction, selective breeding, generation, species, trait, heredity, cloning, offspring, organisms
Mutations, adaptation, survival, natural selection,
Prey, predator,
Selective breeding, desirable, mutations, reproduce, evolve, evolutions, inherit, inheritance,</td></tr>
</table>

- observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins, and camels. - They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.		
Application and Assessment Activity	 Inheritance 7. Explain what inheritance means. 8. True or false? Inherited characteristics are always physical? 9. True or false? A child gets half of its characteristics from its mother and the other half from its father. 10. Explain why siblings who inherit the same characteristics from their parents are not identical to each other.	

Thinking Deeper:
Considering the current changes How do you envisage humans evolving in the future?

Links to other subjects:
Subject Specific links – history
Personal Development – working within teams to research and present to an audience
SMSC – cultural understanding about why people and animals in different places develop different cultural traits
Cultural Capital – awareness of the people around us and the wider world and some of their differences
Careers – Famous scientists, David Attenborough
British Values – respecting our environment and understanding things we do can impact upon it
Equality – linked to why people differ in appearance, equality between people of different backgrounds and cultures