

Waterville Primary School Progression of Skills and Vocabulary in Science – Evolution and Inheritance

Year 6

KS1 National Curriculum

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.

Pupils should be taught:

- 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.

Prior Learning

Linked Learning:

- YEAR 2 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)
- YEAR 3 Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)
- YEAR 4 Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

Vocabulary:

Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils

Key skills to be taught

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 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.

Key Ideas

Why are fossils so important?

How are we different? How are we the same?

How are living things adapted to their environment?

How do living things change?

Possible Activities

- Examine fossils (specimens/pictures). Draw. Describe.
- Plot extinctions, etc, on a timeline (L6, scale). Could include geological time periods. Link to fossil record
- Research dinosaurs, extinct mammals, etc. create report / presentation. 'Name & explain' the shadow dinosaur.
- Make fossils (Leaf rubbing; object (plastic dinosaur) & plaster of Paris / Plasticine).
- Look at family photos. Describe similarities / differences. Do same for other animals.
- Develop model of inheritance ('blending' of features)
- Match features (e.g. height, skin colour, hair colour, hair length, piercings, weight, etc) to inherited / non-inherited
- Fair test – variation in height, hand span, head span, foot length, forearm length, eye colour, tongue rolling, PTC tasting, etc. Tabulate. Chart / graph.
- Compare variation distribution with other year groups, males/females, etc. Prepared or collected data. Tabulate. Chart / graph.
- Fair test – Relationship between length of holly leaf (different species) and number of prickles. Graph
- Research adaptive features of animals (e.g. polar bear) & plant (e.g. cactus), etc. Discuss what would happen if they lost one of these adaptive features.
- Use of spider keys/concept maps. • Fair test – penguin heat loss (cover test tubes with different thicknesses of feathers. Fill tubes with hot water. Measure rate of heat loss). Repeat. Tabulate. Graph
- Fair test – Plant leaf area against water loss (cover different numbers of leaves with Vaseline for small plantlets grown in plugs. Measure weight loss over time).
- Fair test – Woodlice behaviour (choice chamber tubes. Different conditions at either end. Count woodlice after time). Repeat. Tabulate. Chart / graph.
- Bird beaks – use cardboard shapes to investigate which beaks are best for picking up objects (e.g. rice, etc
- Examine examples of mule, zebroids, ligers, etc.
- Develop concept of species. Research / explore examples of natural selection.
- Research Charles Darwin and theory of natural selection
- Fair test – Effect of camouflage on predation (coloured counters/wool on mat/grass. Number/colour picked up in 15 seconds). Repeat for different colour mat. Compare data.

Next steps in KS3:

- Heredity as the process by which genetic information is transmitted from one generation to the next.
- A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model.
- The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection.
- Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.