St Joseph's Catholic Primary School

Science Medium Term Plan Overview

YEAR 3 ANIMALS, INCLUDING HUMANS

Knowledge and Understanding

Statutory Requirements

3b1: identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
3b2: identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.
Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.

Lower KS2 - Working Scientifically

Statutory Requirements

lks2w1: asking relevant questions and using different types of scientific enquiries to answer them
lks2w2: setting up simple practical enquiries, comparative and fair tests
lks2w3: making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
lks2w4: gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
lks2w5: recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
lks2w6: reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
lks2w7: using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
lks2w8: identifying differences, similarities or changes related to simple scientific ideas and processes
lks2w9: using straightforward scientific evidence to answer questions or to support their findings.

Lessons:

1. Explain how many portions of food from different food groups we should eat in a day.

2. Match animals to their food – according to whether they are herbivore, carnivore or omnivores (NB: THESE LESSONS ARE MISSING ON THE STAFF DRIVE – NOT DOWNLOADED)
3. Create a food chain and explain what it shows – learn all livings get their energy from the Sun (photosynthesis), either directly as a producer (plant) or indirectly as a consumer (animal).
4. Create a food web and explain what it shows. Use arrows on the food chain and food web diagrams to indicate the energy flow through the ecosystem.
5. Explain the functions of the human skeleton and identify its main bones – learn about the three main function of the human endoskeleton to protect, to support and to allow movement. Learn names and location of the major bones including: skull, jaw, humerus, radius, ulna, spine, pelvis, femur, tibia and fibula.
6. Explain how muscles work – bicep, tricep diagram and explanation.
7. Match animals to their skeletons – identifying e.g skull, ribs, tusk, pelvis, spine. Discuss similarities and differences between the skeletons.
8. Identify which type of skeleton an animal has – endoskeleton, exoskeleton, hydroskeleton

Vocabulary

Energy, bread cereal and potatoes (carbohydrates) ; fruits and vegetables (contain vitamins and minerals) ; meat and fish (protein) ; milk and diary (calcium) ; fats and sugars. Portions, vegan, vegetarian herbivore, carnivore or omnivores , producer, consumer , photosynthesis, food chain, arrows, energy flow, ecosystem , skeleton, endoskeleton , movement, support, protect skull, jaw, humerus, radius, ulna, spine, pelvis, femur, tibia and fibula, muscle, bicep, triceps endoskeleton, exoskeleton, hydro skeleton

YEAR 3 ROCKS

Knowledge and Understanding

Statutory Requirements

3c1: compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
3c2: describe in simple terms how fossils are formed when things that have lived are trapped within rock
3c3: recognise that soils are made from rocks and organic matter.

Knowledge and Understanding

Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.

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Pupils will work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils will research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.

Lower KS2 - Working Scientifically

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lks2w2: setting up simple practical enquiries, comparative and fair tests
lks2w3: making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
lks2w4: gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
lks2w5: recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
lks2w6: reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
lks2w7: using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
lks2w8: identifying differences, similarities or changes related to simple scientific ideas and processes
lks2w9: using straightforward scientific evidence to answer questions or to support their findings.

Lessons:

1. Explain how fossils are formed – in sedimentary rock. Learn that some ancient organisms died, were covered soon after death, formed fossils and were then uncovered.
2. To observe and describe the properties of rocks.
3. To test and compare rocks based on their hardness – use selection of rocks, predict if they can be scratched. Present results in simple table, create a frequency table and bar chart then rank rocks in order of hardness.
4. To investigate the properties of rocks. Eg. if the rocks can be scratched with a nail, are porous, can float in water Present results in the form of a table and then a Venn diagram.
5. To describe fossils and guess how they were formed.

6. To investigate what soils are made from - use hand lenses to explore 2 different soil samples looking for sand, plant parts, water and minibeasts. Create observational drawings and describe these.
7. To examine what a soil sample is made from – mix a soil sample wit water in a bottle, allow it to settle. Draw and label its initial appearance and then repeat this process after several days.
8. To match rocks to their properties and suggest uses for them. Learn that rocks can be placed in three categories: sedimentary, metamorphic and igneous. Examine 8 familiar rocks such as: chalk, diamond, sandstone, slate, granite, flint, marble and sandstone.

Vocabulary

Soil, sedimentary rock, scratch, tally, frequency table, bar chart, organic matter, porous, float, Venn diagram, organisms, palaeontologist , humus (dead or rotting organisms), air spaces, mini beasts, sedimentary, metamorphic, igneous, chalk, diamond, sandstone, slate, granite, flint, marble and sandstone.

Cultural capital Trip: Year 3 Hudnall Park visit to do experiments with rocks and soils.

YEAR 3 LIGHT

Knowledge & understanding statutory requirements:

3d1: recognise that they need light in order to see things and that dark is the absence of light
3d2: notice that light is reflected from surfaces
3d3: recognise that light from the sun can be dangerous and that there are ways to protect their eyes
3d4: recognise that shadows are formed when the light from a light source is blocked by a solid object
3d5: find patterns in the way that the size of shadows change.

Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.
Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.
Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.

Lower KS2 - Working Scientifically

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Statutory Requirements

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lks2w9: using straightforward scientific evidence to answer questions or to support their findings.

Lessons:

1. To investigate how moving a light source changes the size of an object's shadow. Present finding s in the form of a table and then a bar chart.
2. to identify light sources – learn that we see things because they are light sources which travel directly into our eyes or they are non-light sources that we see because light reflects off them into our eyes.
3. To identify light sources in school. Present findings in the form of a frequency chart and then select a suitable scale to draw a bar chart.
4. To identify whether an object is a light source or a reflector. Present findings in a Venn diagram.
5. To explain how the sun can be dangerous and ways in which we can protect ourselves.
6. To explain how shadows are formed.
7. To group objects according to whether they are opaque, transparent or translucent.
8. To make a sundial and explain how it works – learn that shadows cast by the sun change in length and direction during the day because of the apparent motion of the sun across the sky (though it's really the rotation of the Earth). Use cricket wicket as a gnomon and chalk to create a sundial on the playground.

Vocabulary

Shadow, light source, non-light source, eyes, reflect / reflection/ reflecting/ reflector , frequency chart, tally chart, sun, exposure, sunscreen (SPF) , star, orbits, hydrogen, helium, orbits, sunglasses, shade, damage/damaging , opaque, blocks, straight lines, opaque, transparent , translucent, sundial, rotation, Earth, calibrate, gnomon.

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YEAR 3 FORCES AND MAGNETS

Knowledge & understanding statutory requirements:

3e1: compare how things move on different surfaces
3e2: notice that some forces need contact between two objects, but magnetic forces can act at a distance
3e3: observe how magnets attract or repel each other and attract some materials and not others
3e4: compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
3e5: describe magnets as having two poles
3e6: predict whether two magnets will attract or repel each other, depending on which poles are facing.

Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).
Pupils might work scientifically by: comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.

Lower KS2 - Working Scientifically

Statutory Requirements

lks2w1: asking relevant questions and using different types of scientific enquiries to answer them
lks2w2: setting up simple practical enquiries, comparative and fair tests
lks2w3: making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
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lks2w5: recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
lks2w6: reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
lks2w7: using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
lks2w8: identifying differences, similarities or changes related to simple scientific ideas and processes
lks2w9: using straightforward scientific evidence to answer questions or to support their findings.

Lessons:

1. To investigate how magnetic forces act through different materials. Present results in a table and transfer into a Venn diagram.
2. To investigate how magnets can make things move on different surfaces. Make predictions and record these and the results in a table and transfer results to a bar chart.
3. To investigate how magnetic forces act at a distance. Investigate how powerful 5 different magnets are. Predict, transfer results to a bar chart. Fair test, measurements. Order in terms of strength.
4. Investigate which magnets are magnetic. Consider how to measure this and how to make it a fair test. Transfer results to a Carroll diagram.
5. Investigate which metals are magnetic. Think about how to make the test fair. Present results in a Venn diagram. Discuss the relationship between the type of metal an object is made of and whether it is magnetic.
6. Investigate which magnet is the most powerful. Test the strength of 10 different magnets . eg. Predict how many 1p coins they can place in a bag held by a paper clip attracted by the magnet before the bag and paper clip fall off. Transfer results to a bar chart and pace the magnets in order of strength.
7. Investigate how magnetic poles interact with one another. Record results in a Carroll diagram.
8. To describe the function of magnets in different situations. Learn about more powerful magnets called electromagnets , which can be created by passing an electrical current through coil wrapped around a permanent magnet. Learn about 5 different machines that use a magnet e.g a maglev train, an MRI machine , a crane , a button magnet and a compass. Challenge : to write a description and explanation of how one or more of these work.

Vocabulary

Magnet , magnetic , metal , aluminium, fair test, magnetic poles, north , south, attract, repel, electromagnets , electrical current coil wrapped, permanent magnet, a maglev train, an MRI machine , a crane , a button magnet and a compass.

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Love and learn in the footsteps of Christ