



Wirksworth Junior School. Science skills progression. Year 6. (2021-2021)

Year Group 6	Animals including humans – heart & circulatory system (Autumn Term 1)	Light (Autumn Term 2)	To investigate living thing and their habitats - classification (Spring Term 1 and 2)	To understand evolution and inheritance (Summer Term 1 and 2)	Electricity (In year A Spring Term 2021)
<p style="text-align: center;">Year 5/6 Year B</p>	<p>Marie M. Daly</p> <p>I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>I can describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>ibn al- Haytham :</p> <p>I can recognise that light appears to travel in straight lines.</p> <p>I can use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <p>I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>Steve Erwin :</p> <p>I can describe how living things classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plant and animals.</p> <p>I can give reasons for classifying plants and animals based on specific characteristics.</p>	<p>Charles Darwin</p> <p>Jane Goodall</p> <p>Barbara McClintock</p> <p>I can recognise that living things have changed over time and that fossils provide information abo living things that inhabited the Earth millions of years ago.</p> <p>I recognise that living things produce offspring of the same k but normally offspring vary and not identical to their parents.</p> <p>I can identify how animals and plants are adapted to suit their environment in different ways that adaptation may lead to evolution.</p>	<p>Thomas Edison/ Lewis Latimer</p> <p>I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>I can use recognised symbols when representing a simple circuit in a diagram.</p>
	I recognise when variables	I recognise when observing	I recognise when identifying and	I recognise when research using	I recognise when research using

Science skills	<p>cannot be controlled pattern seeking will be the way to answer my questi decide how detailed my needs to be and v equipment to use, to make</p>	<p>changes over time will be the best way to answer my question.</p> <p>I decide how detailed my observations need to be an what equipment to use, to make my</p>	<p>classifying will be the best way t answer my question. I decide w equipment, tests and secondary sources of information to use to identify and classify things.</p> <p>I use a series of tests to sort an classify materials.</p>	<p>secondary sources will be the b way to answer my question.</p> <p>I decide which sources of information might answer my question.</p>	<p>secondary sources will be the be way to answer my question.</p> <p>I decide which sources of information might answer my question.</p>
	<p>measurements/observations as</p>	<p>observations/measurements</p>	<p>I use secondary sources to identify</p>	<p>I use relevant information and data</p>	<p>I use relevant information and data</p>

	<p>accurate as possible.</p> <p>I select scientific equipment and use it with increasing accuracy. I take repeat readings when appropriate. I record data and results of increasing complexity. I present data in scatter graphs and frequency charts. I recognise patterns in results. I recognise the effect of sample size on reliability.</p> <p>I draw valid conclusions from data about patterns and recognise their limitations. I report and explain cause and effect patterns using scientific ideas. I evaluate how well I looked for patterns. I use my results to predict and set up further pattern seeking.</p>	<p>as accurate as possible.</p> <p>I select scientific equipment and use it with increasing accuracy. I take repeat readings when appropriate.</p> <p>I record data and results of increasing complexity.</p> <p>I present data in line graphs.</p> <p>I recognise the effect of changing the time and number of observations.</p> <p>I draw valid conclusions from data about changes.</p> <p>I interpret changes in the data.</p> <p>I report and explain changes using scientific ideas.</p> <p>I evaluate how well I observed over time.</p> <p>I use my results to predict and set up further observations.</p>	<p>and classify things.</p> <p>I make my own classification keys and branching databases with four or more items.</p> <p>I use more than one piece of scientific evidence to identify and classify things.</p> <p>I draw valid conclusions when sorting and classifying.</p> <p>I report and explain what I have done using scientific ideas.</p> <p>I evaluate how well my key/branching database worked.</p>	<p>from a range of secondary sources</p> <p>I recognise how data has been obtained.</p> <p>I present my findings in a variety of suitable formats</p> <p>I draw valid conclusions from my research.</p> <p>I am beginning to notice when information and data is biased or based on opinion rather than facts.</p> <p>I evaluate how well my research has answered my questions and recognise that some scientific questions may not have been answered definitively.</p>	<p>from a range of secondary sources</p> <p>I recognise how data has been obtained.</p> <p>I present my findings in a variety of suitable formats</p> <p>I draw valid conclusions from my research.</p> <p>I am beginning to notice when information and data is biased or based on opinion rather than facts.</p> <p>I evaluate how well my research has answered my questions and recognise that some scientific questions may not have been answered definitively.</p>
<p>Investigation focus</p>	<p>Pattern seeking</p> <p>Is there a pattern between what we eat for breakfast and how fast we can run?</p>	<p>Observing over time</p> <p>How does my shadow change over the day?</p>	<p>Identifying, classifying and grouping</p> <p>How would you make a classification key for vertebrates/invertebrates or microorganisms?</p>	<p>Research using secondary sources</p> <p>What happened when Charles Darwin visited the Galapagos Islands?</p>	<p>Research using secondary sources.</p> <p>How has our understanding of electricity changed over time?</p>

Notes and guidance (non statutory) The table below contains notes and guidance for each science topic for your year group. These have come from the National Curriculum and might help when planning lessons. This should also help with the progression of learning throughout the school and stop year groups from teaching the same thing twice.

Animals including humans

- Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.
- Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.
- Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.

Living things and their habitats

- Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another. Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.
- Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.

Light

- Pupils should build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection and shadows. They should talk about what happens and make predictions.
- Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water, and coloured filters (they do not need to explain why these phenomena occur).

Evolution and inheritance

- 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: 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 2 feet rather than 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.

Electricity

-Building on their work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. They should learn how to represent a simple circuit in a diagram using recognised symbols.

-Note: pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity.

-Pupils might work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.