



**Chaddlewood Primary School's Science Progression Grid**

Topics/WS Working scientifically	Year 3	Year 4
Plants	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Naming parts of the plant and flowers-function-pre unit assessment.</p> <p>The role of the stem-celery</p> <p>The role of the leaves-plants with and without, plastic bag over leaves to show respirations, photosynthesis.</p> <p>The role of the parts of the flower-flower dissection</p> <p>The role of the seed-seed dissection.</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <p>Conditions for germination compared with conditions for grow to a healthy plant.</p> <p>Investigate the way in which water is transported within plants</p> <p>Investigate the use of stems and roots and what they role they play-especially in the transport of water to the plant-wilted basil plants/table for the children to look after, celery, white flowers to show movement of water from the roots to the stem-hydration and rehydration.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Pollination process and life cycle of the plant.</p> <p>Flower dissection-parts of the flowering plant, seed dissection-parts of the seed</p> <p>Seed dispersal sorting.</p> <p>Vocab: Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower</p>	Plants

<p>Animals including humans</p>	<p>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</p> <p>Explain the differences between food groups and different types of nutrients, amount of nutrients and which ones are needed.</p> <p>The importance of a balanced diet.</p> <p>identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Types of skeletons- endo, hydro exo-Forest school activity</p> <p>Naming the common and scientific names of bones-make your own skeleton and label it.</p> <p>Functions of skeletons, joints and types of muscles-PE linked.</p> <p><b>Vocab: Movement, Muscles, Bones, Skull, Nutrition, Skeletons,</b></p>	<p>describe the simple functions of the basic parts of the digestive system in humans</p> <p>Children learn about the different parts of the digestive system and identify them placing them on a body outline.</p> <p>Children complete investigation where they recreate how the digestive system works using a banana, juice, cup, bag and nylon material.</p> <p>Use an online program showing the functions of the basic parts of the digestive system.</p> <p>identify the different types of teeth in humans and their simple functions</p> <p>Children use pictures to identify different teeth types and their function.</p> <p>Children identify and colour these on a picture of a mouth.</p> <p>NEW - outside visitor to come and talk about teeth - need to book.</p> <p>construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>Children sort different foods to complete food chains for a variety of different animals.</p> <p>Cut and stick food chains and label producer, predator and prey (including apex predator)</p> <p><b>Vocab: Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar</b></p>
<p>Materials</p>	<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Identify natural and man-made sources of light. Use a dark box to make observations to show how the amount of light can change what you see.</p> <p>Notice that light is reflected from surfaces.</p> <p>Focus on different reflective materials and compare them through their properties.</p> <p>Use of mirrors to show reflection, and how they change the angle of reflection from a surface area.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Explore and look at sun safety and what harm the sun can cause discuss sunglasses, sun cream.</p>	

	<p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object Focus on how shadows are formed, shapes of shadows and different intensities of shadows. Focus on using opaque, translucent and transparent objects to compare.</p> <p>Find patterns in the way that the size of shadows change Using torches or the sun, investigate what happens to shadows throughout the day, or when a torch is moved.</p> <p><b>Vocab: Light, Shadows, Mirror, Reflective, Dark, Reflection</b></p>	
Rocks	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Children become rock detectives, sorting rocks by their properties. Focus and name types of rocks and investigate the appearance of physical properties. (Scratch tests, absorbency investigation and acid test) Natural and manmade rocks Formation of different rocks-igneous, metamorphic and sedimentary</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>How fossils are formed-the process (touch on the different types of fossils) The discovery of fossils and their importance, including Mary Anning's role and the role of a paleontologist</p> <p>Recognise that soils are made from rocks and organic matter. Focus on the different soil types e.g. Sandy and clay. Investigate the appearance and permeability of the soil types, make comparisons and draw upon conclusions.</p> <p><b>Vocab: Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent</b></p>	
Forces and magnets	<p>Compare how things move on different surfaces. Compare how vehicles move on different surfaces (cars experiment). Compare distance vehicles travel on a slope with different surfaces. Which is the best surface for an escape lane? Balloon rockets- how do they travel along different carriers?</p>	

	<p>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance Forces acting between object and surface, friction and gravity</p> <p>Ballista-amount of force makes an object move further. observe how magnets attract or repel each other and attract some materials and not others</p> <p>Introduction to magnets- independent investigation. Different magnetic activities focusing on repelling and attracting. Strength of magnets materials</p> <p>describe magnets as having 2 poles Different poles- poles apart magnetic challenge.</p> <p>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 Compare a range of classroom materials and if they are magnetic or not. Use of small magnet investigations</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing. Magnet investigations- bar ring, horse shoe, marble magnets</p> <p><b>Vocab: Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull</b></p>	
<p>Living things and their habitats</p>		<p>recognise that living things can be grouped in a variety of ways Children group different animal and plant pictures using their own ideas Introduce children to the different way of grouping. Ask children to group animals into 2 groups Introduce children into terms vertebrate and invertebrate Develop knowledge further by looking at the five different animal groups - birds, mammals, reptiles, amphibians and fish</p> <p>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Children are taught how a classification key works. Children sort pictures of different living things into their correct class Use a key to identify living things</p>

		<p>recognise that environments can change and that this can sometimes pose dangers to living things  Cross curricular - covered in Geography through our Rainforest work. Discussion about deforestation and the effect this has on living things</p> <p><b>Vocab: Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats</b></p>
States of matter		<p>compare and group materials together, according to whether they are solids, liquids or gases  Children are given a selection of objects and determine if they are solid, liquid or gas (usually containing gas)  Children discuss and use the different properties of these materials.</p> <p>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)  Children observe what happens to water when it is heated and cooled.</p> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature  Children are taught the different parts of the water cycle and how they play their part.  Children observe and discuss what happens to water and link the evaporation rate to temperature - water placed by a heater, water placed in a fridge.  Identify evaporation and condensation through pictures and through boiling a kettle and creating condensation</p> <p><b>Vocab: Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heatin</b></p>
Sound		<p>identify how sounds are made, associating some of them with something vibrating.  Investigations - rice on a drum, balloons on a tube, tuning fork on water, water xylophone and touching your throat</p> <p>recognise that vibrations from sounds travel through a medium to the ear</p>

		<p>Use different string telephones.</p> <p>find patterns between the pitch of a sound and features of the object that produced it Water xylophone Dismantle the piano and identify the different length and width of the strings and how this affects the sound.</p> <p>find patterns between the volume of a sound and the strength of the vibrations that produced it Watch videos illustrating this and link to rice drum investigation.</p> <p>recognise that sounds get fainter as the distance from the sound source increases Outside investigation - whisper, talk and shout - measuring the distance it takes for the children to hear the different sounds.</p> <p><b>Vocab: Volume, Vibration, Wave, Pitch, Tone, Speaker</b></p>
Electricity		<p>identify common appliances that run on electricity Through discussion and using web-site identifying electrical hazards around the house.</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Practical activities using the above equipment. Make a simple buzzer game.</p> <p>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Practical activities using the correct equipment.</p> <p>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Practical activities using the correct equipment.</p> <p>recognise some common conductors and insulators, and associate metals with being good conductors Practical activities using the correct equipment - testing different materials within the circuits.</p> <p><b>Vocab: Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators</b></p>

WS	<p><b>Asking relevant questions and using different types of scientific enquiries to answer them</b>  Plan different investigations to discover some of the properties of rock-permeability, scratch and wearing, acid reactions(vinegar)  Soil permeability.  Rock research  Pollination story, seed research.  What will happen to a plant with leaves vs no leaves?  Focused investigation at the end of the unit. Children ask questions about the skeleton, sort the relevant and irrelevant ones and set up a simple investigation independently to find out.  Which of these materials would a Celt want to wear if he was going to creep up ion a Roman soldier?  Which materials are magnetic? Are all magnets magnetic? Investigations.  Can you change the size of a shadow? Can you change the colour of a shadow?</p> <p><b>Setting up simple practical enquiries, comparative and fair tests</b>  Plan different investigations to discover some of the properties of rock-permeability, scratch and wearing, acid reactions(vinegar)  What will happen to a plant with leaves vs no leaves?  Conditions of germination and growth into a healthy plant-fair test.  Which of these materials would a Celt want to wear if he was going to creep up ion a Roman soldier? Reflective material-fair test  Cars on a flat surface, Cars on a sloped surface. Strength of magnets</p> <p><b>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</b>  Observations of rock properties investigations, soil permeability, close observations of rock formation.  Soil permeability-amount of water passing through soil overtime-mm and time.  Observations of seed growth and germination  Measuring plants with and without leaves.  Flower and seed dissections  Observations of animals with different skeletons  Measurements comparing skeletons.  Dark Box Challenge-observations with change in light intensity.  Measurements-length of distance travelled of car on flat surface, car on slope, balloon distance travelled, ballista distance-cm or m</p>	<p><b>asking relevant questions and using different types of scientific enquiries to answer them</b>  How do scientists group living things?  Why do scientists group living things?  Which class does this animal belong to?  Children to set up and observe evaporation of water in different places, emphasising the need for a fair test  How many teeth have they got?  How many new ones (permanent teeth) do we get?  How many baby teeth (milk teeth)? Why do they lose their milk teeth?  Can they count their teeth?  Do you know the names of the different types of teeth?  Do you know what they do?  Can you identify the different teeth from their shape?  Can you identify where they are found in the mouth?  Do you know where poo comes from?  How is our food digested?  What are the name of the different parts of the body which make up the digestive system?  What does each part of the digestive do?  What is electricity?  Where does it come from?  What things need electricity to work?  What do we mean by a circuit?  What is a conductor?  What is an insulator?  How can we draw a circuit scientifically?</p> <p><b>setting up simple practical enquiries, comparative and fair tests</b>  Carry out practical activity to recreate digestive system to illustrate how food is digested.  Children to construct different simple circuits using bulbs, buzzers and motors.  Children construct circuits with switches.  Children experiment with different conductors and insulators within their circuits.  gathering, recording, classifying and presenting data in a variety of ways to help in answering questions  Use drawings and tables to record observations.</p>

Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Own research into rock formation.  
Recording observations in rock property investigations.  
Observational drawings-leaf, stem and root investigations.  
Photos of different skeletons during Forest School activity.  
Shadow drawings before investigation and after  
Data form above presented in graph form-conclusions drawn from them.

Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Conclusions about permeability and practical applications for rocks-flooring, work surfaces  
Labelled diagrams of plants, flower parts  
Human skeleton-make a labelled diagram, label joints and muscles  
Record findings from own skeleton investigations  
Diagrams and photographs from mirror investigations  
Results tabulated, diagrams for investigations, bar charts for independent magnet investigations, car/balloon investigations

Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Soil day investigations, properties of rock investigations Seed dispersal sorting  
Why we need muscles to move?  
Shadow size and colour investigations.  
Discussion and conclusions made about magnets through independent small investigations.

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

What conditions to seeds need for germination?  
What conditions do seeds need to grow into a healthy plant?  
Choosing the correct material for a blind-translucent, transparent and opaque.  
Reflective material investigation-What a Celt wears...  
Which is the best material for an escape lane? Make conclusions

making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Children use thermometers to measure temperatures at which water melts and boils.

reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Record observations on water evaporation.  
Use drawings and tables to record observations.

using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions  
Make predictions and draw conclusions from observations on evaporation.  
use circuit investigations to draw conclusions on what makes a conductor.

gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Classify different living things into groups by following a key

recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Children create their own classification key to sort a range of living things  
Identify and label the different parts of the digestive system.  
Re-order the parts of the digestive system.  
record information on different conductors and insulators using a table.  
Draw simple circuits using scientific symbols.

identifying differences, similarities or changes related to simple scientific ideas and processes

Children use differences and similarities to classify living things  
Use results of investigation to support their predictions and answer questions set.

Identifying differences, similarities or changes related to simple scientific ideas and processes

Properties of rocks investigations-draw conclusions  
Different types of soils-how they differ from each other and how they behave differently in investigations  
Changes in plants with and without water  
Comparing skeleton types.  
Conclusion from light box challenge  
Different strengths of magnets, poles, within different magnets.

Using straightforward scientific evidence to answer questions or to support their findings.

Independent research into rocks and fossil formation.  
Drawing conclusions questions asked-Can a plant survive without leaves?  
Children's own questions about the skeleton-their conclusions.  
Where does the food come from to germinate the seed?  
Choosing the correct material for a blind-translucent, transparent and opaque.  
How do magnets react-poles