

## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

Progression of Scientific Enquiry and Investigations						
Year Group	Autumn Cycle A	Spring Cycle A	Summer Cycle A	Autumn Cycle B	Spring Cycle B	Summer Cycle B
KS1	<b>PHYSICAL PROCESSES</b>  Seasonal Changes	<b>BIOLOGY</b>  PLANTS  ANIMALS INCLUDING HUMANS	<b>CHEMISTRY</b>  Everyday Materials	<b>PHYSICAL PROCESSES</b>  Seasonal Changes	<b>BIOLOGY</b>  PLANTS  ANIMALS INCLUDING HUMANS	<b>CHEMISTRY</b>  Everyday Materials
Year One and Two	<p>Do trees with bigger leaves lose their leaves first in autumn? <b>Pattern seeking</b></p> <p>Making tables and charts about the weather . rain gauge. Bar chart to record data. <b>Observing over time</b></p> <p>Are there plants that flower in every season? What are they? <b>Research</b></p> <p>Do the tallest plants have the largest leaves? Identify similarities and differences between plants and trees and</p>	<p>How can we organise zoo animals? <b>Identifying and Classifying</b></p> <p>How do cress seeds change through the week? <b>Observing over time</b></p> <p>How can we classify different animals? Pupils investigate ways to classify animals including fish, amphibians, reptiles, birds and mammals <b>Identifying and Classifying</b></p> <p>What would our lives be without senses? Pupils to investigate the</p>	<p>Compare and group together a variety of everyday materials based on their simple physical properties. <b>Pattern seeking</b></p> <p>Which materials are the most flexible? <b>Simple Comparative test</b></p> <p>Pupils choose a material to make an umbrella. Which materials are waterproof? <b>Identifying and Classifying</b></p> <p>Do the bounciest balls bounce higher or for longer? Pupils will investigate types of balls to explore the materials that change when the ball is bounced e.g</p>	<p>How does the temperature change during the day? Children will explore the different types of weather and how it affects the temperature. <b>Observing over time</b></p> <p>Will my shadow always look the same? Pupils investigate that their shadows will change depending on when they stand in the sun and in which pose. . <b>Observing over time</b></p> <p>How does the weather and change with the different seasons? Pupils to investigate the weather and temperature change throughout the four seasons. <b>Observing over time</b></p> <p>How does the daylight length change across the seasons?</p>	<p>Do all animals have the same senses as humans? <b>Research</b></p> <p>How do we identify plants? What is a plant? Pupils investigate how to identify and name common plants. <b>Identifying and Classifying</b></p> <p>Which trees have the largest trunks? Pupils will investigate the girth of the trunk for the different types of trees. <b>Research</b></p> <p>How many different living things are in the school grounds? Pupils to investigate and identify the range of plants and animals within the school grounds. <b>Identifying and Classifying</b></p> <p>Does one habitat have different species of</p>	<p>How many different ways can materials be sorted? Pupils investigate the properties of different materials before classifying them in a range of ways. <b>Identifying and Classifying</b></p> <p>magnetic? Pupils to investigate what is meant by Which materials are 'magnetic' and investigate which materials have a magnetic force. <b>Simple Comparative test</b></p> <p>Do all objects float? Pupils will investigate floating and sink and which material floats the best. <b>Simple Comparative test</b></p>

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	<p>sort them into groups. <b>Identifying and Classifying</b></p> <p>Do trees look the same all year round? Pupils will investigate how trees change during the seasons <b>Observing over time</b></p> <p>What conditions do woodlice prefer to live in? <b>Pattern seeking</b></p>	<p>senses used in different situations and record their observations of importance of senses <b>Simple Comparative test</b></p> <p>Can food only be tasted with our tongues? Pupils investigate the senses and the impact they have on food choices. Pupils to investigate the differences between sour and sweet tastes and identifying different flavours <b>Simple Comparative test</b></p> <p>How does a tadpole change over time? <b>Observing over time</b></p> <p>How can we grow a healthy plant? Pupils investigate how to keep a plant healthy</p>	<p>squash. <b>Simple Comparative test</b></p> <p>How can stretching fabrics help us? Pupils investigate different fabrics to understand that some materials change. <b>Simple Comparative test</b></p> <p>What would happen if houses were built with absorbent materials? Pupils to explore the absorbency of different materials in order to construct a house and test their theories. <b>Simple Comparative test</b></p> <p>what sort of materials are in our classroom? Pupils make observations; try to group the materials they find <b>Identifying and Classifying</b></p> <p>What sort of materials are in our community? Children make observations of buildings, roads and pavements; try to group the materials they find <b>Identifying and Classifying</b></p>	<p>Pupils will investigate how the length of daylight hours increases in the summer. <b>Observing over time</b></p> <p>Sort leaves and trees in deciduous and evergreen <b>Identifying and Classifying</b></p> <p>Leaves hunt <b>Identifying and Classifying</b></p>	<p>organisms? Pupils to investigate the different types of worms found in a habitat. <b>Research</b></p> <p>What would happen if there were no herbivores? Pupils to investigate the relationship between a variety of common animals that are carnivores, herbivores and omnivores. <b>Research</b></p> <p>Do cress seeds grow quicker inside or outside? <b>Simple Comparative test</b></p> <p>How does the habitat of the arctic compare with the habitat of the rainforest? <b>Research</b></p> <p>Are all seeds the same? Pupils make general comparisons and observations of seeds. pupils make observational drawings of the seeds over time growing into a plant and draw conclusions. <b>Observing over time</b></p> <p>How is an animal/plant suited to live in its environment? Pupils investigate how</p>	<p>Which materials are shiny and which are dull? <b>Identifying and Classifying</b></p> <p>Is all paper good for drawing on? Pupils to investigate the different types of paper and the uses for them. <b>Simple Comparative test</b></p> <p>Which material would be the best for an umbrella? Pupils to investigate the materials and how waterproof they are. <b>Simple Comparative test</b></p>
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		<p>looking at the different factors that affect growth e.g water, light and temperature <b>Simple Comparative test</b></p> <p>Do the tallest plants have the longest roots? Pupils investigate why the root and stem of a plant is important. Pupils will investigate roots using magnifying glasses. Pupils will observe and describe how seeds and bulbs grow into mature plants <b>Research</b></p> <p>Do all seeds create the same plants? Pupils investigate a range of seeds and what they require to grow. <b>Simple Comparative test</b></p> <p>Do the tallest pupils</p>	<p>Which materials can I squash? Which are the squashest? <b>Simple Comparative test</b></p> <p>Which materials can I stretch? Which are most stretchy? <b>Simple Comparative test</b></p> <p>Which material bends the most? Comparing plastic and wooden rulers with weights hanging from them. <b>Simple Comparative test</b></p> <p>Which shape structure is the strongest? (Art Straws tower – context earthquake proof) <b>Simple Comparative test</b></p>		<p>specific animals/plants in school wood are adapted to their environment. <b>Research</b></p> <p>What is the feeding relationship between animals and plants? Pupils to investigate the importance of food chains and the connection between animals and plants. <b>Research</b></p> <p>How can we keep our hearts healthy? Pupils to investigate how to ensure the heart remains healthy. Pupils to recognize that exercise makes the heart work harder. <b>Observing over time</b></p> <p>Do we get taller as we get older? Class life graphing <b>Observing over time</b></p> <p>What different tastes can I taste? <b>Identifying and Classifying</b></p> <p>Is my hearing better with my eyes closed <b>Simple Comparative test</b></p> <p>How do people use their bodies differently in different sports? <b>Simple Comparative test</b></p>	
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		<p>have the longest arms? Pupils to investigate through measurement the diversity within the classroom. <b>Simple Comparative test</b></p> <p>What helps our bodies to stay healthy? Pupils investigate the different factors that can cause their bodies to be healthy or unhealthy. <b>Research</b></p> <p>What sort of birds live in our local area? Set up a bird table and make observations <b>Observing over time</b></p> <p>Spiders Investigation – Web hunt, <b>Pattern seeking</b></p> <p>Investigating Bees – Making models to show key features of bees, observing how</p>			<p>What is the best way to wash your hands? Children investigate different techniques to wash paint off their hands <b>Simple Comparative test</b></p> <p>How does exercise affect how many breaths you make every minute? <b>Observing over time</b></p>	
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		<p>bees fly, local area walk – what sort of flowers attract bees? <b>Pattern seeking</b></p> <p>Investigating sizes of hands and feet <b>Simple Comparative test</b></p> <p>How does a daffodil grow? Plant daffodil bulbs and monitor growth over the term <b>Observing over time</b></p> <p>How can we group leaves? Observe, compare and group leaves <b>Identifying and Classifying</b></p> <p>Which tree is the oldest? Carry out a tree survey , measure circumference using string <b>Identifying and Classifying</b></p> <p>Grow beans – monitor growth using photos and measurements. Keep a bean diary <b>Observing over time</b></p>				
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		<p>What trees and plants grow in our local area? Use books and the internet to identify common plants. what have all flowers got in common?</p> <p><b>Identifying and Classifying</b></p> <p>Use microscopes and magnifying glasses to make close up observations of plants <b>Pattern seeking</b></p>				
<b>LKS2</b>	<p><b>PHYSICAL PROCESSES</b></p> <p><b>LIGHT</b></p> <p><b>FORCES AND MAGNETS</b></p>	<p><b>BIOLOGY</b></p> <p><b>PLANTS</b></p> <p><b>ANIMALS INCLUDING HUMANS</b></p>	<p><b>CHEMISTRY</b></p> <p><b>ROCKS</b></p>	<p><b>PHYSICAL PROCESSES</b></p> <p><b>SOUND</b></p> <p><b>ELECTRICITY</b></p>	<p><b>BIOLOGY</b></p> <p><b>LIVING THINGS AND THEIR HABITATS</b></p> <p><b>ANIMALS INCLUDING HUMANS</b></p>	<p><b>CHEMISTRY</b></p> <p><b>STATES OF MATTER</b></p>
<b>Year Three and four</b>	<p>How does the distance between the shadow puppet and the screen affect the size of the shadow?</p> <p>How does the size of a shadow change when the object moves?</p> <p>Pupils to investigate</p>	<p>What happens to a bean after we have planted it</p> <p><b>Research</b></p> <p>How does the head circumference of a girl compare to that of a boy?</p> <p><b>Comparative test</b></p>	<p>Can you use the identification key to find out the name of each rock in your collection?</p> <p><b>Identifying and Classifying</b></p> <p>What would the world be like without fossils?</p> <p>Pupils investigate the</p>	<p>How are sounds made?</p> <p>Pupils investigate how to make sounds. they will experiment with different amounts of force on different types of instruments eg percussion, string</p> <p><b>Research</b></p> <p>Can sounds travel through solids, liquids</p>	<p>How does the habitat of the arctic compare with the habitat of the rainforest?</p> <p>What is the healthiest meal for an athlete?</p> <p>Pupils to investigate the different food groups and recognize the importance of a healthy, balanced meal. <b>Identifying and Classifying</b></p>	<p>Do all liquids freeze?</p> <p>Pupils investigate if liquids are similar within their properties. If they do freeze, do they freeze at the same temperature.</p> <p><b>Comparative test</b></p> <p>Can you group these materials and objects</p>

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	<p>how the shadow changes in length when it is moved closer to a light source. <b>Comparative test</b></p> <p>Do the tallest people have the longest shadows? Pupils to investigate how shadows are formed and draw conclusions. <b>Comparative test</b></p> <p>Does the size and shape of a magnet affect how strong it is? <b>Pattern seeking</b></p> <p>Compare how things move on different surfaces <b>Comparative test</b></p> <p>Is gravity the only force that does not need contact? Pupils to investigate the different types of forces and recognize that magnetism does not require contact. <b>Comparative test</b></p> <p>Are all magnets the same strength? Pupils investigate the</p>	<p>Do the same plants grow in different environments? Pupils investigate different plants and use a quadrant - plants, leaves, seeds, fruits, twigs and seed cases in this area. They will compare this to a different area. <b>Comparative test</b></p> <p>What is the function of the stem? Pupils investigate the importance of the stem through the iodine in the water to see how the water is transported to the plant through the stem. <b>Research</b></p> <p>How does light affect the growth of a plant? Pupils investigate the importance of light by</p>	<p>importance of fossils before creating their own out of plaster of paris. <b>Research</b></p> <p>What would happen to our planet without soil? Pupils will investigate the different types of soil and why it is so important to the planet and that they are organic matter. <b>Identifying and Classifying</b></p> <p>Does location impact rock properties? Pupils to investigate the different properties of the rocks. <b>Identifying and classifying</b></p> <p>Which rock is the hardest? Pupils investigate the hardness of rocks. <b>Comparative test</b></p> <p>Which type of rock soaks up the most water? <b>Identifying and classifying</b></p>	<p>and gases? Pupils investigate if sounds travel through different mediums and draw conclusions. <b>Comparative test</b></p> <p>What would our lives be like without electricity? Pupils will investigate the different appliances and objects that require electricity and how they impact life today. <b>Research</b></p> <p>Can a light bulb ever light up in an open circuit? Pupils investigate how to create a circuit and the elements required for this. <b>Fair test</b></p> <p>Which materials are suitable to use in wires? Children to investigate a range of materials focusing on which are conductors and insulators. <b>Fair test</b></p> <p>Which material is the best to use for muffling sound in ear defenders? <b>Comparative test</b> Which room has the most electrical sockets in a house? <b>Pattern seeking</b></p>	<p>What would it be like if we didn't have bones? Pupils to investigate the importance of bones, joints and the skeleton to protect major organs. <b>Research</b></p> <p>Do people have stronger muscles if they use them more? Pupils to investigate the purpose of muscles and that the muscles work in pairs. <b>Observing over time</b></p> <p>How does exercise affect the breathing rate? Pupils to investigate how different types of exercise affect the body <b>Comparative test</b></p> <p>How have animals adapted to live on mountains?</p> <p>Which drink is bad for our teeth? <b>Fair test</b></p> <p>How can living things be classified? Pupils to investigate in the local area the living things they can find in a quadrant. Vertebrates</p>	<p>into solids, liquids and gases? <b>Identifying and classifying</b></p> <p>Do all materials remain in their original state at all times? Pupils to investigate how different objects change state depending on the temperature it is in. Focus on the ice-cube for the investigation <b>Observing over time</b></p> <p>How are solids, liquids and gases different? Pupils will investigate and define the different properties of a solid, liquid and gas. They will then classify different materials into the categories <b>Identifying and classifying</b></p> <p>What affects how quickly ice melts? Pupils will investigate the change in state and the factors that affect this e.g temperature, environment, size of</p>
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	<p>strength of magnets using paper clips and a range of magnets. <b>Comparative test</b></p> <p>Are all metals attracted to magnets? Pupils to investigate the different types of metals to see if they attract to the magnet. Pupils to compare and classify the different metals based on this. <b>Comparative test</b></p> <p>If we magnetise a pin, how long will it stay magnetised for? <b>Observing over time</b></p> <p>How do we see things? Pupils investigate if a light source is required to see. Pupils will categorize different light sources into man-made or natural light. <b>Identifying and classifying</b></p> <p>Which material is the best for</p>	<p>placing the seeds in different conditions e.g by the window sill, in a dark cupboard, away from the window, on a radiator. <b>Comparative test</b></p> <p>Do plants need soil to germinate? Pupils investigate germinating seeds in different mediums other than soil. <b>Fair test</b></p> <p>Do animals have a similar digestive system to that of humans? Pupils to investigate the digestive systems and explore similarities and differences eg cows, sheep, camels are</p>	<p>Which type of rock is the heaviest? <b>Identifying and classifying</b></p> <p>Which type of soil does water flow through the quickest? <b>Comparative test</b></p>	<p>Is there a pattern between the pitch of a sound and the instrument's features? Pupils will investigate various musical instruments to identify how the pitch is altered eg guitar- thicker strings make a lower pitch sound.; <b>Pattern seeking</b></p> <p>How can you reduce the level of sound? Pupils investigate how they could muffle sounds such as when the gardeners cut the grass with their huge machinery. Pupils will investigate layering fabrics and a range of fabrics <b>Comparative test</b></p> <p>How does the sound change with distance? Pupils will investigate how the distance from the sound source changes how we hear sounds. <b>Comparative test</b></p> <p>How have ideas about electricity changed over time? Pupils will investigate how electricity has impacted our lives and what life was</p>	<p>and invertebrates is one type of classification. <b>Identifying and classifying</b></p> <p>How does grouping living things help modern biologists? Pupils to investigate the classification of living things and recognize the importance of grouping. <b>Identifying and classifying</b></p> <p>What would happen if there were no predators in the world? Pupils to investigate the role of predators, producers and prey in a food chain and their roles. Pupils to explore the responsibility humans have in the impact of food chains. <b>Research</b></p> <p>Which cereal has the most iron in it? (Practical investigation using magnets) <b>Comparative test</b></p> <p>Which chocolate bar is most unhealthy? (Comparing food labels) <b>Identifying and classifying</b></p> <p>Which drink causes the most damage to teeth? (leaving dirty coins in different drinks to compare the effects <b>Comparative test</b></p>	<p>ice cube. <b>Comparative test</b></p> <p>What which melts fastest – Ice cream, butter or ice? <b>Comparative test</b></p> <p>Which evaporates quickest – water, vinegar or nail varnish remover? <b>Observing over time</b></p> <p>How does the temperature of ice cream change over time? <b>Observing over time</b></p> <p>How does the temperature of wax/water change as you heat it up? <b>Research</b></p> <p>Which type of chocolate melts fastest? <b>Observing over time</b></p> <p>How do they make condensed and evaporated milk? <b>Research</b></p> <p>What conditions make washing dry quicker? <b>Research</b></p>
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	<p>sunglasses? Pupils to investigate the materials that are the most reflective of the light. <b>Comparative test</b></p> <p>Where is the light brightest in our school? Data logging investigation to investigate our local environment <b>Comparative test</b></p> <p>What is white light made from? (Prisms) <b>Identifying and classifying</b></p> <p>What factors affect the size of a shadow? Making shadow sticks and measuring shadow size <b>Comparative test</b></p> <p>How far will a toy car go on different surfaces? <b>Comparative test</b></p> <p>How many layers of card can you place between a magnet and a paperclip before it won't attract? How close will a paperclip get to different magnets before it attracts? <b>Comparative test</b></p>	<p>ruminants and they chew the cud. Pupils to explore monogastric, ruminant and avian digestion types. <b>Research</b></p> <p>What would happen if animals had the same teeth? Pupils to investigate the different types and shapes of teeth to understand their functions. <b>Pattern seeking</b></p> <p>How do human skeletons compare with those of other animals? <b>Identifying and classifying</b></p> <p>Which crisps have the highest salt/fat content? Analyse data from food packaging, draw graphs and demo burning of each type of crisp to compare observations with findings <b>Research</b></p>		<p>like before electricity. <b>Research</b></p> <p>How does the amount of voltage in a circuit affect the brightness of a bulb? Pupils will investigate the relationship between the voltage and the bulb. <b>Comparative test</b></p> <p>What materials can sound travel through? <b>Identifying and classifying</b></p> <p>What materials will stop sound travelling? Sound proofing <b>Pattern seeking</b></p> <p>Investigating water in milk bottles <b>Comparative test</b></p> <p>To identify electrical appliances around school <b>Identifying and classifying</b></p> <p>To make and test wind turbines and solar panels <b>Comparative test</b></p>		<p>Evaporation – drying towels experiment <b>Observing over time</b></p>
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UKS2	<b>PHYSICAL PROCESSES</b>  <b>EARTH AND SPACE</b>  <b>FORCES</b>	<b>BIOLOGY</b>  <b>LIVING THINGS AND THEIR HABITATS</b>  <b>ANIMALS INCLUDING HUMANS</b>	<b>CHEMISTRY</b>  <b>PROPERTIES AND CHANGES OF MATERIALS</b>	<b>PHYSICAL PROCESSES</b>  <b>LIGHT</b>  <b>ELECTRICITY</b>	<b>BIOLOGY</b>  <b>LIVING THINGS AND THEIR HABITATS</b>  <b>ANIMALS INCLUDING HUMANS</b>  <b>EVOLUTION AND INHERITANCE</b>	<b>CHEMISTRY</b>  <b>PROPERTIES AND CHANGES OF MATERIALS</b>
Year Five and six	<p>How have our ideas about the solar system changed over time? <b>Research</b></p> <p>Which shape parachute takes the longest to fall? <b>Fair test</b></p> <p>How can we balance a 1kg using a lever? Pupils investigate the relationship between the lever and the fulcrum to enable them to balance a 1kg weight. <b>Research</b></p> <p>Which parachute is the best for skydiving? Pupils to investigate the relationship between air</p>	<p>How do animal lifecycles vary? Pupils to investigate the differences in mammal, amphibians, insect and bird lifecycles and draw conclusions. . <b>Identifying and classifying</b></p> <p>Why is plant reproduction important? Pupils investigate the reproduction of flowering plants through dissection of plants to see male and female gametes. <b>Research</b></p> <p>What environment is ideal for yeast to grow?</p>	<p>What affects the speed at which jelly dissolves? Pupils will investigate soluble and insoluble materials as a term before considering the factors such as temperature, quantity of water, size of jelly cubes for setting jelly.</p> <p>Do all solids dissolve in water? Pupils investigate if all solids dissolve in water by making careful observations to draw conclusions. <b>Comparative test</b></p> <p>How can an ice-cream be</p>	<p>Which material is the best conductor of electricity? <b>Comparative test</b></p> <p>How can we see different colours? Pupils to investigate using a mirror and water how we see colours by understanding that white is made up of lots of different colours. <b>Research</b></p> <p>What happens if the surface from which the light reflects isn't flat? Pupils to investigate that light reflects in straight lines and if the surface is not smooth, the light</p>	<p>Is there a relationship between a mammal's size and its gestation period? <b>Pattern seeking</b></p> <p>How does asexual reproduction impact on crop farming? Pupils to investigate that plants reproduce asexually and explore the advantages and disadvantages of asexual reproductions <b>Research</b></p> <p>Can you identify the changes in the human life cycle? <b>Identifying and Classifying</b></p> <p>What happened when Charles Darwin visited the Galapagos Islands? <b>Research</b></p> <p>What impact has Carl Linnaeus had on the</p>	<p>How does a nail in salt water change over time? <b>Observing over time</b></p> <p>Which material is the hardest? (Scratch testing with iron nail and magnifying glass) <b>Fair test</b></p> <p>Which material dissolves best in water? (comparing the time for salt, sugar, flour, washing powder to dissolve) <b>Identifying and Classifying</b></p> <p>What factors affect how quickly a solid dissolves? (Different sized particles of sugar/ different temperatures)</p>

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	<p>resistance, gravity and the parachute. <b>Research</b></p> <p>Do more gears make a bike faster? Pupils to investigate how the gear mechanisms allows for a smaller force but have a greater effect. Pupils will investigate the impact of friction. <b>Comparative test</b></p> <p>How do the Earth and Moon travel around the Sun? Pupils to explore the relationship between these three bodies and the impact of them on Earth. <b>Research</b></p> <p>How does the planets move in relation to the sun? Pupils will investigate the movement of the Earth, and other planets, relative to the Sun and how the</p>	<p>Pupils investigate the conditions that yeast, a micro-organism needs to grow e.g. water, air, temperature, food. <b>Fair test</b></p> <p>How does the length of time we exercise for affect our heart rate? <b>Fair test</b></p> <p>How many different ways can we classify animals? Pupils explore the different ways such as invertebrates and vertebrates, mammals etc <b>Identifying and Classifying</b></p> <p>Why is the heart one of the major organs in the body? Pupils investigate the function of the heart and the different parts of the heart through a</p>	<p>kept cooler for longer? Pupils investigate the thermal insulating properties of materials. <b>Fair test</b></p> <p>Are all changes in state of matter reversible? Pupils investigate reversible and irreversible changes by making plastic out of milk. <b>Fair test</b></p> <p>How do we separate solid mixtures?  Give children an opportunity to separate some mixtures through using sieves with different sizes of mesh: lumps from flour, rice from salt, coffee from coffee beans, stones from soil, different size seeds, sugar from sugar lumps, buttons in a button box, etc <b>Identifying and Classifying</b></p> <p>Do liquids mix?</p>	<p>reflects in many directions <b>Research</b></p> <p>Which material would be the best for a hi-viz jacket? Pupils to investigate different materials in order to identify which material is the most reflective of light? <b>Comparative test</b></p> <p>Which type of fruit makes the best fruity battery? <b>Fair Test</b></p> <p>How does the type of liquid affect the angle which the light refracts? Pupils to investigate the light beams refraction through liquids such as water, oil etc. <b>Research</b></p> <p>Squidgy circuits – using conductive dough to create electrical art sculpture <b>Pattern seeking</b></p>	<p>classification system today? Pupils to investigate the importance of classification and the five classification systems. <b>Identifying and Classifying</b></p> <p>How would you make a classification key for vertebrates/invertebrates or microorganisms? <b>Identifying and Classifying</b></p> <p>How speeds up the process of mould growing? Pupils to investigate what factors cause mould to grow on bread e.g light, temperature, moisture. Pupils to work in groups to draw conclusions in regards to the best conditions to keep bread mould-free. <b>Fair test</b></p> <p>Why do offspring look like their parents? Pupils investigate the theme of inheritance and difference between inheritance and acquired skills <b>Research</b></p> <p>How do fossils provide evidence of evolution? Pupils investigate fossil evidence to explore the evolution process to draw conclusions <b>Research</b></p>	<p><b>Identifying and Classifying</b></p> <p>What happens to the transparency of a material as it gets thicker? (data logger to measure light intensity with increasing layers) <b>Research</b></p> <p>Which material is the best thermal insulator? (Hot Chocolate/Penguins investigation) <b>Research</b></p> <p>Do all stretchy materials stretch in the same way? <b>Pattern seeking</b></p> <p>What is the best dish for a bird water bowl? Pupils will investigate the process of evaporation to decide on the most appropriate bowl. <b>Fair Test</b></p>
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## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

	<p>Sun, Earth and Moon are approximately spherical <b>Research</b></p> <p>Does everyone on the planet have day and night at the same time? Pupils will investigate the idea of the Earth's rotation and apparent movement to explain day and night. Pupils will explore why day and night is different in different areas of the world <b>Research</b></p> <p>How does the Moon appear to change over a month? – keep a moon diary <b>Observing over time</b></p> <p>What shape would be best for a sensor that you want to fall to the bottom of the ocean? Different shaped plasticine shapes –time the fall –change liquid and look at viscosity <b>Comparative Fair test</b></p> <p>Which surface gives the greatest friction? Measuring the angle of the slope that will</p>	<p>dissection. <b>Research</b></p> <p>How can our heart rate be affected in our daily lives? Pupils will investigate how their heart rate changes before and after exercise and create a line graph. Pupils will explore how their heart rate changed during a particular exercise at one-minute intervals. <b>Comparative Fair test</b></p> <p>Investigating the stages in a sunflower's life <b>Observing over time</b></p> <p>Comparing sexual and asexual reproduction in plants and animals <b>Identifying and Classifying</b></p> <p>Investigating Seed dispersal <b>Pattern seeking</b></p>	<p>Smear some Vaseline around the top of a jar. Fill this with water and a few drops of food colouring. Fill another identical jar with water only and place a sheet of tin foil over the opening. Carefully, turn over the jar with the foil and put it on top of the first jar. Wait a few moments, then, very carefully, slide out the foil. Look at the jars every 15 minutes and note the colours. The waters should mix through the process of diffusion. <b>Identifying and Classifying</b></p>		<p>How have adapted traits ensured the survival of living things? Pupils investigate the understanding of seed dispersal and the adaptation of bird's beaks related to food choice. <b>Research</b></p> <p>Investigating variation in the classroom – height, weight, hair colour, shoe size etc Data collection and graph drawing to analyse. <b>Identifying and Classifying</b></p> <p>What differences are environmental and what differences are inherited from our parents? Children can bring in family photos to make comparisons or you can provide a set of family photos <b>Research</b></p> <p>How are birds adapted to survive on their island? Investigation to replicate the work of Darwin in the Galapagos Islands using various size tweezers to pick up various food stuffs – small and large nuts, worms and large fruit <b>Identifying and Classifying</b></p> <p>Comparing skeletons of humans, with Neanderthals and apes. Using images to observe similarities and differences <b>Research</b></p>	
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	<p>make a object move. What is the best design for a rocket? Changing nose cone shapes and investigating effect on distance travelled. <b>Comparative Fair test</b></p> <p>Which boat shape or sail shape would reduce friction forces the most? <b>Comparative Fair test</b></p> <p>DT link- making moving cars with pulleys <b>Research</b></p>				<p>How does the average height of a class change as they get older? <b>Observing over time</b></p> <p>How are different animals born? Video based investigation – observations recorded, research to find out extra details, compare and contrast exercises, conclusions written <b>Research</b></p>	
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## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

Working Scientifically Skills Progression										
KS1	To ask scientific questions	To plan an enquiry	To observe closely	To take measurements	To gather/record results	To present results	To interpret results	To draw conclusions	To make a prediction	To evaluate an enquiry
<b>Classifying</b>	Be able to ask a Yes/No questions to aid sorting	Identify the headings for the two groups (it is ....., it is not .....)	Be able to compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.			Sort objects and living things into two group using a basic Venn diagram or simple table	Talk about the number of objects in each group i.e. which has more or less			
<b>Researching</b>	Ask one or two simple questions linked to a topic					Present what they have learnt verbally or using pictures	Be able to answer their questions using simple sentences			
<b>Comparative/fair testing</b>	Identify the question to investigate from a scenario or choose a question from a range provided	Choose equipment to use and decide what to do and what to observe or measure in order to	Make observations linked to answering the question	When appropriate, measure using standard units where all the numbers are marked on the scale	Record data in simple prepared tables, pictorially or by taking photographs	Present what they learnt verbally, using pictures or block diagrams	Answer their question in simple sentences using their observations or measurements			



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<b>Observing over time</b>	Ask a question about what might happen in the future based on an observation	answer the question			Record data in simple prepared tables, pictorially or by taking photographs	Present what they learnt verbally or using pictures				
<b>Pattern seeking</b>	Ask a question that is looking for a pattern based on observations				Record data in simple, prepared tables and tally charts	Present what they learnt verbally				

## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

LKS2	To ask scientific questions	To plan an enquiry	To observe closely	To take measurements	To gather/record results	To present results	To interpret results	To draw conclusions	To make a prediction	To evaluate an enquiry
<b>Classifying</b>	Be able to ask a range of Yes/No questions to aid sorting	Be able to put appropriate headings onto intersecting Venn and Carroll diagrams	Be able to compare objects based on more sophisticated, observable features. Present observations in labelled diagrams.			Sort objects and living things into groups using intersecting Venn and Carroll diagrams	Spot patterns in the data particularly two criteria with no examples e.g. there are no living things with wings and no legs	Draw simple conclusions, when appropriate, for patterns e.g. a flying insect with no legs might always crash land		Suggest improvement e.g. a wider range of objects – only looked at British trees. Suggest new questions arising from the investigation.
<b>Researching</b>	Ask a range of questions linked to a topic	Choose a source from a range provided				Present what they learnt verbally or using labelled diagrams	Be able to answer their questions using simple scientific language			Suggest limitations e.g. only had one book. Suggest new questions arising from the investigation.
<b>Comparative/f air testing</b>		Decide what to change and what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary	Prepare own tables to record data	Present data in bar charts	Refer directly to their evidence when answering their question	Where appropriate provide oral or written explanations for their findings	Use results from an investigation to make a prediction about a further result	Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation.
<b>Observing over time</b>		Decide what to measure or observe. Decide how often to take a measurement.	Make a range of relevant observations	Measure using standard units where not all the numbers are marked on the scale. Use dataloggers to measure over time.		Present data in time graphs				



## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

<b>Pattern seeking</b>		Decide what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale.		Use ICT package to present data as a scattergram				
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## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

UKS2	To ask scientific questions	To plan an enquiry	To observe closely	To take measurements	To gather/record results	To present results	To interpret results	To draw conclusions	To make a prediction	To evaluate an enquiry
<b>Classifying</b>	Be able to ask a range of Yes/No questions to aid sorting and decide which ways of sorting will give useful information	Identify specific clear questions that will help to sort without ambiguity	Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry			Create branching databases (tree diagrams) and keys to enable others to name living things and objects	Be able to talk about the features that objects and living things share and do not share based on the information in the key etc.	Be able to use data to show that living things and materials that are grouped together have more things in common than with things in other groups		Be able to explain using evidence that the branching database or classification key will only work for the living things or materials it was created for
<b>Researching</b>	Ask a range of questions recognising that some can be answered through research and others may not	Choose suitable sources to use				Present what they learnt in a range of ways e.g. different graphic organisers	Be able to answer their questions using scientific evidence gained from a range of sources			Be able to talk about their degree of trust in the sources they used
<b>Comparative/ fair testing</b>	Ask a range of questions and identify the type of enquiry that will help to answer the questions. Ask further questions based on results.	Recognise and control variables where necessary	As for KS1	Measure using standard units using equipment that has scales involving decimals	Prepare own tables to record data, including columns for taking repeat readings	Choose an appropriate form of presentation, including line graphs	Be able to answer their question, describing causal relationships	Provide oral or written explanations for their findings	Use test results to make predictions for further investigations	Explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results
<b>Observing over time</b>					As for LKS2		Be able to answer their questions, describing the change over time			



## Hady Primary School: WORKING SCIENTIFICALLY PROGRESSION

<b>Pattern seeking</b>						Choose an appropriate form of presentation, including scatter graphs	Be able to answer their questions identifying patterns			
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