

Enquiry maps

Age 9 – 11 years

This enquiry map aims to give you some ideas for scientific enquiry based on Explorify activities. You will often find more guidance in the **Take it further** section of the activity. **This enquiry map takes account of the requirements of all four UK science curriculums, so do check your own scheme of work/nation's curriculum when selecting activities.**

We have included activities that can get the children asking questions as all science starts with curiosity and questioning. This may generate questions the children can go on to investigate. The Great Science Share has different [question maker resources](#) to support this.

	Ask questions	Observe changes over time	Identify and classify	Carry out comparative and fair tests	Notice patterns and relationships	Research using secondary sources
Animals		Tiny teeth – observe frogspawn develop into frogs. Coming out to play or Maria Sibylla Merian - observe caterpillars develop into butterflies	Get a backbone – which animals have vertebrae? Wild life in the pond and Puddle pals – can you classify a set of animals? Food chain challenge - can you create food chains and webs for these plants and animals?		Very hungry caterpillars Do smaller animals lay more eggs? Savanna side kicks Do larger mammals have longer gestation periods? Perfect pinchers Is there a pattern between the size and shape of a bird's beak and the food it eats.	Coming out to play – how do insects reproduce? Hungry hedgehog – which animals hibernate? How can we help them? HYE cared for a baby animal? - research the life cycle of different animals and compare.

			<p>Looking after baby - Compare animals based on similarities and differences in their lifecycle</p> <p>Incredible invertebrates - How would you make a classification key for a set of invertebrates?</p>			
Humans	<p>What is a balanced diet for us and the planet?</p> <p>HYE smelt something that made you happy? - what questions do you have about our senses? How could you find the answers?</p>	<p>Have you ever had your heart rate measured? How does my heart rate change at different times of the day?</p>	<p>Born to dance How much exercise do you do in a week?</p> <p>HYE noticed how babies change as they become toddlers? Can you identify all the stages in the human life cycle?</p>	<p>Beating heart – Which type of exercise has the greatest effect on your heart rate?</p> <p>Does colour affect how we taste things? - if you change the colour of a drink will your friends still like it?</p>	<p>Have you ever had your heart rate measured? - does the class all have the same resting heart rate? Do the children who exercise most have a lower heart rate?</p> <p>HYE broken a bone? - look for patterns in your skeletons:</p> <p>Can the tallest people reach the highest?</p> <p>Is height related to leg length?</p>	<p>What if we couldn't exercise? - research the impact of exercise on our health.</p> <p>Our digestive organs - research the digestive system.</p> <p>What if we couldn't see colour? or In your eyes- research how your eyes work and how animals see colour differently</p> <p>Skip a beat</p>

					<p>Is there a link between height and arm length? Is there a link between hand span and foot length?</p> <p>Brilliant brain case</p> <p>Do male humans have larger skulls than female humans?</p> <p>Pink and spongey - Do children who exercise more have a bigger lung capacity?</p> <p>Fuel up</p> <p>Is there a pattern between what you ate for breakfast and how fast you can run?</p>	<p>Where are the major organs located in your body?</p>
Classification		<p>HYE found mould growing on bread at home?</p> <p>What happens to a piece of bread if you leave it on the windowsill for two weeks?</p>	<p>What a fun guy - classify different fungi.</p>	<p>Who is Alexander Fleming? - what conditions are best for growing yeast?</p>	<p>Fury fruits - Do soft fruits decay faster than hard fruits?</p>	<p>Small but powerfull</p> <p>Research the difference between bacteria, viruses and fungi. Why are they not plants or animals?</p> <p>Can micro-organisms be</p>

						good for you? Or Michael Sulu Research how micro-organisms can be helpful or harmful.
Inheritance	HYE been told you look like your parents or other relatives? - What questions do you have?		Brilliant brain case How are the skeletons of apes, humans, and Neanderthals similar and different? A hinge in the rock - what type of fossil are you looking at? How can you sort them?		Perfect pinchers Is there a pattern between the size and shape of a bird's beak and the food it eats?	Fantastic foxes Research the different types of foxes and the characteristics they have that are well-suited to their habitats Terrific tree dwellers - Research how different species are adapted for their habitat. What if we could bring back woolly mammoths? - which animals are like the mammoth? Why did it become extinct?
Plants	Plant takeaway - what questions do you have after watching this video?	New beginnings – observe a spider or strawberry plant over the year. Mystery eyes – use a hand lens or microscope to carefully observe the nodes (eyes) and then grow potatoes. Furry fruits – what happens if you leave some	New beginnings , Mystery eyes or Brown spots - can you sort the plants by how they reproduce? Autumn leaves Classify a set of leaves. Can you	Brown and sticky Which shape of seed case takes the longest time to fall?	Do you like butter? Do all flowers have the same number of petals? Do bigger flowers/plants have more petals?	Brown spots or Brown scales Research the characteristics of flowering plants, mosses, ferns and conifers.

		<p>fruit for several weeks? A sudden downpour How is plant behaviour influenced by seasonal change?</p>	<p>make a key to sort them?</p>			
Materials	<p>Do rocks stay the same for ever? - what questions do you have about the substances that make up the Earth's surface?</p>	<p>Red and flaky Observe nails rusting. HYE burnt your toast? or Bright spark Observe different materials burning. HYE splashed in a puddle? observe how long a puddle takes to evaporate. Shaking sensation - observe how cream changes to butter with churning.</p>	<p>Have you ever tasted sugar in your cereal?- observe whether different materials dissolve or form a mixture. Classify materials as soluble or insoluble. What if all materials were transparent? Classify materials by whether they are opaque, translucent or transparent? Electrifying metals - sort the materials into conductors and insulators.</p>	<p>How would you stay warm in the arctic? What material offers the best thermal insulation? Suits you - which material is best for a space suit? Melting ice cubes - which material will slow the ice cube melting? It's in the bag - which material is most suitable to make a carrier bag with? HYE needed to dry something quickly? Investigate evaporation by leaving pieces of fabric to dry in different conditions. Have you ever tasted sugar in your cereal? Which type of sugar dissolves the fastest? Does the heat of the water affect how quickly the sugar dissolves?</p>	<p>3-2-1 lift off - Can you spot a pattern in the results after blowing up balloons using the gas produced by vinegar and different amounts of bicarbonate of soda?</p>	<p>Where does our rubbish go? How can waste be reduced, reused or recycled and how is this beneficial? Liquid of life - research the water cycle.</p>

Forces	<p>HYE warmed your hands by rubbing them? - can the children explain what is going on? What questions do they have?</p>	<p>HYE tried to keep a balloon in the air? - observe how things fall to the ground. Do heavier or larger objects fall more quickly? Investigate by dropping plastic bottles filled with different amounts of water.</p> <p>HYE felt an electric spark from touching something or someone else? - How long will a static balloon stick to the wall?</p>		<p>Sleek designs Do all objects fall through water in the same way? Soft Landing - how does the size, material or surface area of a cupcake case affect how the cupcake case falls to the ground? Moving propellers Which spinner falls slowest? Paper planes – which plane design will fly the furthest or have the straightest flight path? Levers in action - How does moving the fulcrum make a difference to the load that can be lifted? Best foot forward or Get a grip - Design a shoe suitable for walking in snow.</p>	<p>Shoot the breeze Which shape parachute takes the longest to fall? To the moon and beyond - how does the force applied affect how far my rocket travels? Tabletop hovercraft - Does the amount of air in the balloon affects the time that the hovercraft hovers? HYE tried to push a floating toy down under water? - which objects float and which sink? Making work easier – is there a pattern between the number of pulleys in a system and the amount of string/rope/chain you must pull?</p>	<p>Whirring wonders How do the gears on a bike work?</p>
Electricity				<p>Who is Hayden Francis? Which make of battery lasts the longest?</p>	<p>Battery bonanza! - does a bigger battery make the bulb brighter?</p>	

				HYE not been able to find a battery when you need one? Which type of fruit makes the best fruit battery? Curly coil What happens if you add more bulbs to the circuit?	
Energy	What if all transport was electric? - what questions do you have about renewable energy?				Take your turn - what is the balance between non-renewable and renewable energy? How is this changing?
Light	Have you ever been somewhere where you couldn't see anything when you woke up in the night? - What questions do you have about how we see?	Light and time How does your shadow change over the day?			HYE had an eye test? - research how your eyes work.
Space	Earth - what do you notice happens to our planet in this video? How could you find out more? HYE spoken to a friend or relative elsewhere in the world and the time was	What if there were two suns? observe what might happen using two torches and a toy figure. HYE looked up at the Moon and noticed how it appears to be different shapes at different		Maps of the solar system Is there a pattern between the size of a planet and the time it takes to travel around the Sun?	What if there was no gravity? Research gravity and how it is different on different planets.

	different? - what questions do you have about day and night?	times? - How does the Moon change shape over the month?				
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For other ideas visit

The Ogden Trust - [Identifying and classifying](#), [pattern seeking](#), [comparative tests](#), [observing overtime](#), and [research](#)

The Great Science Share has some great videos looking at the [different working scientifically skills](#). You will need to set up a login, but it is free.

PLAN primary assessment also has [working scientifically matrixes](#).