Progression map: Scientific knowledge

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|  |  | R | Y1 | | Y2 | Y3 | Y4 | Y5 | Y6 | |
| **Biology** | Animals & humans | **Early Learning goals /Development Matters**  **Explore the natural world around them, draw pictures of animals and plants**  **Understand the effect of the changing seasons on the natural world around them and changing states of matter**  **Know and talk about different factors that support their overall health – toothbrushing, screen time, good sleep , safe pedestrian** | Why are humans not like tigers?  **Identify/name common animals: carnivores, herbivores and omnivores**  **identify, name, draw and label the basic parts of the human body .Associate with each senses.** | | How can I grow to be a happy, healthy me? X2  **notice that animals, including humans, have offspring which grow into adults**  **describe the basic needs of animals, including humans, for survival**  **importance of exercise, eating the right amounts of different types of food, and hygiene.** | How can an athlete move so fast?  ** skeletons and muscles for support, protection and movement**  **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** | What happens to the food we eat?  **functions of the basic parts of the digestive system**  **different types of teeth in humans and functions** | What will you look like at 80?  **describe the changes as humans develop to old age.**  Does all life start as an egg? Life cycles  **life cycles of a mammal, amphibian,insect and a bird**  **process of reproduction in some plants and animals.** | | What would a journey through our bodies look like?  **circulatory system/ heart, blood vessels and blood diet, exercise, drugs and lifestyle describe the ways in which nutrients and water are transported** Why do our bodies change? |
| Plants | What changes in the seasons will Percy the Park Keeper see around our school?  **observe changes across the four seasons**  **observe and describe weather associated with the seasons and how day length varies.** | | How does a tiny seed grow into a sunflower?  **observe and describe how seeds and bulbs grow into mature plants**  **find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.** | How did that blossom become an apple? Plants  **functions of plants: roots, stem/trunk, leaves flowers**  **requirements of plants for life and growth and how they vary from plant to plant**  **investigate how water is transported within plants**  **explore pollination, seed formation and seed dispersal.** |  | Does all life start as an egg? Life cycles –inc plants  **process of reproduction in some plants and animals.** | |  |
| Habitats | **Recognise some environments are different to the one in which they live -drawing on their experiences and what has been read.**  **Describe what they see, hear and feel outside** | What birds and plants would Percy the Park Keeper find in the school/park?  **identify and name a variety of common wild and garden plants, including deciduous and evergreen trees**  **Identify and describe the basic structure of a variety of common flowering plants, including trees.**  **identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals**  **describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) ???** | | What is it like to live under a rock?  **differences between things that are living, dead, and never been alive**  **most living things live in habitats to which they are suited -provide for the basic needs of animals and plants- they depend on each other**  **identify/name plants/animals in their habitats, including micro-habitats**  **animals obtain their food from plants/other animals-simple food chain, and identify/name sources of food.** |  | What wild things live near us?  **know that living things can be grouped in a variety of ways.**  **construct and interpret a variety of food chains, identifying producers, predators and prey.**  **Know that environments can change and pose a danger to living things.** |  | | Living things and their habitats  **Know that living things can be classified into broad groups according to observable characteristics and based on similarities and differences** |
| Evolution |  | Y6 ONLY Could Spiderman really exist? Evolution and inheritance  **Know what evolution is and can explain it**  **Know how how fossils can be used to find out about the past**  **Know that offspring produce living of the same kind , but normally offspring vary and are not identical to their parents**  **Know how animals and plants are adapted to suit their environmentin different ways**  **Know that adaptation may lead to evolution**  **Know that living things have changed over time**  **Know that fossils provide information about living things that inhabited the Earth millions of years ago**  . | | | | | | | |
| **Chemistry** | Materials | **Understand the effect of the changing seasons on the natural world around them and changing states of matter** | What materials would Stickman see around our school?  **distinguish between an object and the material from which it is made**  **identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock**  **describe the simple physical properties of a variety of everyday materials**  **compare and group together a variety of everyday materials on the basis of their simple physical properties.** | | How can we fix Mrs Kernick’s tent? (Materials)  **identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses**  **find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.** | What do rocks tell us about the way the Earth was formed? Rocks and Soils  **compare and group together different kinds of rocks on the basis of their appearance and simple physical properties**  **describe in simple terms how fossils are formed when things that have lived are trapped within rock**  **recognise that soils are made from rocks and organic matter.** | How would you survive without water? States of matter  **Compare/group materials-whether they are solids, liquids or gases**  **some materials change state when heated or cooled. Measure or research the temp at which this happens.**  **identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.** | Could you be the next CSI investigator? Separating mixtures  **Compare/group materials on basis of properties.**  **know that some materials will dissolve in liquid to form a solution- describe how to recover**  **separate using filtering, sieving and evaporating**  **give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday**  **dissolving, mixing and changes of state are reversible changes**  **explain that some changes result in the formation of new materials- not usually reversible,** |  | |
| **Physics** | Light/sound | Links:  Describe what they see, hear, feel outside  **Understand the effect of the changing seasons on the natural world around them – length of day, amount of sunshine** | Y1 links:  Seasonal changes\*  Observe changes across the seasons  Observe and describe how the length of day changes  What materials would stickman see around the classroom?\*  Identify properties of different materials ( light can pass through some materials but not others) |  | | How far can you throw your shadow? Light and shadows  **need light in order to see things.Dark is absence of light**  **notice that light is reflected from surfaces**  **recognise that light from the sun can be dangerous-there are ways to protect teyes**  **recognise that shadows are formed when the light from a light source is blocked by an opaque object**  **find patterns in the way that the size of shadows change**. | What makes music magnificent? Sound  **identify how sounds are made**  **vibrations from sounds travel through a medium to the ear**  ** patterns between pitch and features of the object that produced it**  ** patterns between volume of sound & strength of vibrations that produced it**  **recognise that sounds get fainter as the distance from the sound source increases.** |  | How can you light up your life?  **light appears to travel in straight lines objects are seen because they give out or reflect light into the eye we see things because light travels from light sources to our eyes**  **explain why shadows have the same shape as the objects that cast them**. | |
| Forces | Explore the natural world around them | Stickman\*  Which materials are flexible? |  | | **Can you feel the force?**  **compare how things move on different surfaces**  **some forces need contact between two objects- magnetic forces can act at a distance**  **magnets attract/repel and attract some materials**  **compare/ group various materials on the basis of attraction to a magnet, and identify some magnetic materials**  **magnets have two poles**  **predict will they attract/repel** |  | Can you feel the force? Friction, air/water resistance pulleys/levers/gears  **unsupported objects fall towards the Earth because of the force of gravity**  **identify the effects of air resistance, water resistance and friction**  **some mechanisms, , allow a smaller force to have a greater effect.** |  | |
| Electricity |  |  | | |  | How could we cope without electricity?  **identify electrical appliances**  **construct a simple series circuit, name parts: cells, wires, bulbs, switches buzzers**  **identify a complete loop with a battery**  **switch opens /closes circuits and recognise common conductors and insulators-metals are good conductors.** |  | **Are you a bright spark? associate the brightness /volume with voltage 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 use recognised symbols when representing a simple circuit in a diagram.** | |
| Earth/space | Links:  Explore the changing seasons | Y1 links:  Seasonal changes\*  Observe changes across the seasons | | |  |  | Could you be the next Tim Peake/Helen Sharman?  **Describe:**   **movement of the Earth/planets, relative to the Sun**  ** movement of the Moon relative to the Earth**  ** Sun, Earth and Moon as approximately spherical bodies**  ** explain day/ night and the apparent movement of the sun** |  | |

\*These themes are not taught explicitly inKS1 but are addressed in topics.