Knowledge Progression

Year 1/2 Science Cycle 1

	Seasonal Changes TERM: Aut 1, Spr 1 and Sum 1	Animals including Humans (Y1) TERM: Autumn 2	Plants (Y1) TERM: Spr 1 & 2	Animals including Humans (Y2) TERM: Sum 1 & 2
Key Vocabulary	Weather (sunny, rainy, windy, snowy etc.) Seasons (winter, summer, spring, autumn) Sun, sunrise, sunset, day length, temperature, observation, collection, phenologist	fish, gills, amphibian, fins, reptile, cold-blooded, warm-blooded, bird, feathers, herbivore, mammal, lungs, carnivore, omnivore, backbone, vertebrate, invertebrate, senses, characteristics	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, deciduous, evergreen, botanist. Names of trees in the local area – e.g. sycamore, horse chestnut, beech, oak, silver birch Names of garden and wild flowering plants in the local area – e.g. daisy, buttercup, dandelion, forget-me-not, bluebell, daffodil, lily of the valley, cow parsley, foxglove, rose.	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), life cycle, exercise, heartbeat, heart rate, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)
Previous knowledge/ Learning	In EYFS, children will have explored and observed changes around them. These may include seasonal changes but not exclusively. They will have talked about the features of their own immediate environment, and will have experienced and named the four seasons: autumn, spring, summer and winter.	In EYFS, children will have explored similarities and differences in relation to living things. They will have made observations of animals.	In EYFS, children will have explored and observed changes around them. These may include growing plants from seeds, but not exclusively. They will have talked about the features of their own immediate environment and how environments might vary from one another. They will have made observations of plants and explained why some things occur and talked about changes.	In the Cycle 1 unit, children will have: 1. Learnt to identify common animals including: fish, amphibians, reptiles, birds and mammals. 2. Learnt to identify: carnivores, herbivores and omnivores. 3. Described the basic parts of the human body and can say which part is associated with each sense. 4. Learnt to care for animals in their local environment.
N.C. Objectives	1. Observe changes across the 4 seasons 2. Observe and describe typical weather associated with the seasons (e.g. snow in winter) and how day length varies	1. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals 2. Identify and name a variety of common animals that are carnivores, herbivores and omnivores 3. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) 4. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	1. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees 2. Identify and describe the basic structure of a variety of common flowering plants, including trees	1. Notice that animals, including humans, have offspring which grow into adults 2. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) 3. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene
Resources/ Assessment	***LOCATIONS OF PLANNING/RESOURCE*** Seasonal Change Investigation – TAPS focused assessments	***LOCATIONS OF PLANNING/RESOURCE*** Animal Classification Investigation – TAPS focused assessments Joan Proctor, Dragon Doctor by Patricia Valdez - The inspiring story of Joan Proctor, the herpetologist (reptile scientist) who designed the London Zoo's reptile house	***LOCATIONS OF PLANNING/RESOURCE*** Leaf Look and Plant Structure Investigations – TAPS focused assessments	***LOCATIONS OF PLANNING/RESOURCE*** Handspan Investigation – TAPS focused assessments Tadpole's Promise by Jeanne Willis - lifecycles

Knowledge Progression

Year 1/2 Science Cycle 1

	Seasonal Changes TERM: Aut 1, Spr 1 and Sum 1	Animals including Humans (Y1) TERM: Autumn 2	Plants (Y1) TERM: Spr 1 & 2	Animals including Humans (Y2) TERM: Sum 1 & 2
Key Knowledge – what do we want our children to know before they leave our year group? How will we get them there? How is that personalised to Tranmere?	***POWERFUL KNOWLEDGE:*** ***OUR CHILDREN WILL KNOW THAT:*** *S1* - In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. *S2* - The weather also changes with the seasons. In the UK, it is usually colder and rainier in Winter and hotter and dryer in the Summer. *S3* - The change in weather causes many other changes; some examples are numbers of minibeasts found outside, seed and plant growth, leaves on trees on the school grounds e.g. sycamore and horse chestnut, and type of clothes worn by people. ***COMMON MISCONCEPTIONS*** Some children may think: • it always snows in winter • it is always sunny in the summer • there are only flowers in spring and summer • it rains most in the winter • there are only showers in April. ***HOW DOES THIS LOOK AT TRANMERE?*** 1. Elicitation (September) ***Today we are going to be phenologists.*** What do you know about the seasons? Complete a drawing/note comments about the four seasons. 2. In Aut 1, Spr 1 and Sum 1, children to go on a 'welly walk' to the same place (using the school banks and trees), observe a deciduous and an evergreen tree. Look at the signs of the season and make collections (see below for detail) Identify and take photos of each tree and the signs of the season. 3. Children will observe the weather and use this to create part of the display back in class. They will explore, is the weather the same every day? 4. Back in class, explore and discuss collections and scribe comments. 5. Plot the changes using the photographs of a deciduous tree and an evergreen tree on a seasonal display – use photos of the walk, collections and data. You might observe: Autumn - falling leaves, seeds, fruits, changing colours, dew on grass, temperature, mini beasts, temperature, clothing Winter – bare trees, hard ground, lack of plants, temperature (ice/snow), clothing Spring – buds on trees, new growth, blossom, bird song, grass, warmth, temperature, clothing Summer –full trees, colours, mini beasts, wild flowers, temperature, clothing 6. Children will ask questions about what they have seen and see if any of these can be answered using further enquiry. (Is the weather the same?) 7. At the end of school year: revisit initial elicitation to add new observations or create new drawings/descriptions/comparisons/weather charts of four seasons.	***POWERFUL KNOWLEDGE:*** ***OUR CHILDREN WILL KNOW THAT:*** *S4* - Animals vary in many ways having different structures e.g. wings, tails, ears etc. They also have different skin coverings e.g. scales, feathers, hair. These key features can be used to identify them. *S5* - Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. *Names of animals experienced first-hand from each vertebrate group *S6* - Humans have key parts (head, neck, arms, elbows, legs, knees, face, ears, hair, mouth, teeth) in common, but these vary from person to person. *S7* - Humans (and other animals) find out about the world using their senses. There are five senses - sight, touch, taste, hearing and smelling. These senses are linked to parts of the body (eyes, skin, tongue, ears, nose) *S8* – Animals can be categorised by characteristics (fish, bird, etc) . N.B. The children need to be able to name and identify a range of animals in each group e.g. name specific birds and fish. ***COMMON MISCONCEPTIONS*** Some children may think: • only four-legged mammals, such as pets, are animals • humans are not animals • insects are not animals • all 'bugs' or 'creepy crawlies', such as spiders, are part of the insect group • amphibians and reptiles are the same. ***HOW DOES THIS LOOK AT TRANMERE?*** 1. Children will make first-hand, close observations of animals from each of the groups, comparing two animals from the same or different groups. 2. Children will classify animals using a range of features (including feathers for birds, scales and gills for fish, scales and cold blood for reptiles) and identify animals by matching them to named images. 3. Give children a small selection of pictures or plastic toys of different animals from all of the main vertebrate groups (ensure that these represent a true image of the animal). Children to identify and classify into fish, amphibian, reptile, bird and mammal and explain why they belong to that group. Prompt children to name animals and discuss their choices. Using a prepared chart or labels, children sort under the headings fish, amphibian, reptile, bird and mammal. Either take photo of classifying or stick pictures onto template. Using mammals only, identify one example that is a carnivore (cat), an herbivore (rabbit) and an omnivore (human). *This activity can be completed as an elicitation activity at the start of the topic, then repeated to assess the progression of children's learning.* 4. Children will also classify animals according to what they eat. 5. They will make first-hand close observations of parts of the body e.g. hands, eyes, and compare more than two people. Comparisons could include: height, hand span, eye colour, tongue rolling, ear lobes, hitch-hikers thumb. 6. Children will compare parts of their body and take measurements of them, and will investigate, looking for patterns between people e.g. Do people with big hands have big feet? 7. Children may investigate human senses e.g. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match?	***POWERFUL KNOWLEDGE:*** ***OUR CHILDREN WILL KNOW THAT:*** *S9* - Growing locally there will be a vast array of plants which all have specific names. e.g. daisy, buttercup, dandelion, forget-me-not, bluebell, daffodil, lily of the valley, cow parsley, foxglove, rose. *S10* - These can be identified by looking at the key characteristics of the plant. *S11* - Plants have common parts (e.g. leaves, stem, roots) but they vary between the different types of plants. *S12* - Some trees keep their leaves all year (evergreen) whilst other trees drop their leaves (deciduous) during autumn and grow them again during spring. ***COMMON MISCONCEPTIONS*** Some children may think: • plants are flowering plants grown in pots with coloured petals, leaves and a stem • trees are not plants • all leaves are green • all stems are green • a trunk is not a stem • blossom is not a flower. ***HOW DOES THIS LOOK AT TRANMERE?*** 1. Children make close observations of leaves, seeds, flowers etc, comparing two leaves, seeds, flowers etc. E.g. the leaves from a horse chestnut and a sycamore, and the flowers of a daisy and buttercup. 2. Children will classify leaves, seeds, flowers etc. using a range of characteristics (e.g. leaf shape, flower or petal colour and shape, seed type and shape) and identify plants by matching them to named images. They will use ID guides to support this. 3. ***Today we will be botanists***. Children will go on a 'welly walk' in school grounds to collect leaves (with clear instructions about where they can go and what they are allowed to collect/pick e.g. try to collect fallen leaves, do not over-pick from one plant, warn to look for prickles and stinging nettles etc – check with an adult if unsure). Use magnifiers to look closely at the leaves and ask pairs to discuss what is the same/what is different. Draw a diagram of one of the leaves using observational skills **(Art link).** 4. As part of this 'welly walk', children will collect weeds. Back in class, children to explore the plants using magnifying glasses, rulers. Using post-it notes ask the children to write labels to identify the basic structure of a plant (leaf, stem, root, flower, petal). 4. Children will make observations of how plants change over a period of time – in Spring 1 and 2. They will observe the emergence of bluebells and daffodils in Spring 1, and then track what happens to these plants. E.g. leaves growing, flowers appearing, petals falling off.	***POWERFUL KNOWLEDGE:*** ***OUR CHILDREN WILL KNOW THAT:*** *S13* - Animals including humans have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults. The young of some animals do not look like their parents e.g. tadpoles. *S14* - All animals including humans have basic needs of feeding, drinking and breathing that must be satisfied to survive, and to grow into healthy adult they also need the right amounts and types of food (carbohydrates, proteins etc) and exercise. *S15* - Good hygiene is also important in preventing infections and illnesses. ***COMMON MISCONCEPTIONS*** Some children may think: • an animal's habitat is like its 'home' • all animals that live in the sea are fish • respiration is breathing • breathing is respiration. ***HOW DOES THIS LOOK AT TRANMERE?*** 1. Children will ask questions and use secondary sources to find out about the life cycles of some animals. This might include asking farmers, animal handlers, zoologists etc. as visitors into school. **(Book visitor)** Alternatively utilise Farmer Time to link with a farmer https://leafuk.org/farmertime/home 2. Children will observe animals growing over a period of time e.g. chicks, caterpillars or tadpoles. 3. Children will, for homework, ask questions of a parent about how they look after their baby and/or ask pet owners questions about how they look after their pet. 4. Children will explore the effect of exercise on their bodies (PE link), observing how their heart rate changes and any other physical changes that occur (sweating, warm etc.) 5. Children will investigate how humans grow by investigating handspans, and whether older children have bigger hands. Ask the children to compare the size of their hand with that of another child. As a class create a list of questions e.g. Do older children have bigger hands? Do taller children have bigger hands? Can bigger hands pick up more cubes? ('Handspan grab' can create a graph of cubes). Discuss how hand spans could be measured and agree as a class (e.g. draw around hands, spread/closed fingers, start and end place of measurement, to nearest centimetre). With a partner to help, ask each child to measure their own hand. Record results together as a class. Ask the children to compare hand spans and suggest reasons answers to the class questions. 6. Children will classify food in a range of ways, including using the Eatwell Guide **(DT/PSHE Link).** Investigate the question: 'Is all food good for us?' and classify foods accordingly. 7. Children will investigate washing hands and why hygiene is so important in staying healthy. This will be done using glitter gel or UV gel and a UV light.
Enquiry and Working Scientifically	**OBSERVATION OVER TIME** **Working Scientifically Skills:** Observing closely Asking simple questions and recognising that they can be answered in different ways Gathering and recording data to help in answering questions	**GROUPING, IDENTIFYING AND CLASSIFYING/ PATTERN SEEKING** **Working Scientifically Skills:** Identifying and classifying Using simple equipment to measure **(Maths Link)** Using their observations and ideas to suggest answers to questions.	**GROUPING, IDENTIFYING AND CLASSIFYING** **Working Scientifically Skills:** Identifying and classifying Observing closely using simple equipment	**RESEARCH USING SECONDARY SOURCES/PATTERN SEEKING** **Working Scientifically Skills:** Asking simple questions and recognising that they can be answered in different ways. Using their observations and ideas to suggest answers to questions. Identifying and classifying