KNOWLEDGE OVERVIEW GRID

	Subject: Science				Year Group: 2	
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Animals incl. humans (Offspring and lifecycles)	**Everyday Materials**	**Animals incl. Humans** (Health and hygiene)	**Plants** (Light and Dark)	**Plants/Living Things** (Growing/Observing)	**Living Things**
NC Objectives Covered (Taken directly from the National Curriculum) Red= substantive knowledge Blue= disciplinary knowledge)	• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	•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.	• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	•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.	•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. For Living Things objectives see Su 2.	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food
Working Scientifically- disciplinary (Taken from the PLAN materials/NC)	•Observing closely, using simple equipment •Asking simple questions and recognising that they can be answered in different ways	•Performing simple tests •Identifying and classifying •Using their observations and ideas to suggest answers to questions •Asking simple questions and recognising that they can be answered in different ways	• Performing simple tests • Identifying and classifying • Gathering and recording data to help in answering questions • Asking simple questions and recognising that they can be answered in different ways	•Observing closely, using simple equipment • Performing simple tests • Identifying and classifying • Gathering and recording data to help in answering questions • Using their observations and ideas to suggest answers to questions • Asking simple questions and recognising that they can be answered in different ways	• Observing closely, using simple equipment • Gathering and recording data to help in answering questions •Identifying and classifying • Asking simple questions and recognising that they can be answered in different ways	• Observing closely, using simple equipment • Identifying and classifying • Gathering and recording data to help in answering questions • Asking simple questions and recognising that they can be answered in different Ways • Using their observations and ideas to suggest answers to questions
Previous Knowledge -What have children learnt previously that will support this next step?	In EYFS, children will have explored similarities and differences in relation to living things. They will have made observations of animals. In Year 1 children will have learnt: • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	In Year 1 children will have learnt: • 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	In Year 1 children will have learnt: - identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	In Year 1 children will have learnt: • 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	In Year 1 children will have learnt: • 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	In Year 1 children will have learnt: •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. •Identify and name a variety of common animals that are carnivores, herbivores and omnivores. •Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Observe changes across the four seasons.

Misconceptions **-What are the common misconceptions in knowledge for this unit?**	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.	Some children may think: •only fabrics are materials •only building materials are materials •only writing materials are materials •the word rock describes an object rather than a material •solid is another word for hard.	Some children may think: •respiration is breathing •breathing is respiration	. Some children may think: •plants are not alive as they cannot be seen to move •seeds are not alive •all plants start out as seeds •seeds and bulbs need sunlight to germinate	Some children may think: •plants are not alive as they cannot be seen to move •seeds are not alive •all plants start out as seeds •seeds and bulbs need sunlight to germinate	Some children may think: •an animal's habitat is like its 'home' •plants and seeds are not alive as they cannot be seen to move •fire is living •arrows in a food chain mean 'eats'.
Learning Sequence **-Detail the learning sequence using key questions in an ordered sequence.** **-The questions should have a sequential build up to answer the overall learning challenge.**	1. Can I find out what humans need to survive? 2. Can I make observations about how human offspring grow and change? 3. Can I observe the changes of animal offspring over time? 4. Can I research and identify the offspring of different animals? 5. Can I recognise the needs of animals to survive? 6. Can I describe the lifecycle of an animal? 7. Can I research how to look after a pet?	1. Can I classify a range of different materials and identify which materials objects are made of? 2. Can I identify and explain the suitability of different materials for different purposes? 3. Can I investigate whether a material is waterproof or not? 4. Can I investigate how stretchy a material is? 5. Can I understand whether a material is opaque, translucent or transparent? 6. Can I explore how materials can change shape? 7. Can I research suitable materials to meet a design brief? Garden - Can I plant winter bulbs?	1. Can I describe the importance of hygiene? 2. Can I explain the importance of handwashing to stop the spread of germs? 3. Can I classify food into food groups? 4. Can I make a meal and identify the different food groups used? 5. Can I investigate the effect of exercise on the human body? 6. Can I present my findings about the importance of exercise and a balanced diet?	1. Can I classify seeds and bulbs? 2. Can I make observational drawings of seeds and bulbs? 3. Can I investigate the conditions which seeds need to grow and stay healthy? 4. Can I make observations of our seeds and their growth? 5. Can I use results from my investigation to explain what a plant needs to grow and be healthy? 6. Can I research which plants grow at different times of the year? 1.Can I classify seeds and bulbs? 2.Can I investigate the conditions which seeds need to grow and stay healthy? 3.Can I make observations of our seeds and their growth? 4.Can I research which plants grow at different times of the year? 5.Can I use results from my investigation to explain what a plant needs to grow and be healthy?	1. Can research how to sow seeds to grow vegetables? 2. Can I make observations of plants in the wildlife garden and what their different needs might be? 3. Can I explain the similarities differences between seeds and bulbs? 4. Can I identify animals in the wildlife garden? 5. Can I find out about an animal and its habitat? 6. Can I investigate the number of animals living in a habitat in our wildlife garden?	1. Can I identify things that are living, dead and never alive? 2. Can I classify things that are living, dead and never alive? 3. Can I investigate preferred living conditions for a minibeast? 4. Can I research different habitats and the animals that live there? 5. Can I research and create food chains? 6. Can I identify animals, plants and habitats within our wildlife garden? 7. Can I investigate the number of animals living in a habitat in our wildlife garden?
Curriculum End Points **-What will children know and be able to do by the end of the unit?** **-What will the children produce to demonstrate this knowledge?**	Children to be able to describe the lifecycle of a caterpillar through observations in class and link this to 'offspring to adult'. Children to choose a pet to research and identify their key needs to be able to survive.	Children will design and create an item to meet a design brief. The brief will require different material properties that the children have previously investigated. They will be able to explain their material choices and their suitability. (Link to a suitable story text).	Children to present the findings of their research and investigations to explain what a balanced diet is and the importance of exercise.	Children will revisit their bulbs planted in Au 2 to make observations. Children will write up a sunflower plant diary over a period of time and they will be able to share their observations and write up the results of their observations of what they think a plant needs to grow and be healthy. Children will be able to explain how different plants they have planted need to be planted at different times of the year. They will sow different seeds in Su 1.	Children will use the knowledge gathered in the previous half term to sow seeds in the vegetable patch. They will revisit plants previously planted to make observations about how healthy their plants are and discuss what they can do to look after them. Children will harvest vegetables when ready. They will produce a piece of work to showcase what they have learnt about seeds and bulbs and make it relevant our school garden and what they have grown. Children will revisit the wildlife garden and identify plants previously learnt about in Year 1.	Children will by the end of the topic be able to identify a range of small animals and minibeasts that live in our school wildlife garden. They will be able to talk about which habitats they live in and identify some relevant plants. They will also develop their data handling skills and conduct two surveys through the topic for number of minibeasts in a habitat and looks for differences between the investigations. They will produce tables and pictograms.

Knowledge Sentences **-Using the end points, what are the key statements children need to remember by the end of the unit?** **(I know that…)** **(To share with children when it is taught during the unit)**	1. I know that humans have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. 2. I know that humans have offspring which grow into adults. 3. I know that with 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. caterpillars. 4. I know that in humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. I know that some animals lay eggs and also that some offspring do not look like their parents. 5. I know that animals have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. 6. I know the stages of the lifecycle of a butterfly. It starts with egg, then larvae, pupa and finally a butterfly. 7. I know have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. (Research specific animal).	1. I know that objects can be made of different materials like metal, plastic, glass, wood, paper. I know that materials can be described as hard, soft, rough, smooth, rigid, flexible. 2. I know that all objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. 3. I know that waterproof materials will not let water through/absorb water. I know that materials like glass, plastic and metal are waterproof. 4. I know that some materials are flexible and can stretch whereas other materials are solid and rigid. 5. I know that materials that are: - opaque block out the light - translucent let some light through - transparent let all light through (see-through) 6. I know that objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. 7. I know that all objects are made of one or more materials that are chosen specifically because they have suitable properties for the task.	1. I know that good hygiene is important for preventing infections and illnesses. 2. I know that handwashing will help to stop the spread of germs. 3. I know the main food groups: meat, fish, bread, pasta, dairy, fruit and vegetables. 4. I know that it is important to have a balance of all the different food groups to be healthy. 5. I know that I need to do exercise to help my body healthy. 6. I know that to be a healthy adult they also need the right amounts and types of food and exercise.	1. I know that plants may grow from either seeds or bulbs. 2. I know that bulbs and seeds then germinate and grow into seedlings which then continue to grow into mature plants. 3, 4, 5 – I know that plants need water, light and suitable temperature to grow. I know some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy. I know seeds can grow in the dark but that seedlings need light to grow healthily. 6 - I know that seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates.	1. I know that seeds need warmth and water to grow and that seedlings grow healthily with sunlight. 2. I know some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy. 3. I know that bulbs and seeds will produce plants. I know that these mature plants may have flowers which then develop into seeds, berries, fruits etc. I know that bulbs will regrow each year and that plants from seed will need to disperse their seeds to make new plants. 4. I know that animals and plants live in a habitat to which they are suited. 5. I know the habitat provides the basic needs of the animals and plants – shelter, food and water. 6. I know that within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves and different numbers of minibeasts can be found here.	1/2. I know all objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers. I know an object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive. 3. I know micro-habitats have different conditions e.g. light or dark, damp or dry. 4. I know that animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. 5. I know that the way that animals obtain their food from plants and other animals can be shown in a food chain. 6. I know that in our wildlife garden that animals live in/under hedgerows, log piles, stones, the pond and trees. 7. I know that within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves and different numbers of minibeasts can be found here.
Key Vocabulary **(To share with children and add to working walls/knowledge mats)**	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly),	Names of materials –wood, metal, plastic, glass, brick, rock, paper, cardboard. Properties of materials –as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)	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. Plus: light, shade, sun, warm, cool, water, grow, healthy, germination, bulb.	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. Plus: light, shade, sun, warm, cool, water, grow, healthy, germination, bulb.	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed Names of local habitats e.g. pond, woodland etc. Names of micro-habitats e.g. under logs, in bushes etc.
What does this look like at Bramhope?	**Enrichment Activities (trips, residentials, speakers, SMSC)**	Caterpillars/Butterfly net to observe in classroom				Wildlife garden RHS Harlow Carr Workshop	RHS Harlow Carr Workshop (either Su1 or 2).
	Physical Resources	Caterpillars / butterfly nets	Collect a range of materials for sorting/classifying Materials needed for investigations Materials to recycle	Ingredients for making a pizza. Glitter gel to demonstrate spreading germs. Stop watches Clipboards	Sunflower seeds Pots and gardening equipment Clipboards and outdoor observation equipment	Seeds to plant summer growing vegetables e.g. lettuce and radish Clipboards and outdoor observation equipment Watering cans and gardening equipment	Clipboards and outdoor observation equipment

			Winter bulbs to plant				
	Cross Curricular learning (Include opportunities for writing and quality texts)	Texts – Tad A tadpole's promise The butterfly is patient The very hungry caterpillar Monkey puzzle	Art – exploring crayon and water colours – how the crayon makes the paper waterproof. Texts – Michael Recycle meets Litter Bug Doug Somebody swallowed Stanley Lost and Found – Oliver Jeffers	PE – exercise investigation	Texts – A seed is sleepy Ten seeds Bloom by Anne Booth From seed to sunflower The Secret Sky Garden The amazing lifecycle of plants	Texts – A seed is sleepy Ten seeds Bloom by Anne Booth From seed to sunflower The Secret Sky Garden The amazing lifecycle of plants	Texts – The big book of bugs Bonkers about beetles Mad about minibeasts Fanatical about frogs A seed is sleepy Ten seeds Bloom by Anne Booth From seed to sunflower The Secret Skygarden The amazing lifecycle of plants
	Local Learning including outdoor learning **(Choose as appropriate)**	Butterfly garden/caterpillars	Pupils talk about objects in the playground or local environment and identify the materials they are made from and how this makes them appropriate for use outside. Start activity indoors to identify materials then outdoors pupils may notice less different types of materials as they need to be suitable for purpose outdoors e.g. waterproof. Pupils to build something outside that needs to be waterproof and choose suitable materials (cross-curricular link for the object that needs to be waterproof). Pupils could then test this on a larger scale in the wildlife garden by building a shelter which needs to be waterproof.		Pupils plant a range of seeds and bulbs at the correct time of year. Use vegetable beds and other flower beds identified in wildlife garden. Pupils observe and take measurements of the growth of the plants from the seeds and bulbs planted. The pupils gather seeds for future pupils to plant and observe/sketch/discuss the seeds they have collected. Pupils follow the instructions to plant the seeds and bulbs correctly e.g. correct spacing, depth, suitable amount of light, inside or outside. Pupils could plant sunflower seeds to investigate growing conditions. Place plants in different conditions and locations around school grounds. The pupils observe and water the plants to encourage them to grow and stay healthy.	Pupils plant a range of seeds and bulbs at the correct time of year. Use vegetable beds and other flower beds identified in wildlife garden. Pupils observe and take measurements of the growth of the plants from the seeds and bulbs planted. The pupils gather seeds for future pupils to plant and observe/sketch/discuss the seeds they have collected. Pupils follow the instructions to plant the seeds and bulbs correctly e.g. correct spacing, depth, suitable amount of light, inside or outside. Pupils could plant sunflower seeds to investigate growing conditions. Place plants in different conditions and locations around school grounds. The pupils observe and water the plants to encourage them to grow and stay healthy.	Pupils explore the playground or local environment to find/collect things that are living, dead and never been alive. Take photos and pupils annotate and make comparisons between the objects found. Pupils talk about how the livings things in the playground or local environment are suited to the habitat in which they found them including bug hotel, under logs, in the pond, in the hedgerow etc. Pupils to create habitats/bug hotels to show understanding of habitats/conditions for minibeasts. Pupils to collect data about the living things found in the wildlife and link to maths. Pupils identify what the animals they found in the playground or local environment eat and how the habitat provides shelter. Pupils use identification charts to name plants and animals found in the playground or local environment. Pupils to go on minibeast hunt in wildlife garden in summer months and discuss their findings. Collect minibeasts by placing sheet under a tree and shaking tree then use pooters for closer look. Pupils name plants and animals found in micro-habitats such as in the pond, under a log, in a bush or in the soil. Take out iPads to research animals/plants found. (PI@ntnet app for identifying plants).
	Opportunities for cultural Diversity						