South Gosforth First School – Science

Long Term Planning – Year 2

Term:	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Science Curriculum Area	**Living Things and their Habitats**		**Uses of Everyday Materials**	**Animals Including Humans**	**Plants**	
Science Topic – Enquiry Question Title	Why do different animals live in different places? 		How do we choose the best material? 	Do living things change or stay the same? 	What should I do to grow a healthy plant? 	
National Curriculum Objectives	• 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.		• 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.	• 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) • 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.	
Key Learning	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 (This is a simplification but appropriate for Year 2 children) An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been		All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example: a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds	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	Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. These mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of the year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade.	

	alive (again ignoring that plastics are made from fossil fuels) 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. The habitat provides the basic needs of the animals and plants – shelter, food and water. 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. These conditions affect which plants and animals live there. The plants and animals in a habitat depend on each other for food and shelter etc. The way that animals obtain their food from plants and other animals in a food chain.	the water. When choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities. A material can be suitable for different purposes and an object can be made of different materials. Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness.	to young or other stages which then grow to adults. The young of some animals do not look like their parents e.g. tadpoles. All animals, including humans, have the basic needs of feeding, drinking and breathing that must satisfied in order to survive. To grow into healthy adults, they also need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses.	Plants also need different amounts of water and space to grow well and stay healthy.
Key Enquiry Questions	**Observing Over Time:** What conditions do woodlice prefer to live in? **Pattern Seeking:** Which habitat do worms prefer – where can we find the most worms? **Research:** How does the habitat of the artic compare to the habitat of the rainforest? **Identifying & Classifying:** How would you group things to show which are living, dead or have never been alive? **Comparative Test:** N/A **Fair Test:** N/A	**Observing Over Time:** Would a paper boat float forever? **Pattern Seeking:** N/A **Research:** How are plastics made? **Identifying & Classifying:** Which material is the stretchiest? **Comparative Test:** Which paper would be the strongest for a paper bridge? **Fair Test:** N/A	**Observing Over Time:** How does a tadpole change over time? **Pattern Seeking:** Which age group of children wash their hands the most in a day? **Research:** N/A **Identifying & Classifying:** Which offspring belongs to which animal? **Comparative Test**: Do bananas make us run faster? **Fair Test:** N/A	**Observing Over Time:** What happens to my sunflower seed after I planted it? **Pattern Seeking:** Do bigger seeds grow into bigger plants? **Research:** How can we identify the trees that we observed on our tree hunt? **Identifying & Classifying:** N/A **Comparative Test:** Do cress seeds grow quicker inside or outside? **Fair Test:** N/A

Suggested Activities & Broken Down Content	• Dead or alive! – look at a live spider, a dead spider and a toy spider. What are some of the differences between the live spider and the dead one? and the dead spider and the toy one? How can we work out what's alive and not alive? Is it sometimes difficult to tell? Armed with all these questions, go outside and collect something alive, something dead and something that was never alive. Sort these specimens into three categories. • Classify objects found in the local environment. • Microhabitats – explore the school grounds on the hunt for microhabitats. Zoom in on the tiny world of these habitats and draw or photograph what is going on there. Consider and draw conclusions about what lives in these microhabitats and why. • Describe the features of a habitat that are suitable for woodlouse growth. • Investigate which habitat worms prefer – where can we find the most worms. • Designing a bug hotel – drawing on your knowledge of habitats, design a bug hotel! Incorporate many different microhabitats to encourage a variety of guests. • Making a bug hotel – using the group designs, build a bug hotel in the school grounds. Create microhabitats layers using found materials; for example, sticks, leaves, tubes, moss. • Research to compare two different habitats. • Create simple food chains for a familiar local habitat from first-hand observation and research. • Create simple food chains from information given e.g. in picture books (Gruffalo etc.) • Food chains – role play food chains in the hall. Understand that, in a healthy habitat, all living things depend on each other in different ways. • Food chain game – think about some simple food chains and make a food chain using laminated cards and string. Challenge each other to string them up in the right order.	• Examine and investigate different materials. • Which fabric is the stretchiest? – consider different fabrics and what they could be used for. Devise an investigation to test the elasticity of the fabric and record the results. • Testing rigidity – examine a selection of different materials and explore their rigidity by devising an investigation to test them. Why is it important that some materials bend and flex? • Explore how paper changes when left in water. • Which is the strongest paper? – explore a selection of paper and predict the strongest one. Test the papers using weights and record results. • Paper bridges – using your knowledge of paper strength and rigidity, build a paper bridge strong enough to hold a toy car. • Make suggestions about alternative materials for a purpose that are both suitable and unsuitable. Could you make a chair out of chocolate? • Design a box to keep an egg safe.	• Hatching eggs! – using magnifying glasses, closely observe feathers and eggs and draw what you see. Consider the question: what do you think is inside an egg? Look after an incubator in the classroom and observe what happens to the eggs! • Babies! – invite visitors in who are pregnant or have very young children. Gather information by careful questioning. Make a timeline using photographs or cut out pictures of babies, young children, adults and elderly people. • Ask people questions and use secondary sources to find out about the life cycles of some animals. • Match animals to their offspring. • Sort and group the needs of a human baby. • Observe tadpoles as they grow. • Explore the effect of exercise on their bodies. • Investigate washing hands, using glitter gel. • Understand the importance of hygiene for humans.	• Make close observations of seeds and bulbs. • Classify seeds and bulbs. • Make comparisons between plants as they grow. • Compare the growth of different sized seeds. • Hydroponics in the classroom – talk about what bulbs need to grow into healthy plants. Plant peas in bags of water and watch them grow. • Growing cress – think about the conditions for healthy plant growth and plant your own cress seeds. Record their growth. How long will it take for them to be long enough to eat? Do they grow quicker inside or outside? • How has the seed grown? – record the growth of the seed and look at how it has developed over the last few weeks. Can you recreate the plant with craft materials? Can you label the parts of the plant? • Know that plants need water, light and a suitable temperature to survive.

		• Investigate how materials can be shaped. • Research how plastics are made. • Identify a new use for a material.	• Investigate how germs are spread through contact. • Write a set of instructions for how to wash your hands. • Choose a physical activity and evaluate the impact on their bodies. • Examine if certain foods increase our running pace. • Classify food in a range of ways, including using the Eatwell Guide. • Look at lots of different lunch box foods and discuss which ones are healthy by checking the sugar and fat contents on the packaging. • Pack a healthy picnic! – invite another class to join you on a healthy picnic in the school grounds. Make healthy snacks before you set off and share all that you have learned about what makes a well-balanced healthy lunch box.	
Prior Learning & Understanding – 'Why here, why now?'	Year 1 objectives: • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles,	Year 1 objectives: • Distinguish between an object and the material from which it is made. (Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass,	Year 1 objectives: • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Animals including humans) • Identify, name, draw and label the basic	Year 1 objectives: • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Plants) Plants in Year 2 will build upon what the children learned in Year 1. The children will use their

	birds and mammals. (Animals including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Animals including humans) • Observe changes across the four seasons. (Seasonal changes) Living things and their habitat topic will build upon what the children learned in Year 1. The children use their knowledge of identifying common plants and animals and their structure to now being able to explore and compare the differences between living, dead and things that were never alive. The children will use their knowledge of animals to be able to identify that most living things live in habitats to which they are suited. The children will be able to describe how the animals they have learned are able to obtain their food from plants and other animals using the idea of a food chain. This topic is a stepping stone to learn about: • Living things and their habitats in Year 4. The children will recognise that living things can be grouped in a variety of ways. They will explore and use classification keys to help them group, identify and name a variety of living things in the local and wider environment. They will recognise that environments can change and that this can sometimes pose dangers to living things. • Animals including humans in Year 4. The children will construct and interpret a variety of food chains, identifying producers, predators and prey.	metal, water and rock. (Everyday materials) • Describe the simple physical properties of a variety of everyday materials. (Everyday materials) • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Everyday materials) Uses of Everyday materials will build upon what the children learned in Year 1. The children use their knowledge of naming everyday materials to now being able to compare the suitability of everyday materials. They will use their knowledge of describing simple physical properties to now being able to change shapes by squashing, bending, twisting and stretching. This topic is a stepping stone to learn about: • Rocks in Year 3. The children will compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Forces and magnets in Year 3. The children notice that some forces need contact between two objects, but magnetic forces can act at a distance.	parts of the human body and say which part of the body is associated with each sense. (Animals, including humans) Animals including humans in Year 2 will build upon what the children learned in Year 1. The children will use their knowledge of naming common animals to now being able to notice that animals including humans have offspring which grow into adults. They will use their knowledge of animals to be able to describe their basic needs and the importance of exercise, eating the right amounts of different types of food and hygiene. This topic is a stepping stone to learn about: • Animals including humans in Year 3. The children 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. • Living things and their habitats in Year 5. The children will describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	knowledge of naming common plants to being able to describe how seeds and bulbs grow into mature plants. They will use their knowledge of describing the basic structure of a plant to now being able to describe how they need water, light and a suitable temperature to grow and stay healthy. This topic is a stepping stone to learn about: • Plants in Year 3. The children will identify and describe the functions of different parts of flowering plants – roots, stem / trunk, leaves and flowers. They explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant. They investigate the way in which water is transported within plants. They explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

		• Properties and changes of materials in Year 5. The children compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. Children will give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	They will describe the life process of reproduction in some plants and animals. • Animals, including humans in Year 6. The children will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	
Common Misconceptions	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'	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: • 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: • 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
Enhancements, Enrichment & 'Hooks' (Linked to 'Intent')	• Investigate the features of a habitat that are suitable for woodlouse growth. • Investigate which habitat worms prefer – where can we find the most worms? • Making a bug hotel – build a bug hotel in the school grounds. • Research world habitats and create own non-fiction book using book creator to present findings. • Parent Workshop – make a shoebox habitat.	• Investigate which material id the stretchiest. • Investigate which paper would be the strongest to make a paper bridge? • Present your findings of the paper bridge investigation to the class. • Make a paper boat and explore how paper	• Observe tadpoles as they grow. • Make a presentation of their life so far using photographs to show how they have changed. • Investigate if certain foods increase our running pace. • Make healthy food.	• Go on a tree hunt around our school grounds. • Investigate if bigger seeds grow into bigger plants. • Plant peas in bags of water and watch them grow. • Grow cress – think about the conditions for healthy plant growth and plant your own cress seeds. Record their growth. How long will it take for them to be long enough to eat? Do they grow quicker inside or outside?

		changes when left in water.		
Key Vocabulary	• 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.	• 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. • Waterproof, absorbent • Recycle	• Offspring, reproduction, growth, child, young/old stages (examples – chick / hen, baby / child / adult, caterpillar / butterfly), frogspawn, tadpole, flock, generation • Exercise, heartbeat, breathing, active, perspire • Hygiene, germs, disease, allergy • Food types (examples – meat, fish, vegetables, bread, rice, pasta), vitamins, portion, balanced,	• Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, warmth, evergreen, deciduous • Names of trees in the local area. • Names of garden and wild flowering plants in the local area. • light, shade, sun, warm, cool, water, grow, healthy • Germinate, require, stunted, dormant, shade, condition, moist, produce
Pupil Outcomes & Evidence	**Knowledge based Evidence:**	**Knowledge based Evidence:**	**Knowledge based Evidence:**	**Knowledge based Evidence:**
	By the end of the topic the children: • Can find a range of items outside that are living, dead and never lived. • Can name a range of animals and plants that live in a habitat and micro-habitats that they have studied. • Can talk about how the features of these animals and plants make them suitable to the habitat. • Can talk about what the animals eat in a habitat and how the plants provide shelter for them. • Can construct a food chain that starts with a plant and has the arrows pointing in the correct direction.	By the end of the topic the children: • Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use. • Can label a picture or diagram of an object made from different materials. • For a given object can identify what properties a suitable material needs to have. • Whilst changing the shape of an object can	By the end of the topic the children: • Can describe how animals, including humans, have offspring which grow into adults, using the appropriate names for the stages. • Can state the basic needs of animals, including humans, for survival. • Can state the importance for humans of exercise, eating the right amounts of different types of food and hygiene.	By the end of the topic the children: • Can describe how plants that they have grown from seeds and bulbs have developed over time. • Can identify plants that grew well in different conditions.

		describe the action used. • Can use the words flexible and / or stretchy to describe materials that can be changed in shape and stiff and / or rigid for those that cannot. • Can recognise that a material may come in different forms which have different properties.	• Can name foods in each section of the Eatwell Guide.	
	Scientific Enquiry Evidence:	**Scientific Enquiry Evidence:**	**Scientific Enquiry Evidence:**	**Scientific Enquiry Evidence:**
	By the end of the topic the children: • Can sort living, dead and never lived. • Can give key features that mean the animal or plant is suited to its micro-habitat. • Using a food chain can explain what animals eat. • Can explain in simple terms what an animal or plant is suited to a habitat e.g. the caterpillar cannot live under the soil like a worm as it needs fresh leaves to eat; the seaweed we found on the beach cannot live in our pond because it is not salty.	By the end of the topic the children: • Can sort materials using a range of properties. • Can explain using the key properties why a material is suitable or not suitable for a purpose. • Can begin to choose an appropriate method for testing a material for a particular property. • Can use their test evidence to select appropriate material for a purpose e.g. which material is the best for a rain coat?	By the end of the topic the children: • Can describe, including using diagrams, the life cycle of some animals, including humans and their growth to adults e.g. by creating a life cycle book for a younger child. • Can measure / observe how animals, including humans grow. • Show what they know about looking after a baby/animal by creating a parenting / pet owners' guide. • Explain how development and health might be affected by differing conditions and needs being met/not met.	By the end of the topic the children: • Can spot similarities and difference between bulbs and seeds. • Can nurture seeds and bulbs into mature plants identifying the different requirements of different plants.
Enquiry Path				

Basic	• Observe and list the key features of things that are living, dead and that have never been alive. • Describe things as living, dead or never been alive. • Observe animals/plants in their natural habitats. • Match the animal/plant to its habitat. • Describe why the animal/plant is suited to its environment. • Match common animals/plants to their habitats. • What does a (name of animal) like to eat? (name) • Draw a food chain that ends with a sparrow hawk. • Name sources of food.	• List different uses for everyday materials. • List reasons for the suitability of materials for particular uses. • Observe and describe changes to the shape of solid objects when they are squashed, bent, twisted or stretched?	• Name the offspring of animals and humans (e.g. babies for humans, puppies for dogs) • Match the offspring to the adult. • List the basic needs of animals, including humans, for survival. • Describe a healthy diet. • Describe a healthy lifestyle. • Observe and describe the effect of exercise.	• Describe the growth of seeds and bulbs. • What do plants need to stay healthy? (describe, list)
Advancing	• Organise things of your choice into groups: living, dead and never been alive. • Categorise animals/plants according to the conditions they require. • Explain your categories. • Explain why a habitat for a particular plant or animal is suitable. • Explain the differences in a food chain from a herbivore and a carnivore.	• Compare and contrast the properties of materials and use this to explain why certain materials are used for particular purposes. • Experiment with changing the shape of solid objects. Organise and summarise your findings.	• Explain the main differences between adult animals and humans and their offspring. • Compare the types of food that different animals require. • Categorise food types and explain why each group is important to humans.	• What are the similarities and differences in the growth of seeds and bulbs? • How could you try to revive these plants? (apply) (Give pupils a dried out plant, one that's been in the fridge, one that's been kept in the dark etc.)
Deep	• Give evidence to show that a glass bottle has never been alive. • Suggest reasons why a cactus may find it difficult to survive in cold, wet conditions. • Create an ideal environment for woodlice and prove that this is a successful habitat. • Design an ideal habitat for a hamster (or other animal) that is kept as a pet. • Create a bottle garden for plants that require warm, dry conditions. • Always, sometimes or never? Food chains end with a carnivore.	• Paper is unsuitable for a model boat. Do you agree or disagree? (reason, justify) • Devise other hypotheses like this and test them. • Always, sometimes or never? The shape of wood can be changed through squashing, bending, twisting or stretching.	• Suggest some ways that an animal's offspring (including humans) are dependent, for some time, on adults.	• What might a scientist need to keep in mind when recording information about the growth of seeds and bulbs? (purpose) • Devise a way of proving that plants need certain conditions for growth.