Science Curriculum Map – Becoming Scientists

Science Curriculum Intent at Ghost Hill	***"Science is the process that takes us from confusion to understanding." – Brian Greene*** At Ghost Hill, we aim to provide our children with progressive skills, knowledge and vocabulary so that they can become confident experimenters, investigators and analysts. We want to develop children who can ask and answer their own questions, develop their own thinking and reasoning skills as well as their scientific knowledge about the world around them. We aim to create 'awe and wonder' moments which ignite children's curiosity, while giving them the skills to discover and explore independently. Supporting children to understand that Science can 'take us from confusion to understanding." This includes allowing children to 'work scientifically' through experiencing and completing science experiments in school.			
Composite *(From National Curriculum)*	**Progression Components (The building blocks to National Curriculum Composites)**			
By the End of KS1 (Y2)	**The Building Blocks of Knowledge in the Early Years Foundation Stage** *In Early Years these building blocks will be observed and provided through rich opportunities in the environment for children to access independently. Science is predominantly observed within physical development and expressive art and design.*		**Year 1**	**Year 2**
Working scientifically *During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:* *1. asking simple questions and recognising that they*	**Nursery** The characters of effective learning from the Statutory Framework for the Early Years Foundation Stage are the foundations on which the working scientifically skills build in KS1. While children are playing and exploring, adults should be modelling, encouraging, and supporting them to do the following: • Show curiosity and ask questions including	**Reception (including ELG)** The characters of effective learning from the Statutory Framework for the Early Years Foundation Stage are the foundations on which the working scientifically skills build in KS1. While children are playing and exploring, adults should be modelling, encouraging, and supporting them to do the following: • Make direct comparisons • Use equipment to measure	**1.** Asking questions and recognising that they can be answered in different ways. (e.g. what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how things happen. Children are involved in planning how to use resources to answer these questions helping them to recognise there are different ways I which questions can be answered)	1. Making observations and taking measurements by observing closely, using simple equipment. 2. Observations support identification, comparison and noticing change using sense supported by equipment such a magnifying glass. They begin to take measurements, initially by comparisons and then using non-standard units. 3. Recording and presenting evidence through **gathering and**

can be answered in different ways *2. observing closely, using simple equipment* *3. performing simple tests* *4. identifying and classifying* *5. using their observations and ideas to suggest answers to questions* *6. gathering and recording data to help in answering questions*	understanding 'why' questions, like: "Why do you think the caterpillar got so fat?" • Make observations using their senses and simple equipment • Record their observations by drawing, taking photographs, using sorting rings or boxes. • Use their observations to help them answer their questions. • Identify, sort and group.	• Record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets. • Talk about what they are doing and have found out. • Identify, sort and group.	2. Engaging in practical enquiry to answer questions through **performing simple tests** and **identifying and classifying.** Using practical resources (objects, materials, living things), pupils can carry out tests to classify, conduct comparative tests, pattern seeking enquiries, and making observations over time, to sort and group using their own criteria. They use simple secondary sources e.g. identification sheets to name and describe.	**recording data to help in answering questions.** Record observations using photographs, videos, drawings, labelled diagrams or in writing. Record measurements using prepared tables, pictograms, tally charts and block graphs. They classify using simple prepared tables and sorting rings. 4. Answering questions and concluding, **using their observations and ideas to suggest answers to questions.** Using experiences of the world around them to suggest appropriate answers to questions and are supported to make links to their evidence e.g. measurements they have taken, observations they have made or information gained from secondary sources. - Evaluating and raising further questions and predictions. - Communicating their findings.
Plants	•Use all their senses in hands-on exploration of natural materials. •Explore collections of materials with similar and/or different properties. •Plant seeds and care for growing plants. •Understand the key features of the life cycle of a plant and an animal.	•Draw information from a simple map with diagrams •Explore the natural world around them •Describe what they see, hear and feel whilst outside. •Recognise some environments that are different to the one in which they live.	•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.	•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. •*Identify and name a variety of plants and animals in their habitats, including microhabitats*

	•Begin to understand the need to respect and care for the natural environment and all living things.	•Understand the effect of changing seasons on the natural world around them		*(Y2 Living Things and their habitats unit).*
Living things and their habitats	•Use all their senses in hands-on exploration of natural materials. •Explore collections of materials with similar and/or different properties. •Begin to understand the need to respect and care for the natural environment and all living things.	•Draw information from a simple map. •Explore the natural world around them. •Describe what they see, hear and feel whilst outside. •Recognise some environments that are different to the one in which they live.	*•Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)* *•Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)* *•Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)* *•Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans)* *•Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)* *•Observe changes across the four seasons. (Y1 - Seasonal change)*	•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 microhabitats. •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. *•Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)*
Animals, including humans	•Use all their senses in hands-on exploration of natural materials. •Begin to make sense of their own life-story and family's history. •Understand the key features of the life cycle of a plant and an animal.	•Talk about members of their immediate family and community. •Name and describe people who are familiar to them. •Recognise some environments that are different to the one in which they live.	•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	•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).

	•Begin to understand the need to respect and care for the natural environment and all living things.		carnivores, herbivores and omnivores. •Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). •Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	•Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. •*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. (Y2 - Living things and their habitats)*
Seasonal Changes	•Understand the key features of the life cycle of a plant and an animal	•Explore the natural world around them. •Describe what they see, hear and feel whilst outside. •Understand the effect of changing seasons on the natural world around them.	•Observe changes across the four seasons. •Observe and describe weather associated with the seasons and how day length varies.	*This is revisited in children's immediate experience of the seasons by being outside and through discussions with teachers regarding this.*
Materials	•Use all their senses in hands-on exploration of natural materials. •Explore collections of materials with similar and/or different properties. •Talk about the differences between materials and changes they notice.	•Explore the natural world around them. •Describe what they see, hear and feel whilst outside.	•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.	•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.


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