Hargrave Park School

We Aim High

SCIENCE CURRICULUM MAP

SKILLS, KNOWLEDGE AND UNDERSTANDING PROGRESSION

YEAR	WORKING SCIENETIFICALLY	LIVING THINGS	MATERIALS	PHYSICAL PROCESSES	PROGRESSION
6	Plan scientific enquiries to answer questions, including recognising and controlling variables where necessary. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. Identify scientific evidence that has been used to support or refute ideas or arguments.	Classify living things into broad groups, giving reasons: micro-organisms, plants and animals. Main parts and of the human circulatory system and their functions; the impact of diet, exercise, drugs and lifestyle. Transportation of nutrients and water within animals. The changes in living things over time; information that fossils provide; offspring of living things; adaptation of animals and plants leading to evolution. Life cycles of a mammal, an amphibian, an insect and a bird. The life process of reproduction in some plants and animals. The changes as humans develop to old age. The changes experienced in puberty.	Group materials according to properties; some materials will dissolve to form a solution; recover substances from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated. Give reasons for the particular uses of everyday materials. Dissolving, mixing and changes of state as reversible changes; irreversible changes result in formation of new materials.	Light appears to travel in straight lines. Objects are seen because they give out or reflect light into the eye. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Compare and give reasons for variations in how electrical components function; including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use symbols to represent simple circuits The movement of the Earth, and other planets, relative to the Sun in the solar system. The movement of the Moon relative to the Earth. The Sun, Earth and Moon as approximately spherical Earth's rotation as explanation of day and night and the apparent movement of the sun. The action of gravity on unsupported objects. The effects of air resistance, water resistance and friction. Some mechanisms, including levers, pulleys and gears, allow a smaller force to hav greater effect.	SKILLS KNOWLEDGE UNDER STANDING
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4	Ask relevant questions and using scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help answer questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings.	Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things. Recognise that environments can change and that this can sometimes pose dangers to living things. Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types and functions of teeth in human . Construct and interpret a variety of food chains, identifying producers, predators and prey. Nutrition in animals, including humans. The skeletons and muscles of humans and other animals. Functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Requirements of plants for life and growth; how they vary from plant to plant. The way in which water is transported within plants the life cycle of flowering plants.	Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled; measure or research the temperature at which this happens. Identify the part played by evaporation and condensation in the water cycle; associate the rate of evaporation with temperature. 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.	Identify how sounds are made; recognise that vibrations from sounds travel to the ear. Patterns between the pitch of a sound and features of the object that produced it; patterns between the volume of a sound and the strength of the vibrations that produced it; sounds get fainter as the distance from the source increases. Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. A switch opens and closes a circuit; associate this with whether or not a lamp lights in a simple series circuit. Recognise common conductors and insulators; associate metals with being good conductors. Light is needed in order to see things; dark is the absence of light; that light is reflected from surfaces. Light from the sun can be dangerous and that there are ways to protect eyes. Understand and exploring shadows. Compare how things move on different surfaces. Explore forces, including magnetic forces which can act at a distance; magnets attract or repel each other and attract some material. Identify some magnetic materials. Explore the behaviour of magnets	
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YEAR	WORKING SCIENETIFICALLY	LIVING THINGS	MATERIALS	PHYSICAL PROCESSES	PROGRESSION
2 1	Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests. Identify and classify. Use their observations and ideas to suggest answers to questions. Gather and record data to help in answering questions. Perform simple tests to explore questions, for example: 'What is the best material for an umbrella? … for lining a dog basket? … for curtains? … for a bookshelf? … for a gymnast's leotard?'	How seeds and bulbs grow; plants need water, light and a suitable temperature to grow and stay healthy. Animals, including humans, have offspring which grow into adult. The basic needs of animals, including humans, for survival; the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Differences between things that are living, dead, and have never been alive. Living things live in habitats to which they are suited; describe how different habitats provide for 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. How animals obtain their food; use the idea of a simple food chain; identify and name different sources of food. Identify and name variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of flowering plants, including trees. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify carnivores, herbivores and omnivores; describe and compare the structure of a variety of common animals. Identify, name, draw and label the basic parts of the human body; say which part of the body is associated with each sense	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. 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.	Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies.	SKILLS  KNOWLEDGE  UNDER STANDING 
R N	Ask 'Why?' questions to find out more. Choose the right resources to carry out their own plan. Talk about what they see using a wide vocabulary. Articulate their ideas and thoughts in well – formed sentences. Make comparisons between objects relating to size, length, weight and capacity. Develop their small motor skills so that they can use a range of tools, competently, safely and confidently.	Understand a simple map. Explore the natural world, describe what can see, hear and feel outside. Recognise differences in environments from life. Discuss immediate family and community, name and describe familiar people. Understand the effect of changing seasons on the natural world around them; Explore the natural world around them; Describe what they see, hear and feel whilst outside. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Begin to make sense of their own life-story and family's history.	Explore a range of materials, including natural materials. Make objects from different materials, including natural materials. Observe, measure and record how materials change when heated and cooled. Compare how materials change over time and in different conditions. Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Shape and join materials. Combine and mix ingredients Change materials by heating and cooling, including cooking.	Explore shadows; Explore rainbows. Explore how to change how things work. Explore how the wind can move objects. Explore how objects move in water Listen to sounds outside and identify the source Make sounds. Learn about the Earth, Sun, Moon, planets and stars; Learn about space travel. Feel forces; Explore how things work. Explore how objects/materials are affected by forces. Listen to sounds; Make sounds Identify electrical devices Use battery-powered devices Explore light sources. Shine light on or through different materials	