



Science

Science Intent, Implementation and Impact Statement

Intent

The Science curriculum at Old Park School has been designed to ensure that all pupils develop a sense of curiosity about their world along with the appropriate subject specific knowledge, concepts, skills and key vocabulary in line with their stage of development. These can be seen on the OPS science scale sheets. Learners are also encouraged to develop their critical and enquiring minds by being supported and taught the skills to think scientifically. The long-term sequence of learning is designed to offer a broad and balanced science education through coverage, experience and progression. All pupils are supported to build upon a body of knowledge about themselves, their bodies and the natural and physical environments as they move through their school life and in preparation for adulthood. Science is a subject that is delivered discretely within all Pathways. Pupils working in Pathway 1 will have multisensory science experiences, Pathway 2 pupils will experience early concepts in science and Pathways 3, 4 and 5 will have subject specific science delivery. Pupils are encouraged to develop their communication skills, and use and extend their vocabulary for scientific elements that are pertinent to their own learning needs. Opportunities are provided for pupils to understand how science can be used to explain what is happening, predict how things may behave and analyse causes.

The Science curriculum has been designed to create an awareness in pupils of associated safeguarding issues and strategies to support pupils in dealing with them. This includes cross curricular links to PHSE being able to understand their own bodies and how to communicate about their bodies, knowing what is appropriate or inappropriate and the vocabulary needed to communicate this. The physiological body parts and changes during puberty are taught discretely within the science curriculum. It also includes an awareness of, and managing risks in everyday life including electrical hazards, water safety and maintaining a healthy lifestyle. The method, depth of knowledge and content of delivery of this curriculum will be unique to the specific needs of each individual group of pupils, appropriate to their learning needs.

This curriculum has been developed at Old Park School to include the expected standards at the end KS1 National Curriculum in Old Park Science which is reflected in Old Park Scale 14. For those working within OPS scales 5-13 we have differentiated the expected standards at end of Key Stage 1 to provide a sequential developmental learning ladder through pathways 3 and 4. To ensure high expectations, aspects of KS2 science curriculum have been included on OPS scale 15. Other documents that have been used as reference to develop this curriculum have been the Development Matters document, AstraZenecha, Equals and DAPA scales to ensure that the teaching of science is in line with the pedagogy of OPS Pathways and the pupils' developmental stages.

The science long term sequence of learning is divided up into nine units of work. Each unit is taught in a different term or half term over a cycle. The order of the units has been determined through meaningful cross curricular links with the termly whole school themes across the different areas of school.

Implementation

Long Term Sequence of Learning

- The sequence consists of nine units, that are repeated as part of a 2 or 3 yearly cycle. Where there is a 2 year cycle, there will be delivery of half termly units in some terms to ensure coverage of all 9 units. The Astra Zeneca and EQUALS schemes of work are used to provide activity ideas and structure key areas of focus.
- Pupils have access to key scientific language and vocabulary within each unit. This is presented in a variety of formats including symbols, Makaton signs and adapted Communication resources including Aided Language Displays.
- Pupils use a range of resources, many of which have been especially selected and adapted for the pupil, to maximise their access, develop their curiosity, knowledge and understanding of working scientifically. They will be encouraged to make comments, observations and ask questions.
- Pupils reflect and revisit previous learning to ensure that knowledge and skills are fully understood, embedded and can be applied. This allows pupils to link ideas together, enabling some to ask questions and become enquiry- based learners. Pupils are given opportunities to problem solve and implement skills into real life contexts.
- Cross curricular links are made wherever possible.

Themes and Curriculum links with Science and Whole School Themes

Phase	Year	Autumn	Spring	Summer
Lower	A	On the Farm Unit 9. Animals, Plants and the Environment (Living organisms; grouping animals; habitats; Food and where it comes from; interactions between living things and ecosystems).	Rainbows LTSL Unit 7. Light, Sound and Colour (Properties and sources of light and sound; Electricity; Staying safe; Exploring colour)	Down in the Jungle Unit 6. My Body and how to keep it healthy (Body parts; Food groups and diet; Keeping my body healthy, clean and safe; Making good choices – lifestyle, drugs and medicines)
	B	Dinosaurs	Fairy Tales LTSL Unit 4. Growth and reproduction in	In the garden Unit 5. Importance of Plants

		Unit 1. Everyday Materials and their uses (Identify, classify, group materials; Functions of materials; States of materials / matter) Include Fossils from Unit 2	animals including humans (Body parts and differences; growing and changing; needs of animals; life cycles)	(Living things, plants & their parts, Habitats, plants as food, Growing healthy plants)
	C	Up, Up and Away LTSL Unit 8. Forces, Energy (Including electricity) and Weather Forces and what they can do; Energy types; Electricity; Seasons and Weather; Earth, Moon and stars; Staying safe)	Magic Carpet Unit 3. Body Parts and Systems of animals including humans (Body parts and functions; Movement and skeletons; Body systems; Healthy choices)	On the beach LTSL Unit 2. Changing Materials (Identify materials and properties, experience different states and ways to change materials)
Middle	A	Carnival of the Animals LTSL Unit 3. Body Parts and Systems of animals including humans (Body parts and functions; Movement and skeletons; Body systems; Healthy choices)	Around the World LTSL Unit 5. Importance of Plants (Living things, plants & their parts, Habitats, plants as food, Growing healthy plants)	Treasure Island LTSL Unit 1. Everyday Materials and their uses (Identify, classify, group materials; Functions of materials; States of materials / matter)
	B	Guess Who Unit 6. My Body and how to keep it healthy (Body parts; Food groups and diet; Keeping my body healthy, clean and	I like to move it LTSL Unit 8. Forces, Energy (Including electricity) and Weather Forces and what they can do; Energy types; Electricity; Seasons and	Water, Water everywhere LTSL Unit 2. Changing Materials (Identify materials and properties, experience

		safe; Making good choices – lifestyle, drugs and medicines)	Weather; Earth, Moon and stars; Staying safe)	different states and ways to change materials)
	C	Home sweet home LTSL Unit 4. Growth and reproduction in animals including humans (Body parts and differences; growing and changing; needs of animals; life cycles)	We are going to the circus LTSL Unit 9. Animals, Plants and the Environment (Living organisms; grouping animals; habitats; Food and where it comes from; interactions between living things and ecosystems).	Who put the colours in the rainbow LTSL Unit 7. Light, Sound and Colour (Properties and sources of light and sound; Electricity; Staying safe; Exploring colour)
Upper+ Form 2	A	Into the woods LTSL Unit 5. Importance of Plants (Living things, plants & their parts, Habitats, plants as food, Growing healthy plants)	Once Upon a Time LTSL Unit 2. Changing Materials (Identify materials and properties, experience different states and ways to change materials Including fossils)	We are community Unit 6. My Body and how to keep it healthy (Body parts; Food groups and diet; Keeping my body healthy, clean and safe; Making good choices – lifestyle, drugs and medicines)
	B	Blue Planet LTSL Unit 9. Animals, Plants and the Environment (Living organisms; grouping animals; habitats; Food and where it comes from; interactions between living things and ecosystems).	Mythical Creatures LTSL Unit 8. Forces, Energy (Including electricity) and Weather Forces and what they can do; Energy types; Electricity; Seasons and Weather; Earth, Moon and stars; Staying safe)	All aboard the magic bus LTSL Unit 3. Body Parts and Systems of animals including humans (Body parts and functions; Movement and skeletons; Body systems;

				Healthy choices)
	C	<p>The world at Night</p> <p>LTSL Unit 7. Light, Sound and Colour (Properties and sources of light and sound; Electricity; Staying safe; Exploring colour)</p>	<p>Witches and Wizards</p> <p>LTSL Unit 1. Everyday Materials and their uses (Identify, classify, group materials; Functions of materials; States of materials / matter)</p>	<p>Circle of Life</p> <p>LTSL Unit 4. Growth and reproduction in animals including humans (Body parts and differences; growing and changing; needs of animals; life cycles)</p>
14-16	A	<p>Misty Mountain winding river</p> <p>LTSL Unit 1. Everyday Materials and their uses (Identify, classify, group materials; Functions of materials; States of materials / matter)</p> <p>Unit 6. My Body and how to keep it healthy (Body parts; Food groups and diet; Keeping my body healthy, clean and safe; Making good choices – lifestyle, drugs and medicines)</p>	<p>Time Traveller</p> <p>LTSL Unit 7. Light, Sound and Colour (Properties and sources of light and sound; Electricity; Staying safe; Exploring colour)</p>	<p>Ticket to ride</p> <p>LTSL Unit 4. Growth and reproduction in animals including humans (Body parts and differences; growing and changing; needs of animals; life cycles)</p>
	B	<p>Starry Night</p> <p>LTSL Unit 8. Forces, Energy (Including electricity) and Weather Forces and what they can do; Energy types; Electricity;</p>	<p>Kings and Queens</p> <p>LTSL Unit 2. Changing Materials (Identify materials and properties, experience different states and ways to change materials)</p>	<p>Planes, Trains and Automobiles</p> <p>LTSL Unit 9. Animals, Plants and the Environment (Living organisms; grouping)</p>

		<p>Seasons and Weather; Earth, Moon and stars; Staying safe)</p> <p>LTSL Unit 3. Body Parts and Systems of animals including humans (Body parts and functions; Movement and skeletons; Body systems; Healthy choices)</p>	<p>Including fossils)</p>	<p>animals; habitats; Food and where it comes from; interactions between living things and ecosystems).</p> <p>LTSL Unit 5. Importance of Plants (Living things, plants & their parts, Habitats, plants as food, Growing healthy plants)</p>
Post 16	A	<p>Back to the Future</p> <p>LTSL Unit 1. Everyday Materials and their uses (Identify, classify, group materials; Functions of materials; States of materials / matter)</p>	<p>My Heroes</p> <p>LTSL Unit 3. Body Parts and Systems of animals including humans (Body parts and functions; Movement and skeletons; Body systems; Healthy choices)</p>	<p>Just Giving</p> <p>LTSL Unit 9. Animals, Plants and the Environment (Living organisms; grouping animals; habitats; Food and where it comes from; interactions between living things and ecosystems).</p>
	B	<p>Space</p> <p>LTSL Unit 8. Forces, Energy (Including electricity) and Weather Forces and what they can do; Energy types; Electricity; Seasons and Weather; Earth, Moon and stars; Staying safe)</p>	<p>Out and About</p> <p>LTSL Unit 5. Importance of Plants (Living things, plants & their parts, Habitats, plants as food, Growing healthy plants)</p>	<p>Healthy Living</p> <p>Unit 6. My Body and how to keep it healthy (Body parts; Food groups and diet; Keeping my body healthy, clean and safe; Making good choices – lifestyle, drugs and medicines)</p>

	C	The story of my life LTSL Unit 4. Growth and reproduction in animals including humans (Body parts and differences; growing and changing; needs of animals; life cycles)	Music through the Ages LTSL Unit 7. Light, Sound and Colour (Properties and sources of light and sound; Electricity; Staying safe; Exploring colour)	Wildest Dreams LTSL Unit 2. Changing Materials (Identify materials and properties, experience different states and ways to change materials Including fossils)

The Science curriculum is written in consultation with and enhanced by the following -

Pre-Subject Specific	Pathway 1 Multi-sensory Foundations for Learning and Life Pathway 2 Learning to Play, Learn and Live	Development Matters Understanding the World, Physical Development: Birth to 3 Reference only: DAPA Scales Willow Dene Assessment Frameworks Astra Zeneca, Equals schemes of work Key Stage 1 and 2 Engagement Model, EHCP Personal Provision Plans Northern Ireland PMLD Thematic Units Enrichment Opportunities – Offsite visit to Snoezelen, Jubilee sensory garden, Bamboozle theatre group, Outside area of Sycamore Adventure
Subject Specific	Pathway 3 Roots	Skills, Concepts, Knowledge, Vocabulary linked to Science KS1 Programmes of Study, National Curriculum England Development Matters: Understanding the World, Physical Development 3-4-year olds OPS Scales 5-9: Subject roots DAPA Scales Astra Zeneca, Equals schemes of work Key Stage 1, 2 and Higher Key Stage 3 Engagement Model, EHCP Personal Provision Plans Enrichment Opportunities – Animal Man visit to school, Planetarium visit to school

Subject Specific	Pathway 4 Shoots	Skills, Concepts, Knowledge, Vocabulary linked to Science KS1 Programmes of Study, National Curriculum England Development Matters Understanding the World, Physical Development: Reception age children into KS1 expectations OPS Scales 10-14: Subject shoots; DAPA Scales Astra Zeneca, Equals schemes of work Key Stage 1, 2 and Higher Key Stage 3 Engagement Model, EHCP Personal Provision Plans Enrichment Opportunities – Safari Park Visit, Planetarium visit to school
Subject Specific	Pathway 5 Blossom	Skills, Concepts, Knowledge, Vocabulary linked to Science KS2 Programmes of Study, National Curriculum England OPS Scales 15: Subject blossom DAPA Scales Astra Zeneca, Equals schemes of work Key Stage 1, 2 and Higher Key Stage 3 Engagement Model, EHCP Personal Provision Plans Enrichment Opportunities – Birmingham Think Tank

Impact

Education Health Care Plans

There are clear links that impact across all four areas of the EHCP within Science.

- **Communication:** the ability to express opinions, communicate and interact confidently about a range of scientific topics, including ourselves and our own bodies whilst developing choice making skills.
- **Cognition and Learning:** to develop our exploratory and problem-solving skills, whilst learning about the world we live in and transferring these skills to real life situations. Being active participants in planning what we will do, interacting with a variety of different resources and scientific equipment and making observations. Evaluating our work and reflecting on our own and other's work. Evaluating and responding to the impact that our actions have on our fragile world.
- **Social, Emotional and Mental Health:** the ability to use the Science Curriculum to support with Healthy Living and making good lifestyle choices. Looking after ourselves and others, including developing empathy for others, including where to look for help. The ability to communicate when something is not right and when we are experiencing pain, illness and discomfort.

Recognising and embracing the differences between each other. To begin to understand the need to assess risk and how to keep ourselves safe in a variety of situations. Working as part of a team, with each team member having a specific and valuable contribution to make.

- **Sensory and Physical:** tactile exploration of a range of different media, textures and scientific-based equipment. Identifying sensory experiences that have a positive impact on my well-being and self - regulation. Developing hand – eye coordination, gross motor skills and fine motor skills. Provides opportunities to interact with and experience a variety of different environments. Being able to look after our bodies with good personal hygiene and preparing for changes as we move towards adulthood.

Pre-Subject Specific Learners

Pre–subject specific learners are able to engage with a sensory curriculum in which Science plays a major role. Pupils working at this level, benefit from a range of experiences and stimuli which supports to maximise their engagement and transfer learned skills over time, following the long-term structured sequence. This maximises the opportunity of these learners to respond expressively to different topics and areas of learning as they revisit each strand of the Science Curriculum. This supports them to be active participants within the world that they are living. In line with their cognitive and physical development, pupils develop emergent communication of their awareness of an interaction, responding consistently to the same familiar people or resources around them, and moving towards or away from others to indicate basic wishes to interact, seek comfort, or reject touch from another. They begin to respond consistently to preferred stimuli, for instance growing plants; specific textures; animals or their coverings; particular food types; or sensory resources and products required for good personal hygiene.

Encounters with animals and plants from a variety of environments, including offsite visits, help to enrich their experiences and broaden their horizons, allowing them to be part of an inclusive world.

Subject Specific Learners

Subject specific learners develop an understanding of their world and the world around them in discrete termly topics which offers them a broad and balanced curriculum. They are supported to become curious and communicate their awareness and understanding of scientific ideas, by using different types of scientific enquiry to answer their own questions, including observing similarities, differences and changes, noticing patterns, grouping and classifying things, carrying out comparative tests and finding things out using secondary sources. Pupils begin to communicate their ideas to a range of audiences in a variety of ways.

Post 16

Pupils within Post 16 forms will develop their scientific knowledge and understanding as they work through their termly units. Students are also supported to use their science knowledge in a cross-curricular way as part of a variety of other linked subjects within their ASDAN accreditation, including the different projects they undertake as indicated below. For example, during the project ‘Scrapheap Challenge’, pupils will have the opportunity to research, test and develop ideas linked to materials and their properties in order to meet a design brief. They will be supported to research and plan a project, carry it out and then evaluate it.

Links have also been made between individual Long Terms sequences of Learning in Science and Preparing for Adulthood, which can be seen on the individual unit sheets for each of the 9 units. Key Stage 4 pupils also engage in Accredited learning specific to Science through ASDAN transition challenges each term.

All students as part of their weekly timetable also engage with Fitness and other physical activities such as swimming, which facilitate practical learning opportunities related to forces, movement and My body.

Preparation for Adulthood

During an Old Park School stakeholder consultation on Post 19 hopes and aspirations across all pathways, a variety of responses were received. The following are addressed through the Science curriculum:

- To have fun whilst exploring my world and express myself.
- To communicate and interact confidently about a range of topics using communication approaches and aids.
- To be able to make positive life choices regarding my lifestyle.
- To encourage independence skills and take part in lots of practical life skills, e.g. keeping clean, dressing, choosing and preparing food.
- To be able to use scientific equipment and technology to enhance my life and pursue my interests.
- To understand how to keep my body clean, which products to use and how often.
- To understand about healthy eating, healthy life styles and therefore make informed choices.
- To be able to keep myself safe, in a variety of contexts, and to communicate if something is wrong or I need help.
- To develop interests and hobbies and support the development of career choices.
- To experience a wide range of enrichment opportunities to inspire me.
- To fully embrace life

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