



Subject overview: Science

What does a Scientist look like at Mengham Infants? What personal skills and characteristics of learning, are particularly relevant for this subject?

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity (*National Curriculum 2014*).

At Mengham Infant School, we strive to provide our children with a rich science curriculum and environment, which provides strong building blocks for future learning. We want our children to be curious, ask questions, seek answers and explore and experiment in many different ways to get these answers. We want to equip our children with the skills and knowledge to develop a secure understanding of the concepts taught, as well as securing an understanding of the nature, processes and methods of science. This will be achieved through a well thought out and developed skills based curriculum that is progressive year on year. Furthermore, it will provide them with many opportunities to carry out enquiries (including longitudinal studies) that allows them to answer questions about the world around them. We feel it is also important that we teach our children to become resilient learners and if at first they don't get the answers they expected or something didn't go right, that that is ok. Scientific enquiry is one area of their learning that can help develop this skill further.

We are very fortunate located where we are on an island, to have many great surrounding areas (beach, shore line, wooded areas) as well as large school grounds (pond area, numerous flower beds, plants and trees) that allows us to take lots of our science learning outside to the world around them. For example all children will have opportunities to grow, tend for and eat their own produce grown, whilst developing a secure understanding of how things grow. We believe that this is a vital part of their education as it allows enrichment, engagement and provides our children with invaluable first hand experiences as possible.

These are the key skills and knowledge that a Scientist will develop during each year (not just EYFS/NC objectives):

Year R	Year 1	Year 2
Working Scientifically		
Ask simple questions and recognising that they can be answered in different ways		
<ul style="list-style-type: none"> -Take a risk, engage in new experiences and learn by trial and error. -Show curiosity about objects, events and people. -Questions why things happen. -Talks about and asks questions about aspects of their familiar world such as the place where they live or the natural world. 	<ul style="list-style-type: none"> -Be exposed to various ways in which we can answer scientific questions. -Begin to ask questions and question themselves -Understand that there are different places to find answers 	<ul style="list-style-type: none"> -Begin to recognise different ways in which they might answer scientific questions -Explore the world around them, ask questions (including asking people) -Use simple secondary sources to find answers (internet, books)
Observing closely, using simple equipment		
<ul style="list-style-type: none"> -Closely observes what animals, people and vehicles do. 	<ul style="list-style-type: none"> -Observe closely and begin to use simple equipment (e.g. hand lenses, egg timers) 	<ul style="list-style-type: none"> -Observe changes over time. -talk about the changes they have seen and possible

<ul style="list-style-type: none"> -Start to ask questions about their learning, showing a curious nature. -Use senses to explore the world around them through Playing & Exploring -Choose the resources they need for their chosen activities -Handle equipment and tools effectively. 	<ul style="list-style-type: none"> -With help, observe changes over time 	<ul style="list-style-type: none"> reasons for these changes. -select and use equipment with growing confidence
Perform simple tests		
<ul style="list-style-type: none"> -Explore and investigate through play. -Test their ideas (finding ways to solve problems/new ways to do things) 	<ul style="list-style-type: none"> -Perform simple tests with help and guidance. 	<ul style="list-style-type: none"> -Build on previous learning of different ways to experiment and investigate. -Perform simple tests.
Identifying and classifying		
<ul style="list-style-type: none"> -Develop ideas of grouping, sequences, cause and effect. -Know about similarities and differences in relation to places, objects, materials and living things. -Begin sorting and classifying into groups by placing items in different piles. -Talk about what they are doing or have done. 	<ul style="list-style-type: none"> -Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) 	<ul style="list-style-type: none"> -Compare objects, materials and living things and sort them (identify & classifying) -Explain how /why they have classified in that way.
Use their observations and ideas to suggest answers to questions		
<ul style="list-style-type: none"> -Answer how and why questions about their experiences. -Make observations of animals and plants and explain why some things occur, and talk about changes. -Talk about what they can see (make observations) -Make links and notice patterns in their experience. -Start to ask questions about their learning, showing a curious nature. 	<ul style="list-style-type: none"> -With support observe closely -I ask simple questions -With support develop their observational skills to answer questions (modelled to them). -Introduce the idea of simple patterns (cause and effect) 	<ul style="list-style-type: none"> -Observe closely -Ask people questions and use simple secondary sources to find answers -Use their observations and ideas to suggest answers to questions -With guidance, they should begin to notice patterns and relationships (cause and effect) -Talk about what they have found out and how they found it out

Gather and record data to help in answering questions (use scientific language)		
<ul style="list-style-type: none"> - Engage in open-ended activity Playing & Exploring. -Develop their own narratives and explanations by connecting ideas or events. -Builds up vocabulary that reflects the breadth of their experience. -Begin to use science words -Create simple representations of events, people and objects. 	<ul style="list-style-type: none"> -Experience different types of science enquiries, including practical activities -Be exposed to a rich science vocabulary and begin to use this language. -Be exposed to and have modelled various ways of recording and communicating their findings. -With help record simple data and have frames for recording their findings. 	<ul style="list-style-type: none"> -Experience different types of science enquiries, including practical activities -Develop their understanding of the scientific language they use. -Begin to use simple scientific language independently. -With help, record and communicate their findings in a range of ways. -Record simple data (tally charts etc)
Plants		
<ul style="list-style-type: none"> -Be able to find plants and trees within their environment. -Plant seeds and watch them grow, talk about the changes they see. 	<ul style="list-style-type: none"> -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. Get out into the environment and dig up plants. -Plant and create a wild garden to attract animals. -Grow their own plant from a seed in clear plastic cup to see structure. 	<ul style="list-style-type: none"> -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. -Plant, create and care for their own garden, with food they can eat for their DT learning.
Animals, including humans		
<ul style="list-style-type: none"> -Talk about and understand how to stay fit, healthy and safe. -Talk about the human body, naming as many parts as they can. -Be exposed to the language of the body parts. 	<ul style="list-style-type: none"> -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 	<ul style="list-style-type: none"> -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)

	<ul style="list-style-type: none"> -Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. -Identify, name, draw and label the basic parts of a human body (including 'private' body parts using the vocabulary vagina, penis and breasts – also through PSHE). -Keep and look after tadpoles and observe the changes. 	<ul style="list-style-type: none"> -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (linked to plants, grow own food to cook. <i>(Linked with Keeping Healthy – PSHE)</i>) -talk about how some diseases can be spread and can be controlled (linked to PSHE) -dental health and why it is important (linked to PSHE) -Keep and look after tadpoles and observe the changes and create a life cycle from this.
Everyday materials (Y1) Uses of Materials (Y2)		
<ul style="list-style-type: none"> -Explore different materials through play -Begin to know the names of different materials (e.g. wood, metal, plastic) -Identify objects made from some of these materials. 	<ul style="list-style-type: none"> -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. -Know that materials have describable properties 	<ul style="list-style-type: none"> -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. -Understand that different materials have different properties.
Seasonal changes		
<ul style="list-style-type: none"> -Children should make observations of their world around them and be exposed to the language of the four seasons and talk about the weather. -Class to have a tree within school grounds that they visit, take photos of and talk about the changes. 	<ul style="list-style-type: none"> -Observe changes across the four seasons -Observe and describe weather associated with the seasons and how day length varies. -Children to carry out a longitudinal study that allows them to observe seasonal change and begin to observe and think how this impacts on the environment and animals. <i>Identify the seasonal and daily weather</i> 	<ul style="list-style-type: none"> -Children to carry out a longitudinal study that allows them to observe seasonal change as well as its impact on the environment and animals. They begin to talk about these changes with confidence. -Class to have a tree within school grounds that they

	<p><i>patterns in the United Kingdom and the location of hot and cold areas of the world in relation to the Equator and the North and South Poles (can be taught alongside Geography)</i></p> <p>-Class to have a tree within school grounds that they visit, take photos of and talk about the changes linked to the weather and season.</p>	<p>visit, take photos of and talk about the changes linked to the weather and season.</p>
--	---	---

Living things and their habitats

<p>-Talk about where they live -Talk about things they need to survive (food, water). -Talk about where different animals live e.g. birds, fish etc</p>		<p>-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 -Create their own 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. -Understand and explain in simple terms that environmental change can affect the plants and animals that live there (link this to scientific enquiry – longitudinal study maybe).</p>
---	--	--

<p>Subject Leader - What three questions are key to you ensuring you have led your subject so that it has a positive impact on the children?</p>
<p>Are the children being given to opportunity work scientifically (that is progressive through the key stage) and understand what that means? Are the children eager to explore and ask questions? (linked to school value of curiosity) Are the children applying and transferring their science skills across the curriculum? Are the children familiar with and using scientific language?</p>

