

Garvestone Science Policy

Science Aims:

To develop the skills to think critically, solve problems and make decisions.

To nurture pupils' natural curiosity and helps develop inquiring minds.

To help pupils to explain and understand how the world works.

To teach pupils the importance of accuracy and problem-solving through practical experiments and investigations in science

Why is Science important?

Science is an important and valued subject because it is highly relevant; an integral part of daily life, from cooking and checking the weather, to recycling and nature walks.

Through science, our lives are changed for the better. We believe all pupils should be taught about the role that science plays in positive advancements, as well as scientific knowledge, methods and processes.

Advances in science are continuing to transform our world at lightning speed and we need to do our best to prepare our pupils for a future we can only imagine.

When is Science taught?

Science is taught through thematic units. The attached overview (Appendix 1) maps out which thematic units feature this subject and the Long-Term Plan (Appendix 2) clearly shows the objectives taught. In addition to the thematic units a yearly science week is planned to ensure coverage and enthusiasm for the subject.

How is Science taught?

Science is taught through working scientifically (involving practical investigation, observation and application skills, enquiry and research) alongside specific taught subject knowledge. Learning takes place both inside and outside the classroom.

What do we learn about in Science?

'Learning Means the World' Curriculum

We learn about:-

Plants

Animals, including humans

Materials

Seasonal changes

Living things and their habitats

Light and heat

Forces and magnets

Sound

Electricity

Earth and space

Evolution and inheritance

Movement

How do we assess and monitor Science?

Assessment is an ongoing process in the classroom as teachers observe pupils' oral and written responses. Opportunities for assessment exist in medium term plans and are built into all activities. When a new unit is introduced the title and supporting materials are displayed to a class. Pupils use their existing knowledge to summarise what they already know about the topic and consider what will be taught. At the end of a unit pupils are encouraged to reflect on their learning against unit knowledge ladders. As a class a theme review sheet will be completed (Appendix 3)

The learning objectives and outcomes within each lesson offer teachers opportunities for checking progress. Consistency of judgment is ensured by using skills ladders (Appendix 4) and advice by the coordinator. The main method of assessing children's knowledge, skills and understanding is through the use of Assessment for Learning. Parents are informed of curriculum coverage in a curriculum newsletter sent out each term and the progress achieved by their child in the end of year report.

Appendix 1



CURRICULUM SUBJECTS OVERVIEW SCIENCE

Learning Pathways								
 Pathfinders	Unity in the Community	Land Ahoy!	Zero to Hero	Come Fly With Me! The Arctic Circle	Happily Ever After	Inter-Nation Media Station	Going Wild	Light Up the World
	Life Processes / Growing	Speed, Sound and Motion	Light and Electricity	Seasons / Materials	New Life / Habitats		Living Things	The Sun / Light and Heat
 Adventurers	Athens v Sparta	Law and Order	A World of Difference	Come Fly With Me! Africa	That's All Folks!	Lightning Speed	Picture Our Planet	Under The Canopy
	Forces		Light	Animals, Including Humans		Electricity	Sound	Plants Habitats
 Navigators	Wars of the World	You're Not Invited	I Have a Dream...	Come Fly With Me! America	Mission Control	A World of Bright Ideas	Full of Beans	Global Warning
	Light		Living Things and Adaptation	Materials	Earth and Space	Forces	Electricity	Materials



Appendix 2

Pathfinders Science Coverage

<p style="text-align: center;">COME FLY WITH ME!</p> <p style="text-align: center;">ARCTIC CIRCLE</p>	<p style="text-align: center;">ZERO TO HERO</p>	<p style="text-align: center;">LAND AHOY!</p>	<p style="text-align: center;">UNITY IN THE COMMUNITY</p>
<p style="text-align: center;">EVERYDAY MATERIALS / SEASONAL CHANGES / LIVING THINGS AND THEIR HABITATS</p> <ul style="list-style-type: none"> • To learn the names of, describe weather associated with and observe changes across the four seasons • To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock, and to know, describe and compare how their simple physical properties vary. Group together a variety of everyday materials on the basis of their simple physical properties. • To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • To distinguish between an object and the material from which it is made and compare the uses of a variety of everyday materials • To 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 • To identify and name a variety of plants and animals in their habitats, including micro habitats 	<p style="text-align: center;">LIGHT AND ELECTRICITY</p> <ul style="list-style-type: none"> • To observe and name a variety of sources of light, including electric lights, flames and the sun • To know that fire has been used throughout history for heat and light • To know about simple circuits involving batteries, wires, bulbs and other components • To know how a switch can be used to break a circuit 	<p style="text-align: center;">FORCES / SOUND</p> <ul style="list-style-type: none"> • To compare how different things move on different surfaces – LKS2 • To know that sounds get fainter as the distance from the sound source increases – LKS2 • To notice and describe how things are moving, using simple comparisons such as faster and slower • To understand that there are many kinds of sound and sources of sound 	<p style="text-align: center;">PLANTS / LIVING THINGS AND THEIR HABITATS</p> <ul style="list-style-type: none"> • To know and describe the basic structure of a variety of common flowering plants • To know and describe how seeds and bulbs grow into mature plants • To learn that plants need water, light and a suitable temperature to grow and stay healthy • To name and identify a variety of common wild and garden plants, including deciduous and evergreen trees • To know how animals obtain their food from plants and other animals, using the idea of simple food chain, and identify and name different sources of food

HAPPILY EVER AFTER	GOING WILD!	LIGHT UP THE WORLD
<p>LIVING THINGS AND THEIR HABITATS / ANIMALS, INCLUDING HUMANS</p> <ul style="list-style-type: none"> • To understand the difference between things that are living, dead and things that have never been alive • To know that humans and other animals can produce offspring and that these offspring can grow into adults • To identify and name a variety of birds 	<p>LIVING THINGS AND THEIR HABITATS / ANIMALS, INCLUDING HUMANS</p> <ul style="list-style-type: none"> • To understand the difference between things that are living, dead and things that have never been alive • To know that animals, as well as humans, have offspring, which grow into adults • To learn about the basic needs of animals, as well as humans, for survival (which are water, food and air) • To identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals • To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • To identify and name a variety of common animals that are carnivores, herbivores and omnivores • To know that some animals are endangered, the reasons why and what is being done to preserve these species 	<p>LIGHT</p> <ul style="list-style-type: none"> • To recognise that we need light in order to see things and that dark is the absence of light – LKS2 • To know, name and observe a variety of sources of light, including electric lights, flames and the sun • To recognise that light from the sun can be dangerous and that there are ways to protect their eyes – LKS2 • To understand that the sun provides energy and that solar power is a sustainable energy source • To be aware of simple ways to save electricity • To know that shadows are formed when the light from a light source is blocked by a solid object – LKS2 • To understand the term 'nocturnal' and learn about nocturnal animals

Adventurers Science Coverage

A WORLD OF DIFFERENCE	COME FLY WITH ME! AFRICA	LIGHTNING SPEED
<p style="text-align: center;">LIGHT</p> <ul style="list-style-type: none"> To know that light is reflected from surfaces To find patterns in the way that the size of shadows change 	<p style="text-align: center;">ANIMALS, INCLUDING HUMANS / LIVING THINGS AND THEIR HABITATS</p> <ul style="list-style-type: none"> To recognise that living things can be grouped in a variety of ways To understand and use classification keys to help group, identify and name a variety of living things in their local and wider environment To know 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 To know the different types of teeth in humans and their simple functions To know and describe the simple functions of the basic parts of the digestive system To know how to construct and interpret a variety of food chains, identifying producers, predators and prey To know that humans and some other animals have skeletons and muscles for support, protection and movement 	<p style="text-align: center;">ELECTRICITY</p> <ul style="list-style-type: none"> To identify common appliances that run on electricity To know how to construct a simple series electrical circuit and demonstrate this, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers To 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 To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit To know and identify some common conductors and insulators, and associate metals with being good conductors

ATHENS V SPARTA	PICTURE OUR PLANET	UNDER THE CANOPY
<p style="text-align: center;">FLOATING AND SINKING</p> <ul style="list-style-type: none"> To know that some objects float in water while others sink To understand that displacement occurs when you place something in liquid 	<p style="text-align: center;">SOUNDS</p> <ul style="list-style-type: none"> To identify how sounds are made, associating some of them with something vibrating To know that vibrations from sounds travel through a medium to the ear To recognise patterns between the volume of a sound and the strength of the vibrations that produced it To identify patterns between the pitch of a sound and features of the object that produced it 	<p style="text-align: center;">PLANTS</p> <ul style="list-style-type: none"> To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers To learn about and 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 To investigate the way in which water is transported within plants To know and explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Navigators Coverage

FULL OF BEANS	GLOBAL WARNING	I HAVE A DREAM
<p>ELECTRICITY / ENERGY SOURCES</p> <ul style="list-style-type: none"> • To identify common appliances that run on electricity • To compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • To be able to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • To know how to use recognised symbols when representing a simple circuit in a diagram • To understand the term 'energy' and identify a range of different renewable and non-renewable energy sources 	<p>PROPERTIES AND CHANGES OF MATERIALS</p> <ul style="list-style-type: none"> • To know that some changes result in the formation of new materials, and that this kind of change is not usually reversible • To compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets • To suggest how mixtures might be separated, including through filtering, sieving and evaporating, use my knowledge of solids, liquids and gases • To know how to demonstrate that dissolving, mixing and changes of state are often reversible changes • To understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution • To show understanding by giving reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials (including metals, wood and plastic) 	<p>LIVING THINGS AND THEIR HABITATS / EVOLUTION AND INHERITANCE</p> <ul style="list-style-type: none"> • To know the differences in the life cycles of a mammal, an amphibian, an insect and a bird • To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • To be able to describe the life process of reproduction in some plants and animals • To be able to classify plants and animals based on specific characteristics and give reasons • To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences • To know and can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

COME FLY WITH ME! AMERICA	MISSION CONTROL	A WORLD OF BRIGHT IDEAS	WARS OF THE WORLD
<p>MATERIALS</p> <ul style="list-style-type: none"> • To distinguish between an object and the material from which it is made • To understand the difference between man-made and natural materials and identify and sort both 	<p>EARTH AND SPACE</p> <ul style="list-style-type: none"> • To know that the Sun, Earth and Moon are approximately spherical bodies • To know about and explain the movement of the Earth relative to the Sun in the solar system • To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky • To know about and explain the movement of the Moon relative to the Earth 	<p>FORCES</p> <ul style="list-style-type: none"> • To know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • To identify the effects of air resistance and friction, that act between moving surfaces • To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect 	<p>LIGHT</p> <ul style="list-style-type: none"> • To understand that light appears to travel in straight lines • To use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • To know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Appendix 3



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PRIMARY SCHOOL

COLLABORATIVE REVIEW

THEME REVIEW

Teacher:	Year:	Class:
W/B:	Theme:	Term:

TEACHER	PUPILS			GENERAL COMMENTS	OTHER STAFF
	WHAT WE NOW KNOW...	WHAT WE NOW CAN DO...	WHAT WE NOW UNDERSTAND...		

Guidance notes:-
 This form is to be used as an assessment tool to inform future planning and evaluation. Teachers, pupils and other staff are encouraged to reflect on the learning that has taken place during the half term and write comments above, matched against the success criteria. This is crucial to the successful monitoring of the effectiveness of the thematic approach. Future planning should demonstrate awareness of, and be based on, the feedback on the collaborative review sheet.



History

EYFS

UW23

Talks about past and present events in their own lives and in the lives of family members

UW24

Looks closely at similarities, differences, patterns and change

UW27

Explains why some things occur

UW28

Talks about changes



History

Skills Ladder

	YEAR ONE	YEAR TWO
INVESTIGATION	<p>Hi1 Use different sources of information to find out about the past</p> <p>Hi2 Find out about the lives of significant people and events from the past and present</p>	<p>Hi7 Ask and answer questions about the past</p> <p>Hi8 Explore places and investigate artefacts</p>
OBSERVATION	<p>Hi3 Using episodes from stories about the past, identify the difference between past and present</p>	<p>Hi9 Recognise why people did things and why events happened</p> <p>Hi10 Identify differences between past and present and show how ways of life at different times were different to their own</p> <p>Hi11 Identify different ways in which the past is represented</p> <p>Hi12 Observe and handle a range of sources of information to find out about the past</p>
APPLICATION	<p>Hi4 Place events in chronological order</p> <p>Hi5 Use common words and phrases related to the passing of time</p> <p>Hi6 Make a personal link to the past by exploring artefacts and images</p>	<p>Hi13 Place events and objects in chronological order</p> <p>Hi14 Use a wide vocabulary of everyday historical terms</p>

	YEAR THREE	YEAR FOUR
INVESTIGATION	<p>Hi15 Develop their understanding that the past can be divided into different periods of time</p> <p>Hi16 Explore the different ways we can find out about the past and how to understand the evidence</p>	<p>Hi23 Ask and answer a variety of perceptive historical questions</p> <p>Hi24 Investigate the characteristic features of, and changes within, periods of history that were significant to the locality and the UK</p>
OBSERVATION	<p>Hi17 Identify different ways in which the past is represented</p> <p>Hi18 Recognise similarities and differences between people's lives during different periods of time</p>	<p>Hi25 Identify the impact of the movement and settlement of people in different periods of British history</p> <p>Hi26 Identify how significant events, developments or individuals and groups have influenced their locality, the UK and beyond in the recent and distant past</p> <p>Hi27 Identify different ways in which the past is represented and interpreted and recognise how history is preserved</p>
APPLICATION	<p>Hi19 Use dates and vocabulary relating to the passing of time and sequence events</p> <p>Hi20 Sequence several events or artefacts</p> <p>Hi21 Begin to give reasons for and results of the main events and changes</p> <p>Hi22 Use sources of information including ICT to find out about events, people and changes</p>	<p>Hi28 Place events, people and changes into correct periods of time on a timeline</p> <p>Hi29 Use dates and vocabulary relating to the passing of time, including AD/BC</p> <p>Hi30 Use and evaluate sources of information, recognising that evidence varies in the extent to which it can be trusted</p> <p>Hi31 Communicate knowledge and understanding in a variety of ways</p>

	YEAR FIVE	YEAR SIX
INVESTIGATION	<p>Hi32 Investigate the characteristic features of, and changes within, periods of history</p> <p>Hi33 Devise historically valid questions about change, similarity and difference and investigate to find possible answers</p> <p>Hi34 Investigate events in the past using primary and secondary sources</p>	<p>Hi42 Devise historically valid questions about change, cause, similarity and difference and investigate to find possible answers</p>
OBSERVATION	<p>Hi35 Identify and describe reasons for and results of historical events, situations and changes</p> <p>Hi36 Recognise primary and secondary sources</p> <p>Hi37 Identify and describe the effects of some economic, technological and scientific developments</p>	<p>Hi43 Recognise social, cultural, religious and ethnic diversity of societies</p> <p>Hi44 Recognise that the past is represented and interpreted in different ways and give reasons for this</p> <p>Hi45 Recognise and understand the broad chronology of major events in the UK, and some key events in the wider world, from ancient civilisations to the present day, and locate within this the periods, events and changes they have already studied</p>
APPLICATION	<p>Hi38 Place events, people and changes into correct periods of time</p> <p>Hi39 Use dates and vocabulary relating to the passing of time, including ancient, modern, BC, BCE, AD, century and decade</p> <p>Hi40 Interpret historical evidence</p> <p>Hi41 Select and organise relevant historical information, making appropriate use of dates and terms</p>	<p>Hi46 Use an increasing depth of factual knowledge to describe past societies and periods and make some links between them</p> <p>Hi47 Suggest possible omissions and the means of finding out</p> <p>Hi48 Select and combine information from different sources</p> <p>Hi49 Recall, select, organise and communicate historical information in a variety of ways</p>