

Ark Atwood Science Curriculum 2022/23

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Years 1 and 2 (2 year cycle)	Changing Materials		Our Living Earth		Habitats and Seasonal Change	
	Mixtures and Potions		Plants and Trees		Living things and their habitats	
Year 3	Forces and Magnets	Light and Shadows	Rocks and Fossils		Plants: Needs for Survival	Skeletons and Muscles
Year 4	Sound	Electricity	States of Matter		Classification and Environments	Teeth and Digestion
Year 5	Forces and Magnets	Earth and Space	Properties and Changes of Materials		Life Cycles	Getting Older
Year 6	Electricity and Circuits	Light and Perception	Classification		Evolution and Inheritance	Circulation and Lifestyle

Physics				Chemistry		Biology			
Electricity	Light and Sound	Earth and space	Forces	Materials and change		Living things and their habitats	Animals including humans	Plants	Seasonal changes

Ark Atwood Science Knowledge Progression Map

Children will:

Electricity	Year 4	<ul style="list-style-type: none"> - 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. - recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. - recognise some common conductors and insulators, and associate metals with being good conductors - construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. - draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.
	Year 6	<ul style="list-style-type: none"> - associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. - 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. - use recognised symbols when representing a simple circuit in a diagram. - building on their work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. - learn how to represent a simple circuit in a diagram using recognised symbols.
Light and Sound	Year 3	<ul style="list-style-type: none"> - recognise that we need light in order to see things and that dark is the absence of light. - notice that light is reflected from surfaces. - recognise that light from the sun can be dangerous and that there are ways to protect their eyes. - recognise that shadows are formed when the light from a light source is blocked by an opaque object. - find patterns in the way that the size of shadows change. - look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.
	Year 4	<ul style="list-style-type: none"> - identify how sounds are made, associating some of them with something vibrating. - recognise that vibrations from sounds travel through a medium to the ear. - find patterns between the pitch of a sound and features of the object that produced it. - find patterns between the volume of a sound and the strength of the vibrations that produced it. - recognise that sounds get fainter as the distance from the sound source increases. - explore and identify the way sound is made through vibration in a range of different musical instruments. - find out how the pitch and volume of sounds can be changed in a variety of ways.
	Year 6	<ul style="list-style-type: none"> - recognise that light appears to travel in straight lines. - 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. - explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. - use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. - Investigate the way that light behaves, including light sources, reflection and shadows.
Earth and Space	Year 5	<ul style="list-style-type: none"> - describe the movement of the Earth, and other planets, relative to the sun in the solar system. - describe the movement of the moon relative to the Earth. - describe the Sun, Earth and Moon as approximately spherical bodies. - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sun. - use a model of the Sun and Earth to explain day and night. - know that the sun is a star at the centre of our universe orbited by eight planets. - know that the moon is a celestial body that orbits a planet.
Forces	Year 3	<ul style="list-style-type: none"> - compare how things move on different surfaces. - notice that some forces need contact between two objects, but magnetic forces can act at a distance. - observe how magnets attract or repel each other and attract some materials and not others. - compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. - describe magnets as having two poles. - predict whether two magnets will attract or repel each other, depending on which poles are facing. - observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing).

Materials and change	Year 5	<ul style="list-style-type: none"> - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. - identify the effects of air resistance, water resistance and friction, that act between moving surfaces. - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. - explore falling objects and raise questions about the effects of air resistance. To explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. - investigate forces that make things begin to move, get faster or slow down. - explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. - explore the effects of levers, pulleys and simple machines on movement. - investigate how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.
	Years 1 and 2 Changing 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. - 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.
	Years 1 and 2 Mixtures and Potions	<ul style="list-style-type: none"> - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. - think about the properties of materials that make them suitable or unsuitable for particular purposes. - think about unusual and creative uses for everyday materials. - find out about people who have developed useful new materials. - ask simple questions and recognise that they can be answered in different ways. - observe closely, using simple equipment perform simple tests.
	Year 3 Rocks	<ul style="list-style-type: none"> - 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. - explore different kinds of rocks and soils, including those in the local environment.
	Year 4 States of Matter	<ul style="list-style-type: none"> - 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, and measure or research the temperature at which this happens in degrees Celsius ($^{\circ}\text{C}$) - identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. - explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). - observe water as a solid, a liquid and a gas and note the changes to water when it is heated or cooled.
	Year 5 Properties and changes of materials	<ul style="list-style-type: none"> - compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. - know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. - use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. - demonstrate that dissolving, mixing and changes of state are reversible changes - explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. - explore and compare the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. - explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. - explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. - find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.

Living things and their habitats	Years 1 and 2 Habitats and Seasonal Change Living things and their Habitats	<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. - 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.
	Year 4 Classification and Environments	<ul style="list-style-type: none"> - 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 in their local and wider environment. - recognise that environments can change and that this can sometimes pose dangers to living things. - use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. - identify how the habitat changes throughout the year. To explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. - begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. - group plants into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.
	Year 5 Life Cycles	<ul style="list-style-type: none"> - describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. - describe the life process of reproduction in some plants and animals. - observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. - find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.
	Year 6 Classification	<ul style="list-style-type: none"> - describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. - give reasons for classifying plants and animals based on specific characteristics. - build on their learning about grouping living things in year 4 by looking at the classification system in more detail. - be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. - through direct observations where possible classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). - discuss reasons why living things are placed in one group and not another. - find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification
	Year 6 Evolution and inheritance	<ul style="list-style-type: none"> - recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. - identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. - Building on what they learned about fossils in the topic on rocks in year 3, pupils to find out more about how living things on earth have changed over time. - be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles. - recognise that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox. - find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.
Animals including	Years 1 and 2 Our Living Earth	<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. - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). - 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). - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. - sort and classify things according to whether they are living, dead or were never alive, and recording their findings using charts.

	Year 3	<ul style="list-style-type: none"> - identify 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. - identify that humans and some other animals have skeletons and muscles for support, protection and movement. - continue to learn about the importance of nutrition and be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.
	Year 4	<ul style="list-style-type: none"> - describe the simple functions of the basic parts of the digestive system in humans. - identify the different types of teeth in humans and their simple functions. - construct and interpret a variety of food chains, identifying producers, predators and prey. - be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine. - explore questions that help them to understand their special functions.
	Year 5	<ul style="list-style-type: none"> - describe the changes as humans develop to old age. - draw a timeline to indicate stages in the growth and development of humans. - learn about the changes experienced in puberty.
	Year 6	<ul style="list-style-type: none"> - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. - recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. - describe the ways in which nutrients and water are transported within animals, including humans.
Plants	Years 1 and 2 Plants and Trees	<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. - 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. - using the local area, identify and name a variety of plants in their habitats, including microhabitats.
	Year 3	<ul style="list-style-type: none"> - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. - 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. - investigate the way in which water is transported within plants. - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. - explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.
Seasonal Change	Years 1 and 2 Habitats and Seasonal Change	<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.