Federation of Spixworth Schools
Science Skills Progression

<table>
<tr><th></th><th>Reception</th><th colspan="2">KS1</th></tr>
<tr><td>Curriculum</td><td rowspan="2">ELG: The Natural World
Children at the expected level of development will:
• Explore the natural world around them, making observations and drawing pictures of animals and plants
• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</td><td colspan="2">• asking simple questions and recognising that they can be answered in different ways
• observing closely, using simple equipment
• performing simple tests
• identifying and classifying
• using their observations and ideas to suggest answers to questions
• gathering and recording data to help in answering questions</td></tr>
<tr><td>Plants
• identify and name a variety of common wild and garden plants
• identify and describe the basic structure of a variety of common flowering plants
Animals, including humans
• identify and name a variety of common animals
• 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
• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
Everyday materials
• distinguish between an object and the material from which it is made
• identify and name a variety of everyday material
• describe the simple physical properties of a variety of everyday materials</td><td>Living things and their habitats
• 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 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
Plants
• 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
Animals, including humans
• notice that animals, including humans, have offspring which grow into adults</td></tr>
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		• compare and group together a variety of everyday materials on the basis of their simple physical properties Seasonal changes • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	• 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 Uses of everyday materials • 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
Coverage	**A Reception scientist can:**	**A Year 1 scientist can:**	**A Year 2 scientist can:**
Working Scientifically: Asking questions	Can talk about some of the things they have observed such as plants, animals, natural and found objects Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world Answer how and why questions about their experiences	Ask simple questions and recognise that they can be answered in different ways	Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum
Working Scientifically: Measuring and recording	Show curiosity about objects, events and people Engage in open ended activity Take a risk, engage in new experiences and learn by trial and error Use senses to explore the world around them Make links and notice patterns in their experience Choose the resources they need for their chosen activity Handle equipment and tools effectively Create simple representations of events, people and objects Make observations of animals and plants and explain why some things occur, and talk about changes	Use simple equipment to observe closely Perform simple tests Identify and classify	Use simple equipment to observe closely including changes over time Perform simple comparative tests Identify, group and classify

Working Scientifically: Evaluating and concluding	Develop ideas of grouping, sequences, cause and effect Find ways to solve problems/find new ways to do things/test their ideas Develop their own narratives and explanations by connecting ideas or events	Gather and record data to help in answering questions Use his/her observations and ideas to suggest answers to questions	Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns Gather and record data to help in answering questions including from secondary sources of information
Animals including Humans (links to light in KS2)	Know about similarities and differences between themselves and others Know about similarities and differences in relation to living things Make observations of animals and explain why some things occur, and talk about changes Show care and concern for living things and the environment Looks closely at similarities, differences, patterns and change Develop an understanding of growth, decay and changes over time	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) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Understand that animals, including humans, have offspring which grow into adults 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
Living things and their Habitats	Know about similarities and differences in relation to places, materials and living things Make observations of animals and plants and explain why some things occur, and talk about changes Talk about the features of their own immediate environment and how environments might vary from one another Show care and concern for living things and the environment Looks closely at similarities, differences, patterns and change Develop an understanding of growth, decay and changes over time		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 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

Materials / States of Matter (Links to Forces and Magnets / Rocks and Soils in KS2)	Know about similarities and differences in relation to materials Talks about why things happen and how things work Looks closely at similarities, differences, patterns and change	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 Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching
Plants	Know about similarities and differences in relation to living things Make observations of plants and explain why some things occur, and talk about changes Show care and concern for living things and the environment Looks closely at similarities, differences, patterns and change Develop an understanding of growth, decay and changes over time	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
Seasonal Changes (Earth and Space in KS2)	Know about similarities and differences in relation to places and living things Make observations of animals and plants and explain why some things occur, and talk about changes Talk about the features of their own immediate environment and how environments might vary from one another Looks closely at similarities, differences, patterns and change Develop an understanding of growth, decay and changes over time	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	

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	LKS2		UKS2	
Curriculum	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.		• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting 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 • identifying scientific evidence that has been used to support or refute ideas or arguments	
	Plants • identify and describe the functions of different parts of flowering plants • explore the requirements of plants for life and growth/ 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, Animals, including humans • identify that animals, including humans, need the right types and amount of nutrition, and	Living things and their habitats • 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 Animals, including humans • describe the simple functions of the basic parts of the digestive system in humans	Living things and their habitats • 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 Animals, including humans • describe the changes as humans develop to old age Properties and changes of materials • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity	Living things and their habitats • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics Animals including humans • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood

	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 Rocks • 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 Light • recognise that they 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 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 Forces and Magnets • compare how things move on different surfaces • notice that some forces need contact between 2 objects, but	• 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 States of matter • 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 (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Sound • 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	(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 Earth and space • 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	• 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 Evolution and inheritance • 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 Light • 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

	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 everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing	Electricity • 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	and the apparent movement of the sun across the sky Forces • 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 •	shadows have the same shape as the objects that cast them Electricity • 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 •
Coverage	**A Year 3 scientist can:**	**A Year 4 scientist can:**	**A Year 5 scientist can:**	**A Year 6 scientist can:**
Working Scientifically: Planning	• ask relevant questions and use different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests	• ask relevant questions and use different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests	• plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	• plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Working Scientifically: Observing	• make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers	• make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers	• take measurements, using a range of scientific equipment with increasing accuracy and precision	• take measurements, using a range of scientific equipment with increasing accuracy and precision

Working Scientifically: Recording	• gather, record, classify and present data in a variety of ways to help in answering questions • record findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables	• gather, record, classify and present data in a variety of ways to help in answering questions • record findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables	• record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs • report and present findings from enquiries, including conclusions, causal relationships and explanations of results in written forms such as displays and other presentations	• record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs • report and present findings from enquiries, including conclusions, causal relationships and explanations of results in written forms such as displays and other presentations
Working Scientifically: Concluding	• report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • identify differences, similarities or changes related to simple scientific ideas and processes • use straightforward scientific evidence to answer questions or to support their findings	• report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • identify differences, similarities or changes related to simple scientific ideas and processes • use straightforward scientific evidence to answer questions or to support their findings	• report and present findings from enquiries, including conclusions, causal relationships and explanations of results in written forms such as displays and other presentations	• report and present findings from enquiries, including conclusions, causal relationships and explanations of results in written forms such as displays and other presentations
Working Scientifically: Evaluating	• use results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions.	• use results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions.	• use test results to make predictions to set up further comparative and fair tests. • identify scientific evidence that has been used to support or refute ideas or arguments	• use test results to make predictions to set up further comparative and fair tests. • identify scientific evidence that has been used to support or refute ideas or arguments
Child objectives Working scientifically	I can ask questions and conduct experiments to answer them. I can set up a fair practical experiment. I can make simple predictions. I can take accurate measurements using Thermometers, data-loggers and rulers.	I can ask relevant questions. I can use different types of experiments to answer questions. I can make a prediction and explain it. I can make careful observations and take accurate measurements using thermometers, data-loggers and rulers.	I can identify the independent variable. I can identify the control variables. I can identify the dependent variable. I can take accurate measurements using lots of different scientific equipment. I can tell you why it is important to take repeated measurements.	I can identify all the relevant variables in an investigation. I can observe changes over different periods of time. I can take accurate measurements using lots of different scientific equipment. I can tell you why it is important to take repeated measurements and use them when appropriate.

	I can record what I have found out using scientific vocabulary that is spelt correctly. I can write what I have found out in a report. I can present my work in different ways such as drawings, labelled diagrams, keys, bar charts and tables. I can present what I have found out to the class. I can use the results I have found out to draw conclusions. I can tell you what I have changed and what has stayed the same in an experiment. I can use the evidence from my own and other people's experiments to support what I have found.	I can classify my results and present the data. I can record in a report using charts, graphs, diagrams. I can deliver an oral report of my findings. I can use the evidence from my results to draw a conclusion. I can evaluate the experiment and suggest improvements. I can use scientific words and spell them correctly.	I can record data using: labelled scientific diagrams, classification keys, tables, bar charts, line graphs. I can make predictions about how other tests will work using results of previous investigations. I can present my findings in an oral or a written report with all important features of a report. I can tell you about other experiments that have been done to support or disprove ideas. I can use scientific words and spell them correctly.	I can record data using: labelled scientific diagrams, classification keys, tables, bar charts, line graphs. I can make predictions about how tests will work based on my previous scientific knowledge. I can present my findings in a variety of different ways using correctly spelt scientific vocabulary. I can draw conclusions from my results and describe causal relationships in results. I can identify scientific evidence that has been used to support or refute ideas or arguments. I can identify patterns in data and recognise inconsistencies. I can find out things using secondary sources of information.
Animals including Humans	• 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	• 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	• describe the changes as humans develop to old age	• 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
Living things and their Habitats	• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. <u>(3-Plants)</u>	• 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	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird <u>(5-Living things and their Habitats)</u>	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences,

		in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things	• describe the life process of reproduction in some plants and animals. (5-Living things and their Habitats) • describe the changes as humans develop to old age	including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics.
Materials / States of Matter		• 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 (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	• 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	
Plants	• 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		• describe the life process of reproduction in some plants and animals. (5-Living things and their Habitats)	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics.
Rocks and Soils (Links to materials KS1)	• 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			
Light (Links to Animals including	• recognise that they 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 appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they

Humans in KS1)	• 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			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.
Forces and Magnets (Links to materials KS1)	• 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		• 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	
Sound (Links to Animals including		• identify how sounds are made, associating some of them with something vibrating		

Humans in KS1)		• 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.		
Electricity		• 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.		• 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.
Earth and Space			• describe the movement of the Earth, and other planets, relative to the Sun in the solar system	

(Seasonal Changes in KS1)			• 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 sky.	
Evolution and inheritance (Links to living things and their habitats in KS1)	• describe in simple terms how fossils are formed when things that have lived are trapped within rock	• recognise that environments can change and that this can sometimes pose dangers to living thing		• 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 • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago