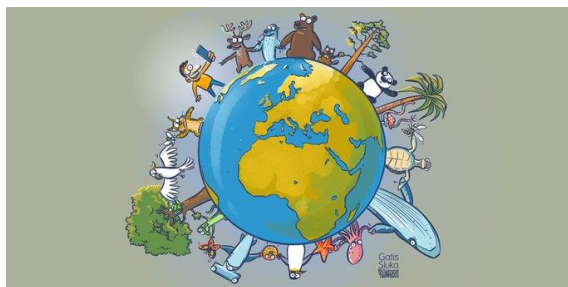


# Long Term Mapping Science KS4

		KS4	KS4
		Cycle 1 (2020 – 2021)	Cycle (2021-2022)
<b>Autumn</b>	1	Biology - Living things and their habitats Biodiversity, Classification & Care of Environments	Chemistry - Material Properties and Material Changes States of Matter
	2	Biology - Living things and their habitats Biodiversity, Classification & Care of environments	Physics - Seasonal Changes
<b>Spring</b>	1	Physics - Sound	Biology - Animals Including Humans Digestion
	2	Physics - Sound	Biology - Animals Including Humans Teeth and Food Chains
<b>Summer</b>	1	Physics - Seasonal Changes	Physics - Electricity
	2	Chemistry - Material Properties and Material Changes States of Matter	Physics - Electricity



## Medium Term Planning Key Stage 4 Cycle 1 (2020 – 2021)

Aspiration for Life		Differentiated, aspirational targets dependent on pupil needs.		Language for Life		Explicit teaching/ exposure to new scientific vocabulary		Learning for Life		Opportunities to develop cross curricular skills e.g. maths, English and ICT			
<b>KS4 Cycle 1 (2020-2021)</b>	<b>INTENT</b> : To explore the world around us, observe phenomena, develop scientific vocabulary, be curious and ask questions about what we see, answer scientific questions creatively and form conclusions from our evidence gathered.	<b>Living things and their habitats Biodiversity, Classification &amp; Care of environments</b>		<b>Living things and their habitats Biodiversity, Classification &amp; Care of environments</b>		<b>Sound</b>		<b>Sound</b>		<b>Seasonal Changes</b>		<b>Material Properties and Material Changes States of Matter</b>	
		<b>Autumn 1 – 7 weeks</b>		<b>Autumn 2 - 7 weeks</b>		<b>Spring 1 – 6 weeks</b>		<b>Spring 2 – 6 weeks</b>		<b>Summer 1 – 5 weeks</b>		<b>Summer 2 – 7 weeks</b>	
		Recognise that living things can be grouped in a variety of way   Recognise environments can change and that this can sometimes pose danger to living things.		Explore and use classification keys to group, identify and name a variety of living things in their local and wider environment   Recognise that environments can change and can sometimes pose danger to living things.		Identify how sounds are made, associating some of them with something vibrating and recognises that vibrations from sounds travel through a medium to the ear.		Experiment with sound and shows some understanding of how sound is made and transmitted.		Name the four seasons, identify when in the year they occur   Observe changes across the four seasons   Observe weather associated with the seasons   Describe seasonal weather   Knows that day length varies.		Group materials according to whether they are solids, liquids or gases   Compare solids, liquids or gases.	
		<b>SUGGESTED PRACTICALS (Choose from or use suitable alternative)</b>											
		Group invertebrates and vertebrates   Group animal kingdom (Mammal, plant, reptile, amphibian and bird)   Use hoops to group animals by features (has legs, no legs, has scales etc...)   Group invertebrates into snails/slugs, worms, spiders, and insects.   Investigate changes in the outdoor environment throughout the year eg collate photos taken each month from the same window and discuss how the scene changes.   Using classification keys to classify organisms from pictures.   Create classification key Cross - curricular links with geography <b>VISIT: Manchester Museum</b>		Group plants into flowering and non-flowering plants   Pupil can Investigate changes in the outdoor environment throughout the year e.g. collate photos taken each month from the same window and discuss how the scene changes.   Local habitat survey – observing, recording and gather evidence   Visit a park   Videos on deforestation Cross - curricular links with geography		Pupil can explore how sounds are made using different objects such as sauce pan lids, elastic bands of different thickness   Create a string telephone   Investigate the best material for absorbing sound   Pupil can explore and identify the way sound is made in a range of different musical instruments. Cross - curricular links with music <b>Music shop</b> <b>Visit from Manchester University Dental Students</b>		Investigating pitch on different instruments   Does sound travel fastest through solids or liquids?   Drum, tuning fork to represent vibrations of sound   Using popping candy to emphasise sound in water. – Which liquids does the popping candy pop in the loudest?   Making breakfast and listening to rice crispy crack. Cross - curricular links with music		(W/S) By making tables and charts about the weather: and making displays of what happens in the world around them, including day length, as the seasons change.   Weather Diary – Report (measure temperature, rainfall and wind direction)   Summer walk   Find the indicators of summer   Record changes in day length over a period of time   What clothes do we wear this season   Match weather to season   Visit your tree and record what it looks like Observe changes across the 4 seasons Cross Curricular – Art <b>VISIT: Park</b>		Boiling water in a kettle   Making ice cubes   Watching ice cubes melt   Identify the bubbles of gas /materials in a fizzy drink   Melting chocolate investigation Cross - curricular links with Geography <b>VISIT: Magna</b>	
		<b>SKILLS (to be developed)</b>											
<b>Asking Questions and Planning an Enquiry</b> Asking questions   Use different types of scientific enquiries to answer them  <b>Record</b> Gather, record, classify and present data in a variety of ways   Record findings using simple scientific language, drawing, labelled diagrams, keys, bar charts and tables		<b>Asking Questions and Planning an Enquiry</b> Asking questions   Use different types of scientific enquiries to answer them  <b>Record</b> Gather, record, classify and present data in a variety of ways   Record findings using simple scientific language, drawing, labelled diagrams, keys, bar charts and tables		<b>Asking Questions and Planning an Enquiry</b> Asking questions and using different types of scientific enquiries to answer them		<b>Asking Questions and Planning an Enquiry</b> Asking questions and using different types of scientific enquiries to answer them Using keys, bar charts and tables		<b>Observe and Describe Recording</b> Gather and record data to help in answering questions		<b>Setting up an enquiry</b> Set up simple practical enquiries comparative and fair tests  <b>Record</b> Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawing, labelled diagrams, keys, bar charts and tables			

**VOCABULARY** (In addition to 'skills' terms listed above)

Classification, classification keys, environment and habitat

human impact, positive, negative, migrate and hibernate

Sound, faint, loud and insulation

Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud and insulation

Leaf, flower, blossom, petal, fruit, Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn) and sun

Solid, liquid, gas, state change, melting, freezing, melting point, boiling point and evaporation

Ongoing – recognise that environments can change  
**Week 1 -6** Explore ways grouping living things  
**Week 7** Assessment

Ongoing – recognise that environments can change  
**Week 1-2** Explore ways of grouping flowering and non-flowering plants  
**Week 3-4** Make use of a simple key to identify local plants and animals in a chosen habitat  
**Week 5-7** Describe what effects humans can have on their environment

Ongoing – recognise that environments can change  
**Week 1 -2** Explore how sounds are made using different objects  
**Week 3-4** Explore making ear muffs made from different materials and how they can provide insulations from sound  
**Week 5** Explore how sound travels using electrical resources (ear phones) and non-electrical resources (string and cups)  
**Week 6:** Assessment

Ongoing – recognise that environments can change  
**Week 1 -2** Define pitch and investigate pitch on different instruments.  
**Week 3-4** Define sound and investigate how volume is affected by vibrations  
**Week 5-6** Recognises that sounds gets fainter as the distance from the sound source increases

Ongoing – recognise that environments can change  
**Week 1** Name and describe seasons in order - Begin weather and changes in day length diary. Compare trees in different seasons and visit their favourite spot by a tree  
**Week 2** Summer Walk – find and name 3 or more wild flowers, 3 trees or more trees. Draw and describe your flowers and trees  
**Week 3** Match weather vocabulary to season  
**Week 4** -Look at sun safety What clothes we wear in summer? Why? Longest day of the year and when the clocks go backwards and forwards  
**Week 5 Assessment**

Ongoing – recognise that environments can change  
**Week 1-2** Define solid, liquid and gas and group items accordingly.  
**Week 3** Observe ice melting, freezing and turning to steam.  
**Week 4** Plan an investigation to find the effect of temperature on chocolate  
**Week 5** Plan an investigation to find the effect of temperature on chocolate  
**Week 6** Carry out the investigation to find the effect of temperature and chocolate  
**Week 7** Write results and form a conclusion for the effect of temperature on chocolate

## Medium Term Planning Key Stage 4 Cycle 1 (2020 – 2021)

Aspiration for Life	Differentiated, aspirational targets dependent on pupil needs.		Language for Life	Explicit teaching/ exposure to new scientific vocabulary		Learning for Life	Opportunities to develop cross curricular skills e.g. maths, English and ICT	
<b>KS4 Cycle 2 (2021 -2022)</b>	<b>Material Properties &amp; Material Changes (States of Matter)</b>	<b>Seasonal Changes</b>	<b>Animals Including Humans (Digestion)</b>	<b>Animals Including Humans (Teeth and Food Chains)</b>	<b>Electricity</b>	<b>Electricity</b>		
	<b>Autumn 1 – 7 weeks</b>	<b>Autumn 2 - 7 weeks</b>	<b>Spring 1 – 6 weeks</b>	<b>Spring 2 – 6 weeks</b>	<b>Summer 1 – 5 weeks</b>	<b>Summer 2 – 7 weeks</b>		
	Observe that some materials change state when they are heated or cooled and measure/research the temperature at which this happens   Understand that liquids evaporate and condense as a result of temperature.	Name the four seasons and identify when in the year they occur   Observe changes across the four seasons   Observe weather associated with the seasons   Describe the weather associated with the seasons   Knows day length varies	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.	Identify common appliances that run on electricity.	Construct a simple series electrical circuit identifying and naming its basic part   Knows that changes can be made to circuits and that some materials are better conductors than others.		
	<b>SUGGESTED PRACTICALS (Choose from or use suitable alternative)</b>							
	<b>Ice Cube Investigation</b> Boil a kettle – Get steam over mirror   Place two or three ice cubes on some cling film stretched over a container of warm water   Put two ice cubes in two beakers   Put a teaspoon of salt on one ice cube, and observe what happens over a few minutes   Use a thermometer to observe how the temperature in the beakers changes. Cross - curricular links with geography	(W/S) Investigate what happens to the total length of daylight this term and write a report   Weather Diary – Report (measure temperature, rainfall and wind direction)   Autumn walk: Find the indicators of autumn   Record changes in day length over a period of time (sunrise and sunset)   What clothes do we wear this season, why?   Match weather to season   Visit a tree and record what it looks like in autumn Cross Curricular – Art VISITS: Local park, Astronomy Centre, Todmorden	Look at which key parts of the digestive system we already know and define the ones we are unfamiliar with   Label diagram of digestive system   Demonstrate how different parts of the digestive system work using a model Use chopping board and knife for mouth, tube for oesophagus, plastic tubs for stomach, small intestine, large intestine (all with pictures of what each tub represents on the front) and tights.   Draw digestive system   Give household objects and ask to discuss which object could be used to model the different parts of the digestive system – turn into a video Cross - curricular links with PSHE Visit from Manchester University Dental Students	(W/S) Effect of fizzy drinks on teeth experiment   (W/S) Brush the brown layers of the left eggs with toothpaste to show how toothpaste works – which toothpaste works best? Fluoride or non-fluoride?   Practising flossing using large lego. Practise brushing teeth using yogurt containers.   Paint using toothbrushes – emphasise different directions to scrub your teeth - improving fine motor skills What would life be like without teeth? – Does a baby need teeth- it just needs food to be broken down before!   Pupil can construct and interpret a variety of food chains identifying producers, predators and prey.	Investigate the effect of adding more batteries   Define battery and compare the effectiveness of new and old batteries Cross - curricular links with geography – (thunder/lightening) VISIT: Electronic Shop	Investigate complete and incomplete circuits   Make circuits and draw them pictorially N.B. Children in pathway 4 do not need to use standard symbols as this is taught in year 6 Cross - curricular links with geography – (thunder/lightening)		
	<b>SKILLS (to be developed)</b>							
<b>Setting up an enquiry</b> Set up simple practical enquiries comparative and fair tests Setting up a fair test	<b>Observe and Describe Recording</b> Gather and record data to help in answering questions	<b>Record</b> Record findings using simple scientific language, drawing, labelled diagrams	<b>Record</b> Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawing, labelled diagrams, keys, bar charts and tables	<b>Comparing Interpret and Report</b> Report on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions	<b>Asking Questions and Planning an Enquiry</b> Asking questions and using different types of scientific enquiries to answer them			

INTENT: To explore the world around us, observe phenomena, develop scientific vocabulary, be curious and ask questions about what we see, answer scientific questions creatively and form conclusions from our evidence gathered.

**VOCABULARY** (In addition to 'skills' terms listed above)

Solid, liquid, gas, state change, melting, freezing, melting point, boiling point and evaporation

Leaf, flower, blossom, petal, fruit, Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn) and sun, axis, tilts, Earth, Sun, planets, rotates, solstice, equinox and orbits, hemisphere

Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus and teeth

Teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey and food chain

Battery and electricity

Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal and symbol

**Week 1-2** Define solid liquid and gas and group items accordingly.  
**Week 3-4** Describe changes in state  
**Week 5-6** Ice cube investigation  
**Week 7:** Assessment

**Week 1** Name and describe seasons in order - Begin weather and changes in day length diary  
**Week 2** Compare trees in different seasons and visit their favourite spot by a tree  
**Week 3** Autumn Walk – Describe weather associated with autumn  
**Week 4** Match weather/vocabulary to season  
**Week 5** What clothes do we wear at different points in the year?  
**Week 6-7** Longest day of the year When the clocks go backwards and forwards

**Week 1-2** Know the main parts of the digestive system  
**Week 3-4** Pupils understand the function of the mouth the tongue and the teeth  
**Week 5** Pupil understands the functions of the large intestine and the anus and can order parts of the human digestive system  
**Week 6 Assessment**

**Week 1** Define function of teeth, identify canine, molars and incisors and describe their function  
**Week 2** Compare carnivore and herbivore teeth  
**Week 3** Pupils know what damages teeth and how to look after them  
**Week 4** Construct and interpret food chains and identify the producer, prey and predator  
**Week 5-6** Can identify simple adaptations for animals

**Week 1-2** Know that electricity can be dangerous and have been taught precautions for working safely  
**Week 2-3** Define battery and compare the effectiveness of new and old batteries  
**Week 4** Investigate the effect of adding more batteries  
**Week 5** Assessment

**Week 1-2** Pupil knows key vocabulary- cells (battery), wires, bulbs, switches and buzzers.  
**Week 3** Investigate complete and incomplete circuits.  
**Week 4** Make circuits and draw them pictorially.  
**Week 5** Define series circuit and find out whether a lamp will light in it (based on whether the lamp is part of the loop with a battery).  
**Week 6 -7** Recognises some common conductors and insulators and know that metals are good conductors.