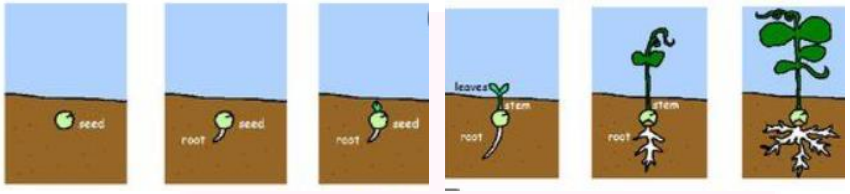
Subject: **Science - Biology**			
Year group: 2			Unit of Learning: Plants
Prior Learning Children should be able to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees and describe their basic structure (root, stem, trunk)			**Future Learning** In year 3 pupils identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers and explore the requirements of plants for life and growth and how they vary from plant to plant. They investigate the way in which water is transported within plants and explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. This is developed further when pupils look at sexual and a-sexual reproduction in plants when in year 5.
Autumn 1			
	Learning Objective	Substantive knowledge	Suggested Activity
Session 1 (1 hr)	**What plants are living in our local environment?** WS – To observe and classify. **What do plants need to grow and stay healthy?**	To know that **plants** are **living things**. To know that **plants** can be grouped in different ways • **Flowering** • **Non flowering** • **evergreen** • **deciduous** To know that **plants grow** from **seeds** and **bulbs**	**Discovery** Explore the school environment looking for different plants. Use classification keys and identify plants that have gone to seed. Back in class Give each group different seeds, bulbs, beans and ask them **what they will do to make sure it grows into a healthy plant?** (provide a range of options soil/ gravel/pots/ jars/clear plastic bags/) When children make suggestions such as give it water, keep it warm, ask why they think that is important. Ask- children what would happen if they didn't water the plants/give them light/keep them warm Plant some in clear containers so children observe the roots and shoots as they grow. Needs to be started at the beginning of term.
Session 2 and 4 (1 hr)	**How do seeds and bulbs grow into mature plants?**	To know that when **seeds** start to grow it is called **germination**. To know that **seeds** need **water oxygen** and **warmth** to **germinate**.	Over a series of lesson pupils keep a plant diary detailing how their seed bulb bean is growing

	What do plants need to survive? To observe and describe how seeds and bulbs grow into mature plants **WS** - To use observations and ideas to suggest answers to questions	To know that first **water** enters the **seed coat**; the **seed swells** and splits the coat. A **root grows** down into the soil then a little **shoot** grows up towards the **light**. Then the plant grows **leaves** so it can make its own **nutrients**	
Session 3 and 5 1 hour	To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **WS** - To ask simple questions and recognising that they can be answered in different ways **WS** - To use observations and ideas to suggest answers to questions	To know that in order to grow and be healthy all **plants need** **air** **light** **water** **nutrients** **the right temperature**	Pupils plan and conduct an investigation to find out what happens if… Pupils remove **one** variable. E.g don't give it soil then observe what happens to the plant or the seed every __ days Make sure you have a control that gets all the conditions it needs to grow well so pupils can see how their plant is growing by comparison. Over the remaining sessions pupils observe and record what is happening to the plants eventually coming to the conclusion that without air, water, light, nutrients and the right temperature to survive and stay healthy.
	ASSESSMENT WEEK Key Assessment Criteria		

	To know that when a seed germinates, the **root grows** down into the soil then a little **shoot** grows up towards the **light**. After that the plant grows **leaves** so it can make its own **nutrients** (NC- To describe how seeds and bulbs grow into mature plants) To know that all **plants need; air, light, water, nutrients** and **the right temperature** to **grow** and be **healthy**. (NC- To describe how plants need water, sunlight and the right temperature to grow and stay healthy)

Subject: **Science -Chemistry**			
Year group: 2			Unit of Learning: Material and their properties
Prior Learning Children should be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock and describe their physical properties and use these to make comparisons.			**Future Learning** In year 4 pupils will learn to compare and group materials together, according to whether they are solids, liquids or gases. They will 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)
Autumn 2			
	Learning Objective	Substantive knowledge	Suggested Activity
Session 1 (1 hr)	**What are things made of?** **Why are some materials used to make certain objects?** WS – To observe and classify.	To know that **objects** are made from different **materials.** To know that **materials** are chosen to do a job because of the **properties** they have. To know the meaning of the words: **strong** **weak** **flexible** **rigid** **transparent** **translucent** **opaque** **soft** **hard** **waterproof** **absorbent** **shiny** **dull** **stretchy** **smooth**	Provide pupils with a selection of objects made from different materials Pupils start by ort these objects according to what they are made off. Use the vocabulary sheet. Explain the properties from the vocabulary sheet. Pointing out that they are opposites strong or weak / flexible or rigid Spend time exploring transparent translucent opaque Clarify that 'hard' means it does not scratch easily (you couldn't damage it with scissors)

<table>
<tr>
<td>Session 2
(1 hr)</td>
<td>What properties do different materials have? Why do these properties make the material suitable for its purpose?
To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</td>
<td>To know that suitable means something is suited to (good for) doing a specific job.

To know that properties describe the qualities different materials have

To know that materials are chosen to do a job because of the properties they have.</td>
<td>Provide pupils with objects to investigate
Pupils record what the object is made from and list its properties using the vocab sheet. (record using photographs)

At the end of the session discuss why a cloth is made of fabric – for example</td>
</tr>
<tr>
<td>Session 3
1 hour</td>
<td>What properties do different materials have? Why do these properties make the material suitable for its purpose?
To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper</td>
<td>To know that materials are chosen to do a job because of the properties they have.

To know the meaning of the words:
strong
weak
flexible
rigid
transparent
translucent
opaque
soft
hard</td>
<td>Pupils record learning

<table>
<tr><td>Object</td><td>Made from…</td><td>Properties</td></tr>
<tr><td>T-shirt</td><td>Fabric</td><td>soft
flexible
opaque</td></tr>
</table>
</td>
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	and cardboard for particular uses	**waterproof** **absorbent** **shiny** **dull** **stretchy** **smooth**	
Session 4 1 hour	**Can all objects be squashed, bent, twisted and stretched?** **What happens to objects when they are squashed, bent, twisted and stretched?** To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	To know that the **shapes** of some objects can be **changed** by **squashing, bending, twisting and stretching**.	Pupils investigate whether given objects can be squashed, bent, twisted and stretched.
Session 5 1 hour	To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	To know that **materials** are chosen to do a job because of the **properties** they have. To know the meaning of the words: **strong** **weak** **flexible** **rigid** **transparent**	Pupils receive a letter from Santa's elves asking for help to find the best material for wrapping all the presents. Pupils identify what properties are needed for wrapping paper. Pupils then test a range of materials to find the most suitable Pupils write a response to the elves.

	WS - To perform simple tests **WS -** To use observations and ideas to suggest answers to questions **WS -** To gather and recording data to help in answering questions.	**translucent** **opaque** **soft** **hard** **waterproof** **absorbent** **shiny** **dull** **stretchy** **smooth**	
Session 6 1 hour	ASSESSMENT WEEK <u>Key Assessment Criteria</u> To know that materials are chosen to do a job because of the properties they have. To know which objects are strong, weak, flexible, rigid, transparent, translucent, opaque, soft, hard, waterproof, absorbent, shiny, dull, stretchy or smooth (NC- To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses) To know that the shapes of some objects can be changed by squashing, bending, twisting and stretching. (NC- To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.)		

Subject: **Science - Biology**			
Year group: 2			Unit of Learning: Living things and their habitat
Prior Learning Children should be able to identify and name a variety of common wild and garden plants and animals including fish, amphibians, reptiles, birds and mammals; deciduous and evergreen trees as well as identifying common animals that are carnivores, herbivores and omnivores			**Future Learning** Year 4 Pupils will explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. They will recognise that environments can change and that this can sometimes pose dangers to living things. Pupil's will construct and interpret a variety of food chains.
Spring 1			
	Learning Objective	Substantive knowledge	Suggested Activity
Session 1 (1 hr)	**What is a habitat?** **How are plants and animals suited to the habitat they live in?** 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 know that the type of **environment** where an **animal** lives is called it habitat. To know that **habitats provide food, shelter, safety.** To know that the there are several different habitats including **desert, polar, coastal, urban, woodland, ocean and pond.** To know that the place within a habitat that provides food, shelter and safety is called a **microhabitat**. E.g A tree is a microhabitat within a woodland habitat To know that the **living things** are **well suited** to their **habitat**.	Place small world figures either on a map of the world of on different habitat posters that they think they would be suited Begin to discuss why they think that certain animals would be found there. What do they notice about all the animals in the polar habitat / desert habitat.

Session 2 (1 hr)	**What are the main habitats and which plants animals are found within them?** **How are animals suited to the habitat they live in?** **Which animals within a habitat are predators and which are prey?** 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 know that the type of **environment** where an animal live is called it **habitat**. To know that **habitats** provide **food, shelter, safety.** To know that the there are several different **habitats** including **desert, polar, coastal, urban, woodland, ocean and pond.** To know that **the place within a habitat that provides food, shelter and safety** is called a **microhabitat**. E.g A tree is a microhabitat within a woodland habitat To know that the **living things** are **well suited** to their **habitat**. To know that **animals** in a **habitat** can be **predators or prey or both.** To know that **predators hunt and kill** other animals for **food**.	QR BBC bitesize learning guide for pupils to explore on the ipads **Polar habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zcrshcw **Ocean habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/z6xd96f **Woodland habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zxxd96f **Rainforest habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zrcfp4j **Urban habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zjq4g7h **Desert habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zm6j8hv **Costal habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zsfx7yc **Pond habitat** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zxh7wnb List predators and Prey in each habitat

Session 3 1 hour	**How do animals get (obtain) food?** To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and	To know that a **food chain** is a **diagram** showing how **energy passes** between **living things** when one living thing **eats** another. To know that a **food chain** must start with a **producer** and a **producer** is a **living thing** that can **make its own food** such as a **plant or algae** To know that a **producer** is **eaten** by a **consumer** and a **consumer** can be **eaten** by another consumer forming a chain. To know that a **food chain** ends with the **top consumer**	Share this with whole class **Intro to food chains** https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zwxwkty QR code the BBC bitesize learning guide for pupils to explore on the ipads **Woodland food chain challenge** https://www.bbc.co.uk/bitesize/topics/z6wwxnb/articles/zsphrwx
Session 4 1 hour	ASSESSMENT WEEK <u>Key Assessment Criteria</u> To know that the type of environment where an animal lives is called it habitat and that the living things are well suited to their habitat. (NC-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 know that a food chain is a diagram showing how energy passes between living things when one living thing eats another and must start with a producer. (NC-To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain)		

Subject: **Science – Chemistry**			
Year group: 2			Unit of Learning: Materials and their properties
Prior Learning Children should be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock and describe their physical properties and use these to make comparisons.			**Future Learning** In year 4 pupils will learn to compare and group materials together, according to whether they are solids, liquids or gases. They will 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)
Spring 2			
	Learning Objective	Substantive knowledge	Suggested Activity
Session 1 (1 hr)	**What materials were used to make houses in 1666?** **What materials are used to go make houses today?** **Why do you think some of the materials have changed?** **Why do you think some have stayed the same?** To identify and compare the suitability of a variety of everyday materials	To know that **materials** are chosen to do **specific jobs** based on their **properties**. To know why specific **materials** are used to build houses. To know some background information as to why and how building materials a have changed	**Discovery** Learn about the materials houses are made from now and in 1666. Look at the houses visible from the school grounds – list the materials Discuss and clarify misconceptions Create a vocabulary list (Pupils could use iPads and QR codes to investigate the videos) Clip of Tudor houses - https://www.youtube.com/watch?v=jhoDXcJ0s54 – interesting parts of this video but not all is relevant Making wattle and daub - https://www.youtube.com/watch?v=VIJlFBAAjvE How bricks are made https://www.youtube.com/watch?v=YbBHRifuBZo https://www.youtube.com/watch?v=GEvoXuFKSA0 Add to vocabulary list Label the houses. Discuss how building materials have changed?
Session 2 (1 hr)	**What properties should walls, windows and roofs have?** **What materials do you think would be most suitable for**	To know the walls, need to be built from materials that are • **strong** • **waterproof** • **opaque** • **rigid**	Share the letter from King Charles Use KAGAN strategies to generate a list of properties that are needed for walls, windows and roofs. Discuss which materials pupils think would be most suitable and why. Ask children how we could find out if materials are waterproof / strong / transparent Generate a plan to investigate the properties and suitability of different materials-

	walls, windows and roofs? To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	To know the windows, need to be built from materials that are • **strong** • **waterproof** • **transparent** • **rigid** To know the roofs, need to be built from materials that are • **strong** • **waterproof** • **opaque** • **rigid**	What equipment will they need? Pupils make predictions
Session 3 1 hour	**Which materials are the most suitable for rebuilding the houses of London?** To identify and compare the suitability of a variety of everyday materials, **WS -** To perform simple tests **WS -** To use observations and ideas to suggest answers to questions **WS -** To gather and recording data to help in answering questions.	See above Working Scientifically	Pupils test a range of materials based on the properties pupils established in last session.

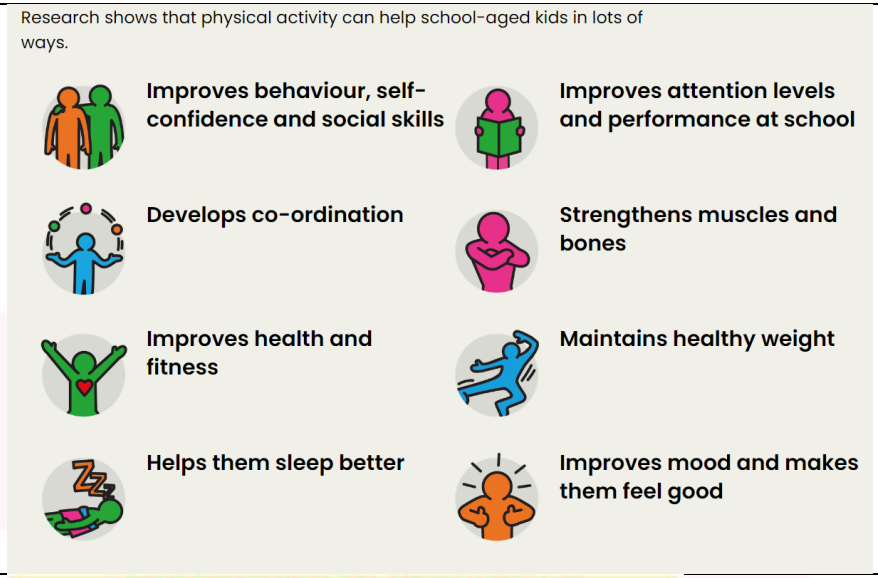
Session 4 1 hour			Pupils respond to King Charles letters to share their findings. Drawing on their knowledge about
	ASSESSMENT <u>Key Assessment Criteria</u> To know that materials are chosen to do a job because of the properties they have. (NC - To identify and compare the suitability of a variety of everyday materials)		

Subject: **Science - Biology**			
Year group: 2			Unit of Learning: Living things and their habitat
Prior Learning Children should be able to identify and name a variety of common wild and garden plants and animals including fish, amphibians, reptiles, birds and mammals; deciduous and evergreen trees as well as identifying common animals that are carnivores, herbivores and omnivores			**Future Learning** Year 3 Pupils will explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. They will recognise that environments can change and that this can sometimes pose dangers to living things. Pupil's will construct and interpret a variety of food chains.
Summer 1			
	Learning Objective	Substantive knowledge	Suggested Activity
Session 1 (1 hr)	**What is the difference between something that is living, dead or never been alive** To explore and compare the differences between things that are living, dead, and things that have never been alive	To know that **living things: react to their surroundings, breath (need air), eat, grow, move, reproduce, gets rid of waste.** To know that **dead things were once alive and could: react to their surroundings, breath (need air), eats, grows, moves, reproduces, gets rid of waste** To know that **things that have never been alive cannot and never have been able to: react to their surroundings, breath (need air), eats, grows, move, reproduces, gets rid of waste**	Walk around the school environment observing and making notes on living and non-living items. Ask children how they know if its living or non-living. Create a large list of both living and non-living Introduce some of the life processes https://www.bbc.co.uk/bitesize/topics/zx882hv/articles/zfhfn9q Look more closely at the 'non-living' list and split into dead and never been alive.
Session 2 1 hour	**What is the difference between something that is living, something that is dead and something that**	To know that **living things: react to their surroundings, breath (need air), eats, grows, moves, reproduces, gets rid of waste.** To know that **dead things were once alive and could:**	Pupil consolidate learning from prior session by sorting a range of resources and or pictures into the three categories 'living' 'dead' or 'never been alive' Pupils could choose one thing from each category to explain why it is 'living', 'dead', or never been alive

	has never been alive? To explore and compare the differences between things that are living, dead, and things that have never been alive	**react to their surroundings, breath (need air), eats, grows, moves, reproduces, gets rid of waste** To know that **things that have never been alive cannot and never have been able to: react to their surroundings, breath (need air), eats, grows, move, reproduces, gets rid of waste**	
Session 3 (1 -2 hr)	**What is a habitat?** **What is a microhabitat?** **To know that living things choose to live in habitats that they are suited to?** To identify and name a variety of plants and animals in their habitats, including microhabitats To identify that most living things live in habitats to which they are suited.	To know that the type of **environment** where an animal lives is called it habitat. To know that habitats provide **food, shelter, safety** To know that the there are several different **habitats** including **desert, polar, coastal, urban, woodland, ocean and pond.** To know that the place within a **habitat** that provides **food, shelter and safety** is called a **microhabitat**. E.g A tree is a microhabitat within a woodland habitat To know that the living things are well **suited** to their habitat i.e they can **find food / stay safe / camouflage.**	Explore the woodland and behind the poly tunnel looking for animals and identify how they are suited to their habitat. Are they well camouflaged can they find food? List the animals they found and how they were suited to their habitat. Look for woodlice. - Where might we find woodlice, why? - What kind of micro habitat will they prefer? Share what kind of conditions pupils think they like based on where they found them? Explain the woodlouse investigation to children and set up. **Do woodlice prefer _____ or _____?** damp /dry dark/ light or another suggestion

		To know that **animals** in a **habitat** can be **predators** or **prey** or both.	
Session 3 1 hour	**Do woodlice prefer _____ or _____?** **WS -** To ask simple questions and recognising that they can be answered in different ways **WS -** To observe closely, using simple equipment **WS -** To perform simple tests **WS -** To use observations and ideas to suggest answers to questions **WS -** To gather and recording data to help in answering questions.		Pupils conduct investigation to answer the scientific question. Discuss and explain about making it a fair test and only changing one variable – Pupils observe and record the number of woodlice on each side of their container at minute intervals for a duration of 5 minutes  Pupils record their findings and draw simple conclusions
Session 4 1 hour	ASSESSMENT WEEK <u>Key Assessment Criteria</u> To know how to identify living things based on knowledge of <u>some</u> of the life processes **(react to their surroundings, breath (need air), eat, grow, move, reproduce, gets rid of waste.)** To know that dead things were once alive and carried out the seven life processes To know that things that have never been alive cannot and never have been able to: carryout the seven life processes. (NC- To explore and compare the differences between things that are living, dead, and things that have never been alive)		

Subject: **Science -**			
Year group: 2			Unit of Learning:
Prior Learning In Year 1 pupils learned about the human body and should be able to identify, name, draw and label its basic parts and say which part of the body is associated with each sense			**Future Learning** In year 3 pupils will 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. In Year 6 they will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
Summer 2			
	Learning Objective	Substantive knowledge	Suggested Activity
Session 1 (1 hr)	**What does it mean to be healthy?** **What kind of things are involved in a healthy life style?** To describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	To know that a healthy lifestyle involves: **exercise**, **eating the right amounts of different types of food,** and **hygiene**. To know that **exercise** is **activity** that needs **more effort** than normal activity. To know that there are lots of good reasons to **exercise** including: **improves health**; **develops co-ordination; improves confidence; strengthens muscles and bones; helps keep you a healthy weight; can help your mental health too.**	Start by using Kagen strategies to explore what is meant by being healthy. Children self and peer assess after watching the video https://www.bbc.co.uk/bitesize/topics/z6882hv/articles/z9j4g7h Ask children how many minutes they should be active for each day? How does school help you to achieve this Explore the change for life website. https://www.nhs.uk/healthier-families/activities/ Try some 'Ten Minute Shake Ups' Scroll to the bottom and share why being active is important

			
Session 2 (1 hr)	**What is the right amount of different foods?** **Do I eat the right amount of different foods?** To describe the importance for humans of exercise, eating the right amounts of different types of food, and <u>hygiene</u>.	To know it's important to **eat** the **right amounts** of food. To know that food is **fuel** for our bodies and it gives us **energy**. To know that **food** contains the **nutrients** that our body needs. To know that **nutrients** are **protein** **carbohydrates** **fats** **vitamins and** **minerals** To know e need more of some **nutrients** than of others.	 Look at the eat well plate briefly discuss each group and the amount we should be eating. Pupils could look at a meal from the school menu or their favourite meal and check against the eat well plate – Are they eating the right amounts of different foods?
Session 3 1 hour	To describe the importance for humans of exercise, eating	To know that **microorganisms** such as **germs** and **bacteria** can make us **ill** and **spread disease**.	Allow children to dip their finger in glitter. After 5 minutes look around to see where the glitter has gone. Ask children to imagine that the glitter was germs and how easy it is to spread them if we don't follow good hand hygiene.

	the right amounts of different types of food, and <u>hygiene</u>. **WS -** To ask simple questions and recognising that they can be answered in different ways **WS -** To observe closely, using simple equipment **WS -** To perform simple tests **WS -** To use observations and ideas to suggest answers to questions **WS -** To gather and recording data to help in answering questions.	To know that **hand washing stops** us spreading **germs** by touch.	Set up the handwashing bread investigation Five slices of bread are treated in different ways… 1- control 2- rubbed on a high traffic surface 3- unwashed hands 4- washed 5- hand sanitizer Observe what happens over several weeks and draw conclusions 
Session 4 1 hour	ASSESSSMENT WEEK <u>Key Assessment Criteria</u> To know the importance of exercise and eating a balanced diet for humans to live a long, healthy life. To know that good hygiene is important for preventing the spread of germs and bacteria that can make us ill. (NC- describe the importance for humans of exercise, eat the right amount of different types of food and hygeine)		