Ashdene Primary School – Science Curriculum

Purpose of Study	A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.
Aims	The national curriculum for science aims to ensure that all pupils: • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
Curriculum Design	The Ashdene Science Curriculum explicitly sets out the substantive and disciplinary knowledge children will learn in each lesson to ensure there is clear interplay between the types of knowledge. To support schema development, lessons are sequenced to build on prior learning with each lesson having clearly defined knowledge to revisit. The Ashdene Science curriculum is sequenced following the topics as they are set out in the National Curriculum for KS1 and KS2. At Ashdene, we prioritise the STEM subjects. All year groups have a STEM based topic that is covered for a full term each year. These topics make explicit links between the Design and Technology, Science and Computing curriculums.

Personal Development Links						
	RESPECT	SMSC	Rights Respecting	British Values	Jigsaw	Trips and Visits

Topic Overview Year 4

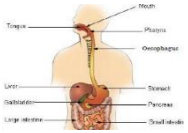
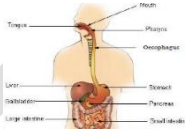
	HT1	HT2	HT3	HT4	HT5	HT6
Year 4	Animals including humans	States of matter	STEM - Electricity		Living things and their habitat	Sound

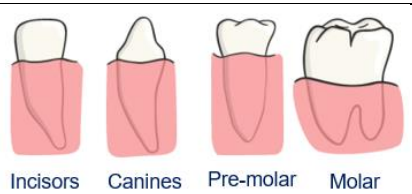
HT1 - Animals including humans

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Revisit of prior learning	Review that humans and animals get their nutrition from what they eat. Review the importance of eating the right amount of different types of food.	Review the names of the key parts of the digestive system.	Review the names of the key parts of the digestive system.	Review names of the different types of teeth and their functions.	Review grouping animals into fish, amphibians, reptiles, birds and mammals. Review carnivores, herbivores and omnivores.	Review carnivores, herbivores and omnivores and how we can tell an animal's diet by their teeth. Review what a food chain is from Y2.
Lesson sequence	Describe the simple functions of the basic parts of the digestive system in humans - *teeth, oesophagus, stomach, small/large intestines, and rectum.*	Describe the simple functions of the basic parts of the digestive system in humans. Intestine experiment	Identify the different types of teeth in humans and their simple functions - *incisors, canines, pre-molars, molars, wisdom.* Modelling teeth with modelling clay	Identify the different types of teeth in humans and their simple functions - investigation to show how to keep teeth healthy. Egg investigation	Investigate animal teeth and how the types of teeth can tell you about their diet.	Construct and interpret a variety of food chains, identifying producers, predators and prey.

Knowledge - Animals including humans

	Substantive knowledge		Disciplinary Knowledge			
	Personal Development		**Knowledge of methods that scientists use to answer questions** ***(Observation over time, pattern seeking, identify/classify, comparative/fair test, research using secondary sources)***	**Knowledge of apparatus and techniques, including measurement**	**Knowledge of data analysis**	**Knowledge of how science uses evidence to develop explanations.**

	1		**Digestion** is the way the body breaks down the food we eat into smaller parts that can be used to give the body the nutrients it needs. The main parts of the **digestive system** are – **mouth, teeth, tongue, pharynx, oesophagus, stomach, gall bladder, pancreas, large intestine, small intestine,** 	**Identify and classify** To identify and classify you make observations and investigations to organise things into groups or categories. Know that you need to use scientific language when identifying and classifying.		Know that a diagram is the best way to display the workings of something.  A diagram is a simple drawing that shows the appearance or workings of something.	Know that scientific evidence has been used to classify the parts of the digestive system. Know that an experiment will demonstrate and consolidate known facts.
	2		1. Food is put into the **mouth** where it is chewed.Food is swallowed and passes through the **pharynx** and **oesophagus** to the stomach. 2. In the stomach food is broken into smaller pieces and mixed with stomach acid. 3. The mixture passes into the small intestine where nutrients are absorbed into the blood stream. 4. The food that is left passes through the large intestine. 5. Waste leaves the body through the rectum.	**Research** Research is an investigation to establish facts about something. Know that information texts use scientific language.			
	3		**Types of teeth** **Molars/pre molars –** back teeth used for crushing and grinding **Canines –** long pointed teeth used for ripping **Incisors –** sharp front teeth used for cutting	**Identify and classify** To identify and classify you make observations and investigations to organise things into groups or categories. **Research** Research is an investigation to establish facts about something.		Know that a diagram is the best way to display the workings of something. A diagram is a simple drawing that is labelled. Modelling can be used to explain/show scientific ideas and concepts.	Know that scientific evidence supports the identification and classification of different teeth and their purposes.

				Secondary sources are works such as textbooks, encyclopedia and scientific books. They describe, discuss and evaluate primary sources. Know that information texts use scientific language.			
	4			**<u>Observation over time</u>** Observing over time is when make systematic and careful observation to identify and measure changes in materials over a period of time. Regular observations/ measurements need to be made at set intervals. You need to control the variables to limit the impact of external factors. You can carry out an observation over time to investigate which drinks cause the most/least damage to your teeth.	You can measure the volume of a liquid using a measuring jug.  The volume of a liquid is measured in millilitres and litres. 1litre = 1000ml	Know that you need to use scientific language when recording results. Know that results from an observation over time can be collected and presented in a table. | Mass of weights/g:	Time/s:	
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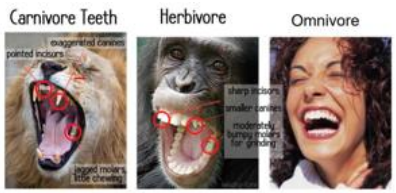
	Trial 1:	Trial 2:
250	3.1	2.9
300	2.5	2.7
350	1.7	1.8
400	1.6	1.2		To draw scientific conclusion you need to look at your results and identify patterns.
	5		**Carnivores** – eat meat. They have teeth that are shaped to slice and rip. E.g. large sharp canines. **Herbivores** – eat plants. They have teeth that are shaped to squash and grind plants e.g. bumpy molars. **Omnivores –** eat meet and plants. They have both teeth that are shaped to slice and rip (e.g. canines) and teeth that are shaped to squash and grind (e.g. bumpy molars).	**<u>Identifying and classifying</u>** To identify and classify you make observations and investigations to organise things into groups or categories. Know that you need to use scientific language when identifying and classifying.		Know that a diagram is the best way to display the workings of something. A diagram is a simple labelled drawing.	Know that results from a scientific enquiry can be used to answer a scientific question. To answer a scientific question, you should include evidence from your scientific enquiry.

				**Research** Research is an investigation to establish facts about something. Secondary sources are works such as textbooks, encyclopedia and scientific books. They describe, discuss and evaluate primary sources. Secondary sources do not give original information. It interprets information from primary sources. Know that information texts use scientific language.			Conclude that herbivores can be recognised based on their types of teeth. Conclude that different teeth have different purposes both in humans and animals.
	6	  	**Food chain** – a diagram that shows the transfer of energy from the energy source to the producer to the consumer. **Energy** – the property that gives humans strength. **Producer** – usually a green plant or algae that makes its own food. **Consumer** – a living thing which gets their food by eating plants or other animals. **Predators** – animals that eat other animals **Prey** – animals that are eaten by other animals. 	**Identifying and classifying** To identify and classify you make observations and investigations to organise things into groups or categories. Know that you need to use scientific language when identifying and classifying. **Research** Research is an investigation to establish facts about something. Secondary sources are works such as textbooks, encyclopedia and scientific books. They describe,		Know that a diagram is the best way to display the workings of something. A diagram is a simple labelled drawing.	Know that scientific evidence has been used to classify different species.

				discuss and evaluate primary sources. Know that information texts use scientific language.			