Manor Primary School
Science Year 4: Animals, including humans

Overview of the Learning:

In this unit of learning children will investigate animals including humans. They will be introduced to the main body parts associated with the digestive system and how they have special functions. This will include: digestive system – mouth, tongue, teeth, oesophagus, stomach and intestine and understand how the digestive system digests the food eaten and (with oxygen) gives the body energy process of digestion. Children will explore different types of teeth including milk and permanent teeth; incisors, canines and molars. Children will find out about food groups and healthy balanced diets and compare diets of herbivores, carnivores and omnivores. Investigate teeth and what causes decay and look closely at food chains/webs.

Core Aims

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics about humans and other animals
- 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.

Pupils should be taught to work scientifically. They will:

- 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.

	Pupils should be taught about animals including humans: • Describe the simple functions of the basic parts of the digestive system in humans Digestive system – mouth, tongue, teeth, oesophagus, stomach and intestine the digestive system digests the food eaten and (with oxygen) gives the body energy process of digestion. • Identify the different types of teeth in humans and their simple functions • Explore types of teeth including milk and permanent teeth; incisors, canines and molars. • Pupils can apply their knowledge and skills by: comparing the teeth of carnivores and herbivores, and comparing how they are used. recording information about organs and systems of the human body through e.g. drawings, labels, diagrams, displays, photographs • Construct and interpret a variety of food chains, identifying producers, predators and prey.

Expectations

Children can:

- Describe the simple functions of the basic parts of the digestive system in humans Digestive system – mouth, tongue, teeth, oesophagus, stomach and intestine • the digestive system digests the food eaten and (with oxygen) gives the body energy process of digestion.
- Identify the different types of teeth in humans and their simple functions
- Explore types of teeth including milk and permanent teeth; incisors, canines and molars.
- Pupils can apply their knowledge and skills by: comparing the teeth of carnivores and herbivores, and comparing how they are used. Recording information about organs and systems of the human body through e.g. drawings, labels, diagrams, displays, photographs
- Construct and interpret a variety of food chains, identifying producers, predators and prey.
- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- 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

Manor Primary School
Science Year 4: Electricity

Overview of the Learning:

In this unit of learning children will investigate making circuits and extends their understanding of circuits, conductors and insulators and the need for a complete circuit in order for a device to work. Children are introduced to ways in which they can vary the current in a circuit.

Core Aims

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics about humans and other animals
- 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.

Pupils should be taught to work scientifically. They will:

- 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. **Pupils should be taught about 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.

Expectations

Children can:

- 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.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.

Manor Primary School
Science Year 4: Living things and their habitats

Overview of the Learning:

In In this unit of learning children will investigate a range of living things. They will explore: what animals and plants need in order to survive; how important plants are for all living things and the conditions that plants need so that they will grow. They will find out about the life cycles of animals that could be found in the school grounds and the conditions that animals need in order to survive. They will also explore how an animal is suited to its environment and investigate some feeding relationships between animals and plants.

Core Aims

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics about humans and other animals
- 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.

Pupils should be taught to work scientifically. They will:

- 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. **Pupils should be taught about 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.

Expectations

Children can:

- 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.
- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- 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

Manor Primary School
Science Year 4: Properties and changing materials

Overview of the Learning:

In this unit of learning children will 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. Children will carry our tests on reversible changes thinking about the processes of melting, evaporating, condensing and freezing/solidifying. Children will use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

Core Aims

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics about humans and other animals
- 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.

Pupils should be taught to work scientifically. They will:

- 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 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.

Pupils should be taught about properties and changing materials:

- 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.

Expectations

Children can:

- 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.
- 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 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

Manor Primary School
Science Year 4: Sound

Overview of the Learning:

In this unit of learning children will investigate how sounds are made. They will identify how sounds are made, associating some of them with something vibrating and recognise that vibrations from sounds travel through a medium to the ear. They will investigate different patterns between the pitch of a sound and features of the object that produce it. They will find patterns between the volume of a sound and the strength of the vibrations that produce it as well as recognise that sounds get fainter as the distance from the sound source increases.

Core Aims

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics about humans and other animals
- 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.

Pupils should be taught to work scientifically. They will:

- 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.

Pupils should be taught about 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.

Expectations

Children can:

- 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.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.

Manor Primary School
Science Year 4: States of Matter – Changing state

Overview of the Learning:

In this unit children will reinforce their understanding of solids and liquids and states of matter. They find out how solids and liquids can be separated when they become mixed and explore reversible changes. They create their own sorting machines and learn how to filter a solution.

Core Aims

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics about humans and other animals
- 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
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Pupils should be taught to work scientifically. They will:

- asking relevant questions and using different types of scientific enquiries to answer them
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- 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.

Pupils should be taught about 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.

Expectations

Children can:

- 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.
- 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
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- 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.