

St Thomas More Catholic Primary School

Complete Science Objectives: Year 1 to Year 6

<u>Year 1 and 2</u> <u>Working Scientifically</u>	<u>National Curriculum Objectives</u>	<i>To be taught throughout the year through investigations.</i>
	To ask simple questions and recognise that they can be answered in different ways.	
	To observe closely, using simple equipment.	
	To perform simple tests	
	To identify and classify	
	To use their observations and ideas to suggest answers to questions	
	To gather and recording data to help in answering questions.	

<u>Year 1</u> <u>Plants</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	To be able to describe how to plant a bean.
	To identify and describe the basic structure of a variety of common flowering plants, including trees.	To be able to identify and name common wild plants.
		To be able to identify and name some garden plants.
		To be able to identify trees by their leaves.
		To be able to sort deciduous and evergreen leaves.
		To be able to identify and describe the parts of plants and trees.
		To be able to talk about how my bean plant has grown.

<u>Year 1</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Animals including humans</u>	To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.	To be able to draw my body and label my body parts.
	To identify and name a variety of common animals that are carnivores, herbivores and omnivores.	I know which parts of my body I use to see, hear, taste, smell and feel.
	To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	To be able to use my senses to do tests.
	To identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	To be able to identify common animals.
		To be able to name some animals that are carnivores, herbivores and omnivores.
		To be able to sort some animals that are carnivores, herbivores and omnivores.

<u>Year 1</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Everyday materials</u>	To distinguish between an object and the material from which it is made.	To be able to identify and name different materials.
	To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	To be able to tell the difference between an object and the materials it is made from.
	To describe the simple physical properties of a variety of everyday materials	To be able to describe the properties of everyday materials.
	To compare and group together a variety of everyday materials on the basis of their simple physical properties.	To be able to identify which materials have certain properties.
		To be able to test different materials.
		To be able to sort objects by their properties.

<u>Year 1</u> <u>Seasonal Changes</u>	<u>National Curriculum Objectives</u> To observe changes across the four seasons.	<u>Lesson by Lesson Objectives</u> To be able to describe how the weather changes across the seasons.
	To observe and describe weather associated with the seasons and how day length varies.	To be able to observe and describe the weather in summer.
		To be able to collect and record data about the weather in spring <i>(dependent on season)</i> .
		To be able to describe how day length varies from spring to summer.
		To be able to identify changes in the trees and in clothes that we wear from autumn to winter.
		To be able to explain how some animals adapt in winter.
		To be able to explain how to stay safe in the sun.

<u>Year 1 and 2</u> <u>Working Scientifically</u>	<u>National Curriculum Objectives</u>	<i>To be taught throughout the year through investigations.</i>
	To ask simple questions and recognise that they can be answered in different ways.	
	To observe closely, using simple equipment.	
	To perform simple tests	
	To identify and classify	
	To use their observations and ideas to suggest answers to questions	
	To gather and recording data to help in answering questions.	

<u>Year 2</u> <u>Living Things and Their Habitats</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To explore and compare the differences between things that are living, dead, and things that have never been alive	To be able to compare the differences between things that are living, dead and have never been alive.
	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 be able to map a habitat and identify what is in it.
	To identify and name a variety of plants and animals in their habitats, including microhabitats	To be able to identify animals in their habitats.
	To 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.	To be able to ask and answer questions about habitats.
		To be able to identify how an animal is suited to its habitat.
		To be able to describe how animals get their food.

<u>Year 2</u> <u>Plants</u>	<u>National Curriculum Objectives</u> To observe and describe how seeds and bulbs grow into mature plants.	<u>Lesson by Lesson Objectives</u> To be able to look closely at plants and trees and record what I see.
	To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	To be able to plant seeds and bulbs and suggest how to care for them.
		To be able to explain the life cycle of plants.
		To be able to use my observations to explain what plants need.
		To be able to use my observations to say what food crops will need to grow and stay healthy.
		To be able to observe and describe the growth of different plants.

<u>Year 2</u> <u>Use of everyday materials</u>	<u>National Curriculum Objectives</u> 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.	<u>Lesson by Lesson Objectives</u> To be able to identify uses of different everyday materials
	To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	To be able to identify and group the uses of everyday materials.
		To be able to compare the suitability of different everyday materials.
		To be able to explain how the shapes of objects made from some materials can be changed.
		To be able to explain the process of recycling.
		To be able to tell you about the inventor John McAdam.

<u>Year 3 and 4</u> <u>Working Scientifically</u>	<u>National Curriculum Objectives</u>	<i>To be taught throughout the year through investigations.</i>
	To ask relevant questions and using different types of scientific enquiries to answer them.	
	To set up simple practical enquiries, comparative and fair tests	
	To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	
	To gather, record, classify and present data in a variety of ways to help in answer questions	
	To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	
	To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	
	To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	
	To identify differences, similarities or changes related to simple scientific ideas and processes	
	To use straightforward scientific evidence to answer questions or to support their findings.	

<u>Year 3</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Plants</u>	To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	To be able to name the different parts of flowering plants and explain their jobs.
	To 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.	To be able to set up an investigation to find out what plants need to grow well.
	To investigate the way in which water is transported within plants.	To be able to record my observations and present them using scientific language.
	To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	To be able to investigate how water is transported in plants.
		To be able to name the different parts of a flower and explain their role in pollination and fertilisation
		To be able to understand and order the stages of the life cycle of a flowering plant.

<u>Year 3</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Animals including humans</u>	To 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.	To be able to explain how living things obtain food.
	To identify that humans and some other animals have skeletons and muscles for support, protection and movement.	To be able to compare and group animals by their diet.
		To be able to sort animals based on their skeletons.
		To be able to identify and name bones.
		To be able to identify and explain the three main functions of a skeleton.
		I know why we need muscles to move. (could be an investigation lesson)

<u>Year 3</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Rocks</u>	To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	To be able to compare different types of rocks.
	To describe in simple terms how fossils are formed when things that have lived are trapped within rock	To be able to group rocks based on their properties.
	To recognise that soils are made from rocks and organic matter	To be able to explain how fossils are formed.
		To be able to explain Mary Anning's contribution to palaeontology.
		To be able to explain how soil is formed
		To be able to make systematic and careful observations in the context of investigating the permeability of different soils.

<u>Year 3</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Light</u>	To recognise that they need light in order to see things and that dark is the absence of light	To be able to recognise that I need light to see things, and that dark is the absence of light.
	To notice that light is reflected from surfaces	To be able to investigate which surfaces reflect light.
	To recognise that light from the sun can be dangerous and that there are ways to protect their eyes	To be able to use a mirror to reflect light and explain how mirrors work.
	To recognise that shadows are formed when the light from a light source is blocked by an opaque object	I know that light from the sun can be dangerous and that there are ways we can protect our eyes.
	To find patterns in the way that the size of shadows change.	To be able to investigate which materials block light to form shadows.
		To be able to find patterns when investigating how shadows change size.

<u>Year 3</u> <u>Forces and magnets</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To compare how things move on different surfaces.	To be able to identify the forces acting on objects.
	To notice that some forces need contact between two objects, but magnetic forces can act at a distance	To be able to investigate how a toy car moves over different surfaces.
	To observe how magnets attract or repel each other and attract some materials and not others	To be able to sort magnetic and non-magnetic materials.
	To 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	To be able to investigate the strength of magnets.
	To describe magnets as having two poles	To be able to explore magnetic poles.
	To predict whether two magnets will attract or repel each other, depending on which poles are facing.	To be able to observe how magnets attract some materials.

<u>Year 3 and 4</u> <u>Working Scientifically</u>	<u>National Curriculum Objectives</u>	<i>To be taught throughout the year through investigations.</i>
	To ask relevant questions and using different types of scientific enquiries to answer them.	
	To set up simple practical enquiries, comparative and fair tests	
	To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	
	To gather, record, classify and present data in a variety of ways to help in answer questions	
	To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	
	To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	
	To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	
	To identify differences, similarities or changes related to simple scientific ideas and processes	
	To use straightforward scientific evidence to answer questions or to support their findings.	

<u>Year 4</u> <u>Living things and their habitats</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To recognise that living things can be grouped in a variety of ways	To be able to group living things in a range of ways.
	To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	To be able to identify vertebrates by observing their similarities and differences.
	To recognise that environments can change and that this can sometimes pose dangers to living things.	To be able to use a key to identify invertebrates.
		To be able to create a classification key.
		To be able to recognise positive and negative changes to the local environment.
		To be able to describe environmental dangers to endangered species.

<u>Year 4</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Animals including humans</u>	To describe the simple functions of the basic parts of the digestive system in humans.	To be able to identify and name parts of the human digestive system.
	To identify the different types of teeth in humans and their simple functions.	To be able to explain the functions of the digestive system.
	To construct and interpret a variety of food chains, identifying producers, predators and prey.	To be able to identify the types and functions of teeth.
		To be able to ask scientific questions and choose a scientific enquiry to answer them.
		To be able to make careful observations, appropriately record my results and use them to develop further investigations.
		To be able to construct and interpret food chains.

<u>Year 4</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>States of matter</u>	To compare and group materials together, according to whether they are solids, liquids or gases.	To be able to sort and describe materials.
	To 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)	To be able to investigate gases and explain their properties.
	To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	To be able to investigate materials as they change state.
		To be able to explore how water changes state.
		To be able to investigate how water evaporates.
		To be able to identify and describe the different stages of the water cycle.

<u>Year 4</u> <u>Sound</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To identify how sounds are made, associating some of them with something vibrating	To be able to describe and explain sound sources.
	To recognise that vibrations from sounds travel through a medium to the ear	To be able to explain how different sounds travel.
	To find patterns between the pitch of a sound and features of the object that produced it	To be able to explore ways to change the pitch of a sound.
	To find patterns between the volume of a sound and the strength of the vibrations that produced it	To be able to investigate ways to absorb sound.
	To recognise that sounds get fainter as the distance from the sound source increases	To be able to make a musical instrument to play different sounds.

<u>Year 4</u> <u>Electricity</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To identify common appliances that run on electricity.	To be able to explain what electricity is.
	To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	To be able to identify electrical appliances and the types of electricity they use.
	To 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	To be able to identify complete and incomplete circuits.
	To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	To be able to identify and sort materials into electrical conductors or insulators.
	To recognise some common conductors and insulators, and associate metals with being good conductors.	To be able to explain how a switch works and why they are needed.
		To be able to record and report on an investigation.

<u>Year 5 and 6</u> <u>Working Scientifically</u>	<u>National Curriculum Objectives</u>	<i>To be taught throughout the year through investigations.</i>
	To plan different types of scientific enquiries to answer questions, including recognise and control variables where necessary	
	To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	
	To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	
	To use test results to make predictions to set up further comparative and fair tests	
	To report and present 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	
	To identify scientific evidence that has been used to support or refute ideas or arguments.	

<u>Year 5</u> <u>Living things and their habitats</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	To be able to describe how some plants reproduce.
	To describe the life process of reproduction in some plants and animals.	To be able to describe the life cycles of different mammals.
		To be able to explain what Jane Goodall discovered about chimpanzees.
		To be able to compare the life cycles of amphibians and insects.
		To be able to compare the life cycles of plants, mammals, amphibians, insects and birds.

<u>Year 5</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Animals including humans</u>	To describe the changes as humans develop to old age.	To be able to describe the stages of human development.
		To be able to explain how babies grow and develop.
		To be able to describe and explain the main changes that occur during puberty. – <i>link with RE curriculum – Journey in Love</i>
		To be able to identify the changes that take place in old age.
		To be able to report findings from enquiries. – <i>gestation period for animals</i>
		To be able to record complex data using graphs and models.

<u>Year 5</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Properties and changes of materials</u>	To 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.	To be able to compare materials according to their properties.
	To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	To be able to investigate thermal conductors and insulators.
	To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	To be able to investigate which electrical conductors make a bulb shine brightest.
	To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	To be able to investigate materials which will dissolve.
	To demonstrate that dissolving, mixing and changes of state are reversible changes	To be able to use different processes to separate mixtures of materials.
	To 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.	To be able to identify and explain irreversible chemical changes.

<u>Year 5</u> <u>Earth and Space</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To describe the movement of the Earth, and other planets, relative to the Sun in the solar system	To be able to explain why we know the Sun, Earth and Moon are spherical.
	To describe the movement of the Moon relative to the Earth	To be able to name and describe features of the planets in our solar system. To be able to order the planets in our solar system.
	To describe the Sun, Earth and Moon as approximately spherical bodies	To be able to explain how planets move in our solar system.
	To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	To be able to explain day and night and the apparent movement of the sun across the sky.
		To be able to investigate night and day in different parts of the Earth.
		To be able to explain the movement of the Moon.

<u>Year 5</u> <u>Forces</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	To identify forces acting on objects.
	To identify the effects of air resistance, water resistance and friction, that act between moving surfaces	To explore the effect gravity has on objects and how gravity was discovered.
	To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	To investigate the effects of air resistance.
		To explore the effects of water resistance.
		To investigate the effects of friction.
		To explore and design mechanisms

<u>Year 5 and 6</u> <u>Working Scientifically</u>	<u>National Curriculum Objectives</u> To plan different types of scientific enquiries to answer questions, including recognise and control variables where necessary	<i>To be taught throughout the year through investigations.</i>
	To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	
	To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	
	To use test results to make predictions to set up further comparative and fair tests	
	To report and present 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	
	To identify scientific evidence that has been used to support or refute ideas or arguments.	

<u>Year 6</u> <u>Living things and their habitats</u>	<u>National Curriculum Objectives</u> To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals	<u>Lesson by Lesson Objectives</u> To be able to give reasons for classifying animals based on their similarities and differences.
	To give reasons for classifying plants and animals based on specific characteristics.	To be able to describe how living things are classified into groups.
		To be able to identify the characteristics of different types of animals.
		To be able to describe and investigate helpful and harmful microorganisms.
		To be able to classify organisms found in my local habitat.
		To be able to explain the classification of organisms found in my local habitat.

<u>Year 6</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Animals including humans</u>	To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	To be able to identify and name the parts of the human circulatory system.
	To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	To be able to describe the functions of the main parts of the circulatory system.
	To describe the ways in which nutrients and water are transported within animals, including humans.	To be able to explain how water and nutrients are transported within the body.
		To be able to describe how diet and exercise impact on human bodies.
		To be able to plan a scientific enquiry.
		To be able to explain the impact of drugs and alcohol on the body.

<u>Year 6</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Evolution and Inheritance</u>	To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago	To be able to explain the scientific concept of inheritance
	To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	To be able to demonstrate understanding of the scientific meaning of adaptation
	To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	To be able to identify the key ideas of the theory of evolution.
		To be able to identify evidence for evolution from fossil records.
		To be able to understand how human beings have evolved.
		To be able to explain how adaptations can result in both advantages and disadvantages.

<u>Year 6</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Light</u>	To recognise that light appears to travel in straight lines	To be able to explain that light travels in straight lines from light sources to our eyes, and from light sources to objects and then to our eyes.
	To 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	To be able to understand how mirrors reflect light, and how they can help us see objects.
	To 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	To be able to investigate how refraction changes the direction in which light travels.
	To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	To be able to investigate how a prism changes a ray of light.
		To be able to investigate how light enables us to see colours.
		To be able to explain why shadows have the same shape as the object that casts them.

<u>Year 6</u>	<u>National Curriculum Objectives</u>	<u>Lesson by Lesson Objectives</u>
<u>Electricity</u>	To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit	To be able to explain the importance of the major discoveries in electricity.
	To 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	To be able to observe and explain the effects of differing volts in circuit.
	To use recognised symbols when representing a simple circuit in a diagram	To be able to plan an investigation.
		To be able to conduct an investigation.
		To be able to record my data and report my findings.