



Year 3 Science Curriculum

WORKING SCIENTIFICALLY

NC Objective/Milestone	Basic	Advancing	Deep
L.O. TBAT ask relevant questions.	With support, questions that are relevant begin to be asked. With the support of a teacher, questions can be sorted into those that can be answered by trying it out and those that cannot.	Relevant questions that lead to scientific investigation are generally asked. Generally, there is an awareness that there are different ways of asking scientific questions.	Questions for scientific investigations are asked and personal ideas are offered without support. Questions are beginning to be improved in order to clarify exactly what is being investigated.
L.O. TBAT Set up simple practical enquiries and comparative and fair tests.	With support, very simple practical enquiries and comparative and fair tests are set up.	Simple practical enquiries and comparative and fair tests are set up, with prompts if necessary.	Without support, practical enquiries and comparative and fair tests are set up and The most appropriate approach to an investigation is chosen.
L.O. TBAT make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.	With support, accurate measurements using standard units and simple equipment begin to be made.	Generally, accurate measurements are made using standard units and a range of equipment.	Without support, accurate measurements using standard units are made and accurate readings are taken.
L.O. TBAT gather, record, classify and present data in a variety of ways to help in answering questions.	With support, data begins to be gathered, recorded, classified and presented in a variety of ways to help in answering questions. Generally, the most appropriate way to present data once collected is selected.	Generally, simple scientific language, drawings, labelled diagrams, bar charts and tables are used to record findings.	Data is gathered, recorded, classified and presented in a variety of ways to help in answering questions without support.
L.O. TBAT record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.	Very basic/simple scientific language, drawings or tables are used to record findings. With support, line graphs are used to record observations.	Generally, observations are recorded, and data is classified and presented, using tables, charts, text and labelled diagrams. A series of observations are made using standard measuring equipment for measuring most quantities.	Without support, the most appropriate way to present data once collected is selected. Points are plotted to make simple line graphs.
L.O. TBAT report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	With support, reports on findings from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.	Generally, it is recognised why it is important to collect data in order to answer a question, and data is gathered, recorded, classified and presented in a variety	Without support, observations, including those for repeat readings, are recorded using tables and bar charts. Without support, reports on findings

			of ways to help in answering questions. Reports on findings from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.	from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.
	L.O. TBAT use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.	With prompts, results are used to draw simple conclusions and suggest Improvements. With prompts, predictions about what will happen are made.	Results are used to draw simple conclusions and suggest improvements. Generally, predictions are made as to what may happen before any tests are carried out. Reasons are suggested for predictions and further predictions are made about new, simple contexts.	Sometimes, patterns found in results are related to previous scientific knowledge, where possible. Independently, results are used to draw simple conclusions and suggest improvements, and conclusions are related to the patterns found in the results. Predictions are made without support and reasons for these predictions are offered.
	L.O. TBAT identify differences, similarities or changes related to simple, scientific ideas and processes.	With support, differences or similarities related to simple, scientific ideas are identified.	Differences, similarities or changes related to simple, scientific ideas and processes are identified.	Without support, differences, similarities or changes related to more complex scientific ideas and processes are identified.
	L..O. TBAT use straightforward, scientific evidence to answer questions or to support their findings.	With prompts, very basic/simple scientific evidence is used to support findings and answer questions.	Generally, appropriate scientific language and straightforward, scientific evidence is used to answer questions or to support findings.	Scientific evidence is used to answer questions or to support findings

Notes and guidance (non-statutory)

Pupils in years 3 and 4 should be given a range of scientific experiences to enable them to raise their own questions about the world around them. They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.

With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected, and finding ways of improving what they have already done. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.

These opportunities for working scientifically should be provided across years 3 and 4 so that the expectations in the programme of study can be met by the end of year 4. Pupils are not expected to cover each aspect for every area of study.

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Light	NC Objective/Milestone	Basic	Advancing	Deep
	L.O. TBAT notice that light is reflected from surfaces.	With prompts, it is noticed that light is reflected from surfaces.	Generally, it is noticed that light is reflected from surfaces.	Without support, it is noticed that light is reflected from surfaces.
	L.O. TBAT recognise that shadows are formed when the light from a light source is blocked by a solid object.	With the support of a teacher, it is understood that shadows are formed when a light source is being blocked by something.	Shadows are associated with a light source being blocked by something and patterns are found that determine the size of shadows.	Independently, shadows are associated with a light source being blocked by something and, without support, patterns are found that determine the size of shadows.
	L.O. TBAT Recognise that light is needed in order to see things and that dark is the absence of light.	With the support of a teacher, experiments are conducted to explore light and seeing. There is an awareness that dark is the absence of light.	Generally, accurate descriptions of how light is required in order to see are given. It is understood that dark is the absence of light.	Without prompts, fluent and accurate explanations of how light is required to see and that dark is the absence of light are given.
	L.O. TBAT recognise that light from the sun can be dangerous and that there are ways to protect the eyes.	With the guidance of a teacher and carefully controlled situations, there is an awareness of the danger to the eyes from the sun.	Generally, it is understood that the light from the sun can be dangerous and some basic ways of protecting the eyes are understood.	A range of measures to protect the eyes from the dangers of light from the sun are described.
	L.O. TBAT find patterns in the way that the size of shadows change.	With the support of a teacher, experiments to find patterns in the way that the size of shadows change are undertaken.	There is a general awareness that the intensity, distance of light source, angle and object causing the shadow are factors in the size and shape of shadows.	Fluent explanations describing intensity, distance, angle and object, along with evidence from experiments are used to explain patterns in the way that the size of shadows change.

Notes and guidance (non-statutory)

Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.

Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.

Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.

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Plants	NC Objective/Milestone	Basic	Advancing	Deep
	L.O. TBAT identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.	With the support of a teacher, the main parts of a plant are described and the functions of different parts of flowering plants begin to be described.	Generally, the functions of different parts of flowering plants are identified and described, e.g. the roots absorb water from the soil to feed the plant, the stem helps to support the plants, the leaves use sunlight to provide the plant with energy and the flower helps the plant to reproduce. [9]	The functions of different parts of flowering plants are independently identified and described, e.g. the roots absorb water from the soil to feed the plant, the stem helps to support the plants, the leaves use sunlight to provide the plant with energy and the flower helps the plant to reproduce. The function of other parts of flowering plants begin to be described, e.g. stamen, style, stigma, anther, filament, ovary, etc.
	L.O. TBAT 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.	With the support of a teacher, the requirements of plants for life and growth are identified. With guidance, these requirements are explored.	Generally, the requirements of plants for life and growth, and how these vary from plant to plant are identified and explored.	The requirements of plants for life and growth, and how these vary from plant to plant, are independently identified and explored.
	L.O. TBAT investigate the way in which water is transported within plants.	With support, the way in which water is transported within plants is investigated.	Generally, the way in which water is transported within plants is investigated.	Without support, the way in which water is transported within plants is investigated.
	L.O. TBAT explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	There are the beginnings of an awareness of the role of flowers in the life cycle of flowering plants.	The role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal, is explored. [9]	The role of flowers in the life cycle of flowering plants, including pollination, fertilisation, seed formation and seed dispersal, is explored independently.

Notes and guidance (non-statutory)

Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.

Note: Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.

Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.

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Animals including Humans (Skeleton & Nutrition)	NC Objective/Milestone	Basic	Advancing	Deep
	L.O. TBAT identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat.	There are the beginnings of an understanding of what 'nutrition' means. With the support of a teacher, the fact that animals, including humans, need the right types and amounts of nutrition is identified.	Generally, the terms 'nutrition' and a 'balanced diet' are understood. Generally, the fact that animals, including humans, need the right types and amounts of nutrition is identified.	Without support, the terms 'nutrition' and a 'balanced diet' are understood. The reasons why humans need the right types and amounts of nutrition are articulated.
	L.O. TBAT identify that humans and some animals have skeletons and muscles for support, protection and movement.	With support, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified.	Generally, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified. [7]	Without support, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified. It is understood that invertebrates do not have a skeleton.

Notes and guidance (non-statutory)

Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.

Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.

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Sound	NC Objective/Milestone	Basic	Advancing	Deep
	L.O. TBAT identify how sounds are made, associating some of them with something vibrating.	With the support of a teacher, the way in which sounds are made is identified.	Generally, the way in which sounds are made is identified and some of them are associated with something vibrating.	Without support, the way in which sounds are made is identified and some of the are associated with something vibrating.
	L.O. TBAT recognise that vibrations from sounds travel through a medium to the ear.	With the support of a teacher, experiments to show how vibrations from sounds travel through various media to the ear.	Generally, the word vibrations is used to describe how sounds travel through various media to the ear.	Fluent and clear explanations about how vibrations from sounds travel through various media to the ear are given.
	L.O. TBAT find patterns between the pitch of a sound and features of the object that produced it.	With the support of a teacher, patterns are beginning to be found between the pitch of a sound and features of the object that produced it.	Generally, patterns are found between the pitch of a sound and features of the object that produced it.	Independently, patterns are found between the pitch of a sound and features of the object that produced it.
	L.O. TBAT find patterns between the volume of a sound and the strength of the vibrations that produced it.	Patterns are beginning to be found between the volume of a sound and the strength of the vibrations that produced it.	Patterns are found between the volume of a sound and the strength of the vibrations that produced it.	Without support, patterns are found between the volume of a sound and the strength of the vibrations that produced it. It is beginning to be understood that sound needs a medium through which to travel, and the speed of sound in air, water and solids is beginning to be looked at.
	L.O. TBAT recognise that sounds get fainter as the distance from the sound source increases.	With the support of a teacher, experiments show that the distance from a sound source affects our hearing of the sound.	Generally, the rule 'the greater the distance, the fainter the sound' is used and understood.	The rule of distance and faintness is used fluently in explanations, along with other factors that may affect our hearing, such as the media through which the vibrations are travelling.

Notes and guidance (non-statutory)

Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.

Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.

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Living things in their habitats	NC Objective/Milestone	Basic	Advancing	Deep
	L.O. TBAT recognise that living things can be grouped in a variety of ways.	With the support of a teacher, the reasons for classifying plants and animals can be described. With the support of a teacher, food chains are described.	Reasons are given for classifying plants and animals based on specific characteristics. Animals are classified as predator and prey.	Without support, reasons are given for classifying plants and animals based on specific characteristics. There is an awareness that feeding relationships exist between plants and animals in a habitat, and this relationship is described using food chains and terms such as predator and prey.
	L.O. TBAT explore and use classification keys.	With the support of a teacher and by using simple classification keys e.g. animal, plant, material, a variety of living things can be identified and named.	Generally, a variety of living things in the local and wider environment are identified and named, using classification keys (e.g. taxonomic titles, features, habitats) to assign them to groups. Generally, vertebrate animals are begun to be put into groups, e.g. fish, amphibians, reptiles, birds and mammals; invertebrates into groups, e.g. snails and slugs, worms, spiders and insects; and plants into groups, e.g. flowering plants, including grasses, and nonflowering plants into groups, e.g. ferns and mosses.	A variety of living things in the local and wider environment are identified and named, without support, using classification keys (e.g. taxonomic titles, features, habitats) to assign them to groups. Keys based on observable features are used to help identify and group living things systematically.
	L.O. TBAT recognise that environments can change and that this can sometimes pose dangers to specific habitats.	With support, the fact that environments are changing is recognised and some potential dangers to specific habitats are identified.	Generally, it is recognised that environments are constantly changing and that this can sometimes pose dangers to specific habitats. [12]	It is recognised independently that environments are constantly changing and that this can sometimes pose dangers to specific habitats.

Notes and guidance (non-statutory)

Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.

Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.

Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.

Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.