

Countryside Live

Primary Science Curriculum Links and Ideas



This paper set out the Science links/learning of the National curriculum – Plant Sciences. However the National Curriculum relating to Citizenship is also relevant:

Unit 9 Respect for property

Vocabulary

- crime, *e.g. right and wrong, stealing, shoplifting, punishment, vandalism, victim, offender, law, consequences*
- property, *e.g. respect, sharing, belongings, buildings, community facilities*

Expectations

Most children will:

offer some reasons why stealing is wrong and identify a range of consequences arising from vandalism and theft. They know that this is regarded as anti-social behaviour and could involve the police. They use their imagination to identify how victims of crime are affected and to consider effects of such actions on offenders. They understand that the right to use and enjoy shared property carries a responsibility to respect property. Working in groups, they investigate responsibilities towards community facilities, public space or property, developing ideas and suggestions. They understand the role of the council in making decisions and prioritising resources on behalf of the community

Plant Sciences

Year 1

Unit 1B Growing Plants

Vocabulary:

- words and phrases for making comparisons *e.g. tall/taller/tallest, like, similar to, different from*
- words relating to plants *e.g. branch, flower, root, stem, seeds, seedlings, plants, leaf, weed*
- words and phrases relating to living and non-living things *e.g. living, non-living, alive, not alive, dead, healthy*

Expectations:

Most children will:

name some common plants, identify the leaf, root, stem and flower of a plant; recognise that plants are living and need water and light to grow and recognise they can investigate the conditions plants need for growth

Unit 1D – Light & Dark

Vocabulary:

- words and phrases related to light and dark *e.g. bright, light, dark, black, night, day, reflect, reflective strip*
- names of light sources *e.g. torch, warning light, Sun, candle, lantern*
- words and phrases used to make comparisons *e.g. darker/darkest, bright/brighter/brightest*
- expressions giving reasons using 'because'

Expectations:

Most children will:

name a number of light sources, including the Sun; recognise that they cannot see in the dark; describe and compare some light sources and explain why it is dangerous to look at the Sun

Year 2

Unit 2B - Plants and animals in the local environment

Vocabulary:

- words and phrases relating to life processes *e.g. produce new plants, produce young, reproduce*
- names for animals *e.g. worm, snail, fly, robin*
- names for plants *e.g. daisy, dandelion, oak tree*
- words which have a different meaning in other contexts *e.g. shoot, fruit, earth, table*
- expressions to describe location *e.g. within, under, next to*
- comparative expressions

Expectations:

Most children will:

recognise that different plants and animals live in the local environment and name some of them; know that flowering plants produce seeds which grow into new plants; describe what they observe as new plants grow; record observations in tables, using these to draw conclusions

Year 3

Unit 3B Helping plants grow well

Vocabulary:

- words to describe physical characteristics of plants *e.g. yellow, pale, thin, spindly*
- expressions of reason using 'because'
- expressions making generalisations

Expectations

Most children will:

recognise that plants provide food for humans and other animals, and that plants need light, water and warmth and healthy leaves, roots and stems in order to grow well; make careful measurements of volumes of water and height of plants and recognise that in experiments and investigations a number of plants need to be used to provide reliable evidence

Unit 3F Light and shadows

Vocabulary:

- words and phrases relating to light and shadow formation *e.g. transparent, opaque, shadow, block, direction, light travels*
- expressions of reason using 'because'
- expressions of comparison *e.g. shortest, highest*
- expressions making generalisations

Expectations

Most children will:

explain that shadows are formed when light from a source is blocked; recognise that shadows are similar in shape to the objects forming them; describe how a shadow from the Sun changes over the course of a day; make predictions about the shadows formed by different objects or materials and make careful observations and measurements of the shadows

Year 4

Unit 4B Habitats

Vocabulary:

- words related to life processes *e.g. nutrition*
- words relating to habitats and feeding relationships *e.g. habitat, condition, organism, predator, prey, producer, consumer, food chain, key*
- words which have a different meaning in other contexts *e.g. producer, consumer, key, condition*
- expressions making generalisations and comparisons

Expectations

Most children will:

identify some local habitats; name some of the organisms that live there; use simple keys to identify organisms; state the food source of some animals; distinguish between those which eat plants and those which eat other animals and plan how to investigate some of the preferences of small animals found in the habitat

Year 5

Unit 5B Life cycles

Vocabulary

- words and phrases associated with life processes *e.g. reproduction, life cycle*
- names for parts of a flower *e.g. stamen, style, stigma, sepal, petal, ovary, pollen*
- names for processes related to life cycles and associated verbs *e.g. reproduction/reproduce, germination/germinate, pollination/pollinate, fertilisation/fertilise, dispersal/disperse*
- descriptions and explanations using a sequence of ideas

Expectations

Most children will:

name and explain the functions of some parts of a flower; describe the processes of pollination, fertilisation, seed dispersal and germination; explain how to carry out a fair test to find the conditions necessary for germination; explain that living things need to reproduce if the species is to survive and recognise stages in the growth and development of humans

Unit 5C Gases around us

Vocabulary

- names of gases *e.g. air, carbon dioxide, helium, natural gas, oxygen*
- names of processes related to changes of state, and verbs related to them *e.g. evaporation/evaporate*
- descriptions and explanations involving a sequence of ideas

Expectations

Most children will:

recognise that air is a material and that it is one of a range of gases which have important uses, that liquids evaporate to form gases and that gases change shape and flow from place to place; measure volumes of liquids accurately, recognise when observations and measurements need to be repeated and provide explanations for what they observe in terms of knowledge and understanding about gases

Year 6

Unit 6A Interdependence and adaptation

Vocabulary

- words relating to plant growth *e.g. fertiliser, nutrients*
- words and phrases relating to feeding relationships *e.g. consumer, producer, predator, prey, food chain*
- words which have different meanings in other contexts *e.g. fertiliser, consumer, producer, key, suited, plant food*
- expressions for summarising and generalising
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Expectations

Most children will:

recognise that a green plant needs light and water to grow well and that it produces new material from air and water; describe how animals in two habitats are suited to the conditions; represent feeding relationships in food chains beginning with a green plant and use keys to identify animals and plants

Unit 6B Micro-organisms

Vocabulary

- use alternative terms for micro-organisms *e.g. microbe, germ, virus*
- recognise that some of these terms *e.g. germ* are used in an everyday but not a scientific context
- provide explanations and generalisations

Expectations

Most children will:

recognise that there are many very small organisms which can cause illness or decay or which can be used in food production and that these micro-organisms feed, grow and reproduce like other organisms

Unit 6C More about dissolving

Vocabulary

- words and phrases related to separating mixtures *e.g. dissolved, undissolved, solution, mixture, evaporate, condense, pure*
- words and phrases related to data handling *e.g. bar line graph, line graph, average, accurate*
- words which have different meanings in an everyday context *e.g. solution, pure*
- classificatory adjectives *e.g. clear, tap, sea*
- expressions for making and justifying predictions
- expressions for explaining, generalising and summarising

Expectations

Most children will:

recognise that solids remain in the solution when they dissolve and can be recovered by evaporation; identify several factors that affect the rate at which a solid dissolves; investigate an aspect of dissolving, presenting results obtained in a suitable graph and explaining what the results show

Countryside and Farm visits Primary Science Curriculum Links and Ideas



This paper sets out the National Curriculum Science links/learning – Human and Animal, relating to years 1-6 (Key Stage 1 & 2). However the National curriculum relating to Citizenship is also relevant:

Unit 3 Animals and us

Vocabulary

- animal welfare, *e.g. needs, rights, care, rules, responsibilities, pets, wildlife, farm, animals*

Expectations

KS1 We all have basic needs - How do we look after animals? KS2 Who else looks after animals? - Taking responsibility – what can we do?

Most children will:

- At KS1: know that animals have needs just like humans, and that these needs include food, water, companionship, a suitable place to live, being looked after by a vet if they are ill, and the freedom to behave naturally. They begin to appreciate the ways in which humans have a responsibility towards all animals – wild animals, farm animals and pets At KS1
- At KS2: know that animals have needs just like humans, and that these needs include food, water, companionship, a suitable place to live, being looked after by a vet if they are ill, and the freedom to behave naturally. They begin to appreciate the ways in which humans have a responsibility towards all animals – wild animals, farm animals and pets. They identify the wildlife in their local area and know how to help protect wild animals

Science - Human & Animal

Year 1

Unit 1A – Ourselves

Vocabulary:

- words relating to their senses *e.g. sense, eye, sight, see, ear, hearing, smell, nose, touch, feel*
- words for parts of the body of humans and other animals *e.g. leg, wing, arm, beak*
- words and phrases relating to living and non-living things *e.g. alive, living, not alive, human, animal*
- words and phrases for making comparisons *e.g. tall/taller/tallest, like, similar to, different from*
- words which have different meanings in other contexts *e.g. like, smell, animal*
- words relating to conveying scientific ideas *e.g. describe*

Expectations:

Most children will:

identify and locate parts of their body, including sense organs; recognise changes that take place as animals get older; use their observations to point out differences between humans and other animals and between animals and non-living things and communicate observations and measurements

Unit 1D – Light & Dark

Vocabulary:

- words and phrases related to light and dark e.g. *bright, light, dark, black, night, day, reflect, reflective strip*
- names of light sources e.g. *torch, warning light, Sun, candle, lantern*
- words and phrases used to make comparisons e.g. *darker/darkest, bright/brighter/brightest*
- expressions giving reasons using 'because'

Expectations:

Most children will:

name a number of light sources, including the Sun; recognise that they cannot see in the dark; describe and compare some light sources and explain why it is dangerous to look at the Sun

Unit 1F – Sound & Hearing

Vocabulary:

- words describing sounds or ways of making sounds e.g. *high, low, loud, quiet, shake, pluck, rattle, ring, silence, direction*
- words and phrases for making comparisons e.g. *louder, quieter, further away, nearer*
- near synonyms e.g. *soft/quiet, noise/sound*
- words which have different meanings in other contexts e.g. *low, high, soft*

Expectations:

Most children will:

recognise and describe many sounds; describe how sounds are generated by specific objects; state that they hear sounds through their ears; describe what they observe when they move further away from a source of sound; make observations or measurements relating to sounds and with help present these in charts

Year 2

Unit 2A - Health & Growth

Vocabulary:

- words and phrases relating to life processes e.g. *grow, growth, move, have young, reproduce, feed*
- words relating to health e.g. *diet, variety, germ, healthy/unhealthy, medicines, safety, packaging, exercise*
- words describing tastes e.g. *salty, sweet*
- comparative expressions e.g. *most, more*
- expressions of time using 'when', 'after'
- expressions of reason using 'because'

Expectations

Most children will:

identify some types of food that make up their diet and name some examples of each; recognise that an adequate diet and exercise are necessary for them to grow and stay healthy; ask questions in order to make comparisons and describe differences they observe e.g. *between*

babies and toddlers; recognise that care needs to be taken with medicines and recognise that animals produce young

Unit 2C Variation – Plants and animals in the local environment

Vocabulary:

- words naming features of animals and plants *e.g. feathers, fur, shell, branch*
- comparative expressions *e.g. long, longer, longest, small, smaller, smallest, similar to, different from*
- expressions making generalisations *e.g. 'we all...', 'most have...'*
- expressions of time related to change

Expectations

Most children will:

recognise similarities between animals and between plants and differences within these groups; suggest questions relating to differences between living things; make measurements of length using standard units and, with help, present results in block graphs, making simple interpretations of these

Year 3

Unit 3A Teeth and eating

Vocabulary:

- words and phrases related to life processes *e.g. feed, feeding, growth, activity*
- words to name and describe groups of foods *e.g. vegetables, meat, fish, sugars and starches, fruit, fats*
- names of different teeth *e.g. incisor, molar, canine*
- words which have different meanings in other contexts *e.g. diet, root, activity, decay, evidence, conclusion*
- expressions making generalisations

Expectations

Most children will:

describe an adequate and varied diet for humans, recognising that there are many ways of achieving this; explain how they should look after their teeth and recognise why they need to do so; suggest questions about diet to be investigated; make relevant observations and present results in bar charts and tables

Unit 3F Light and shadows

Vocabulary:

- words and phrases relating to light and shadow formation *e.g. transparent, opaque, shadow, block, direction, light travels*
- expressions of reason using 'because'
- expressions of comparison *e.g. shortest, highest*
- expressions making generalisations
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Expectations

Most children will:

explain that shadows are formed when light from a source is blocked; recognise that shadows are similar in shape to the objects forming them; describe how a shadow from the Sun changes over the course of a day; make predictions about the shadows formed by different objects or materials and make careful observations and measurements of the shadows

Year 4

Unit 4A Moving and growing

Vocabulary:

- words relating to skeletons and muscles *e.g. ribs, spine, skull, contract, relax, vertebrate*
- nouns and related verbs *e.g. contraction, contract*
- words which have other meanings in other contexts *e.g. relax*
- expressions making generalisations

Expectations

Most children will:

describe the main functions of their skeleton; describe observable characteristics of bones; recognise that their skeletons grow as they grow; state that movement depends on both skeleton and muscles; identify a question to be investigated and how to collect and interpret reliable evidence in order to answer the question

Unit 4B Habitats

Vocabulary:

- words related to life processes *e.g. nutrition*
- words relating to habitats and feeding relationships *e.g. habitat, condition, organism, predator, prey, producer, consumer, food chain, key*
- words which have a different meaning in other contexts *e.g. producer, consumer, key, condition*
- expressions making generalisations and comparisons

Expectations

Most children will:

identify some local habitats; name some of the organisms that live there; use simple keys to identify organisms; state the food source of some animals; distinguish between those which eat plants and those which eat other animals and plan how to investigate some of the preferences of small animals found in the habitat

Unit 4C Keeping warm

Vocabulary:

- words and phrases related to warmth and cold *e.g. temperature, thermometer, degrees Celsius, thermal conductor, thermal insulator*
- related nouns and verbs *e.g. conductor/conduct, insulator/insulate*
- phrases with specific scientific meaning *e.g. room temperature*
- words which have a different meaning in other contexts *e.g. conductor*

Expectations:

Most children will:

recognise that temperature is a measure of how hot or cold objects are; identify some materials that are good thermal insulators and some everyday uses of these; recognise that the same materials keep cold objects cold as keep warm objects warm; use thermometers to measure temperatures; suggest how to investigate a question; construct tables for their results and offer simple explanations for results

Unit 4D Solids, liquids and how they can be separated

Vocabulary

- terms relating to states of matter and to separation *e.g. solid, liquid, melt, freeze, solidify, dissolve, solution, filter, undissolved, dissolved*
- expressions for making suggestions using 'if', 'might', 'could'
- descriptions using a sequence of ideas

Expectations

Most Children will:

describe the differences between solids and liquids; describe melting and dissolving and give everyday examples of each; name some materials that will and some that will not dissolve in water; explain why undissolved solids can be separated from a solution by filtering and show how to do this; recognise that although it is not possible to see a dissolved solid it remains in the solution

Years 5/6

Unit 5/6H Enquiry in environmental and technological contexts

Vocabulary

- words and phrases that describe and explain a sequence of ideas *e.g. if it had..., it might...*
- words and phrases that link cause and effect *e.g. so, because, since*
- analogies *e.g. use a sponge like a filling in a sandwich, use a sponge like a polo mint*
- words and phrases that qualify responses *e.g. if it had..., it might*

Expectations

Most children will:

make a suggestion of how to investigate a question and plan what to do; make a series of observations or measurements appropriate to the task and record these appropriately; interpret their data and relate this to scientific knowledge and understanding, using scientific language; suggest how what they did could have been improved

Year 5

Unit 5A Keeping healthy

Vocabulary

- words and phrases related to health *e.g. balanced diet, side effect*
- words related to food types *e.g. fats, sugars, starches*
- words and phrases related to the heart and circulation *e.g. heart beat, pulse, pulse rate, muscle, blood vessel, lung*
- expressions for making suggestions using 'if', 'could'

Expectations

Most children will:

identify the components of a healthy and varied diet and describe how an idea about the effect of diet on health was tested; recognise some harmful effects of drugs; recognise that during exercise the heart beats faster to take blood more rapidly to the muscles; make careful measurements of pulse rate, represent these in suitable graphs and explain what the graphs show

Unit 5B Life cycles

Vocabulary

- words and phrases associated with life processes *e.g. reproduction, life cycle*
- names for parts of a flower *e.g. stamen, style, stigma, sepal, petal, ovary, pollen*
- names for processes related to life cycles and associated verbs *e.g. reproduction/reproduce, germination/germinate, pollination/pollinate, fertilisation/fertilise, dispersal/disperse*
- descriptions and explanations using a sequence of ideas

Expectations

Most children will:

name and explain the functions of some parts of a flower; describe the processes of pollination, fertilisation, seed dispersal and germination; explain how to carry out a fair test to find the conditions necessary for germination; explain that living things need to reproduce if the species is to survive and recognise stages in the growth and development of humans

Unit 5C Gases around us

Vocabulary

- names of gases *e.g. air, carbon dioxide, helium, natural gas, oxygen*
- names of processes related to changes of state, and verbs related to them *e.g. evaporation/evaporate*
- descriptions and explanations involving a sequence of ideas

Expectations

Most children will:

recognise that air is a material and that it is one of a range of gases which have important uses, that liquids evaporate to form gases and that gases change shape and flow from place to place; measure volumes of liquids accurately, recognise when observations and measurements need to be repeated and provide explanations for what they observe in terms of knowledge and understanding about gases

Year 6

Unit 6A Interdependence and adaptation

Vocabulary

- words relating to plant growth *e.g. fertiliser, nutrients*
- words and phrases relating to feeding relationships *e.g. consumer, producer, predator, prey, food chain*
- words which have different meanings in other contexts *e.g. fertiliser, consumer, producer, key, suited, plant food*
- expressions for summarising and generalising

Expectations

Most children will:

recognise that a green plant needs light and water to grow well and that it produces new material from air and water; describe how animals in two habitats are suited to the conditions; represent feeding relationships in food chains beginning with a green plant and use keys to identify animals and plants

Unit 6B Micro-organisms

Vocabulary

- use alternative terms for micro-organisms *e.g. microbe, germ, virus*
- recognise that some of these terms *e.g. germ* are used in an everyday but not a scientific context
- provide explanations and generalisations

Expectations

Most children will:

recognise that there are many very small organisms which can cause illness or decay or which can be used in food production and that these micro-organisms feed, grow and reproduce like other organisms

Unit 6F How we see things

Vocabulary

- words and phrases related to shadow formation and reflection *e.g. opaque, reflect, reflection, light beam, mirror, light travelling*
- expressions making generalisations about patterns in results
- descriptions and explanations involving a sequence of ideas

Expectations

Most children will:

recognise that light travels from a source, that when it is blocked, a shadow is formed and when it hits a shiny surface, it is reflected; that light sources are seen when light from them enters the eyes; make careful measurements of shadows and represent these in a line graph