**Scheme of work – Science Stage 1**

Cambridge Primary

# Introduction

This document is a scheme of work created by Cambridge International as a suggested plan of delivery for Cambridge Primary Science Stage 1. Learning objectives for the stage have been grouped into topic areas or ‘units’. These have then been arranged in a recommended teaching order but you are free to teach objectives in any order within a stage as your local requirements and resources dictate.

The scheme for Science has assumed a term length of 10 weeks, with three terms per stage and two units per term. An overview of the sequence, number and title of each unit for Stage 1 can be seen in the table below. The suggested percentage of teaching time to spend on each unit is provided at the beginning of each unit. You should decide on the amount of teaching time as necessary, to suit the pace of your learners and to fit the work comfortably into your own term times.

Where possible, several suggested activities have been given for each learning objective. Some are short introductory or revision activities and some are more substantial learning activities. You need to choose a variety of activities that will meet the needs of your learners and cover all of the requirements of the learning objectives. Scientific Enquiry learning objectives can be taught in the context of any of the learning objectives from the other strands. Sample activities that particularly focus on a scientific enquiry have been included in each unit where relevant. It is recommended that you include a wide variety of scientific enquiry in your science teaching.

There is no obligation to follow the published Cambridge International scheme of work in order to deliver Cambridge Primary Science. It has been created solely to provide an illustration of how delivery mightbe planned over the six stages. A step-by-step guide to creating your own scheme of work and implementing Cambridge Primary in your school can be found in the Cambridge Primary Teacher Guide available on the Cambridge Primary support site. Blank templates are also available on the Cambridge Primary support site for you to use if you wish.

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| --- | --- | --- |
| Term 1 | Term 2 | Term 3 |
| 1A Unit 1.1 Us and our senses | 2A Unit 1.3 Living and growing | 3A Unit 1.5 Growing plants  |
| 1B Unit 1.2 What is it made of? | 2B Unit 1.4 Pushes and pulls | 3B Unit 1.6 Making sounds |

# Unit 1.1 Us and our senses

It is recommended that this unit takes approximately **50% of the term**

In this unit, learners

* begin to name parts of the human body
* identify similarities and differences between themselves and others
* learn about senses and how humans and animals can use them to explore the world around them.

## Scientific Enquiry work includes:

* making comparisons
* recording stages in work
* exploring and observing in order to collect evidence (measurements and observations) to answer questions.

## Recommended vocabulary for this unit:

* human, animal
* head, body, shoulders, arms, elbows, hands, fingers, legs, knees, feet, toes
* eyes, ears, nose, mouth, hair, skin, chin, teeth
* senses, sight, see, touch, feel, taste, smell, hear, hearing
* observe, compare, record.

| Framework code | Learning objective | Suggested activities to choose from | Resources  | Comments  |
| --- | --- | --- | --- | --- |
| 1Bh2 | Recognise and name the main external parts of the body  | Play a game such as “Simon Says”. Learners listen to and follow the instructions to point at different parts of their bodies. Practise the game several times until learners understand what to do. Learners are out of the game if they make a mistake or are the last person to carry out an instruction.Give each learner a mirror and ask them to look at their reflection. Elicit which features on their head they name and locate. Record responses on board.As a class, discuss the names and number of specific features, e.g. eyes, nose. Draw a table to show these results. Use two columns with the headings ‘feature’ and ‘number’.Ask each learner to draw a picture of their head and shoulders and to label the parts. Provide a list of words for them to copy e.g.:* chin
* ears
* eyes
* hair
* head
* mouth
* teeth
* nose.

Alternatively give each learner a copy of a worksheet ‘My Body Parts’ and ask them to label it – copy or cut out and stick the words on.Ask learners to move certain body parts in different ways e.g. shrug shoulders, wiggle foot, wave hand – demonstrate as necessary. Invite learners to show some different ways in which they can move different parts of their body. Ask the rest of the class to copy their movements. Ask them to tell you the name of the body part and identify the initial letter or sound in the word, or to try spelling the word. Write and display the correct spelling of these words. | <https://en.wikipedia.org/wiki/Simon_Says>Mirrors (plastic).Worksheet: My Body Parts, showing a body outline and some words of body parts, large enough to be cut out if necessary. Scissors, glue.A large indoor or outdoor space to move around in. Make sure that learners are wearing appropriate footwear.Flipchart and markers or whiteboard. | When providing lists of words, learners may find them easier to use if they are written alphabetically. |
| 1Bh11Eo4 | Recognise the similarities and differences between one anotherMake comparisons | Introduce the word ‘compare’. In pairs talk about ways in which we are alike/the same. With talk partners, tell each other something that is different between the two of you. Listen to learners’ responses. Pre-prepare a game; make some sets of pictures or digital photos of children. Place the photos face down and spread out on the table. Learners choose two; if they are different, they keep them. If the photos are the same, they place them back on the table face down. The winner is the learner with the most pairs of photos at the end.Line learners up in height order. Take a digital photograph of the line. Identify the tallest and shortest learners.Ask learners to bring photos of some family members to school. Learners then talk about how they are similar and different to people in their family. Provide sentence structures such as: * I am similar to\_\_\_\_\_. We both have \_\_\_\_\_\_.
* I am different to \_\_\_\_\_\_. I have \_\_\_\_\_\_\_ and he/she has \_\_\_\_\_\_\_\_\_.
 | Sets of photographs of children (some of which are of the same child). | Note: likely answers will refer to boy/girl, number of legs, eye or hair colour. |
| 1Bh41Bh2 | Explore how senses enable humans and animals to be aware of the world around themRecognise and name the main external parts of the body | Skin and touchAsk learners to stroke the skin on the back of their hand and describe what it feels like. They can also stroke different parts of their bodies (e.g. knee, elbow, shoulder, neck, cheek).Now ask different learners to come forward and identify objects placed in a cloth bag simply by touch. Repeat the game several times. On a flipchart list the words used in describing the objects before or as they are identified.**Extension activity**Use magnifying glasses to look at the surface of the skin. Discuss what our skin does for us, e.g. gives protection and is waterproof. | Cloth bag (useful if they have a drawstring top) a selection of objects easily identifiable by touch e.g. a coin, a button, a pencil, a ball, a stone, a small toy.Flipchart and markers or whiteboard. A selection of everyday objects from around the classroom e.g. a paintbrush, book, ruler and so on. | This can be an opportunity to talk about skin health (e.g. avoiding sunburn) and making learners aware that some people’s skin can look different (e.g. birth marks, vitiligo) or as a result of scars or burns).Although different parts of skin have different sensitivities, learners should identify that all parts of their skin can be used for touch. |
| 1Bh41Bh2 | Explore how senses enable humans and animals to be aware of the world around themRecognise and name the main external parts of the body | Eyes and sightGive the learners a mirror to look at their eyes.*What do our eyes help us to do?* Show them the eye card that an optician would use. *How many letters can they read and see using both eyes? What about if they use one eye?*Invite volunteers to wear a blindfold and make their way around a pathway using a stick. Another learner should support them. Use soft objects (e.g. soft toys or cushions) to mark the boundaries of the path. | Optician’s eye chart <http://visionsource.com/patients/free-eye-chart-download/>Alternatively use a chart with pictures.Blindfolds, soft objects (e.g. soft toys or cushions), walking stick or metre stick. | This can be an opportunity to talk about eye health (e.g. what to do if you get something in your eye or common eye infections). It is also a chance to explain that spectacles/glasses help some people to see better.Sensitivity may be needed if any of the learners have visual difficulties. |
| 1Bh41Bh21Eo3 | Explore how senses enable humans and animals to be aware of the world around themRecognise and name the main external parts of the bodyRecord stages in work | Ears and hearingIn pairs, look at each other’s ears. Talk about what our ears do.Learners close their eyes for 1 minute and describe any sounds they hear. Discuss the sounds that they heard.Go outside and find a place to sit quietly. Use paper or card and pencil to record any sounds heard. Demonstrate a signal (e.g. a whistle or bell) to indicate the start and end of the listening activity.Return to the classroom and display all the learners’ ‘recordings’. Invite them to describe what they heard by showing and talking about what they have recorded.Note: Do not use the word ‘write’ or ‘draw’ for this activity, use the word ‘record’ in the instructions to give the learners choice. | Outdoor space pencils,paper or card bell or whistle.Scissors,paper or plastic cups, music and music system.Flipchart and markers or whiteboard. | This can be an opportunity to talk about hearing health (e.g. the dangers of loud sounds and not putting things into the ear). It is also a chance to explain that hearing aids help some people to hear better.Sensitivity may be needed if any of the learners have hearing difficulties. |
| 1Bh41Eo11Eo4 | Explore how senses enable humans and animals to be aware of the world around themExplore and observe in order to collect evidence (measurements and observations) to answer questionsMake comparisons | Tongue and taste Talk about *What is your favourite food?* Learners *w*rite a list of their favourite foods. Discuss foods that they don’t like to eat.Provide some foods to taste. Choose things that they might not have tasted before, if possible.Learners do an investigation into the question *Do foods taste different if you cannot see them?*Learners taste some foods with or without a blindfold and discuss if there are differences.Provide drinking water for the learners to take sips between each tasting. Learners use mirrors to look at their tongues. Explain that we can taste five main tastes: sweet, sour, salty, bitter and umami. | Blindfolds. Samples of food for learners to taste (e.g. fruit and vegetables).Worksheet with spaces for food and taste.Mirrors (plastic). If these are made of glass, the edges need to be bound with tape. | Be aware of any food allergies or intolerances or forbidden foods for particular learners.Ensure hands are clean before handling and tasting foodstuffs.Misconception alert: A common misconception is that different parts of the tongue are responsible for different tastes. Instead all parts of the tongue can detect all tastes. |
| 1Bh41Eo11Eo4 | Explore how senses enable humans and animals to be aware of the world around themExplore and observe in order to collect evidence (measurements and observations) to answer questionsMake comparisons | Noses and smellHave available a collection of familiar, fragranced products and talk about how we identify them (by smell). Invite different learners to identify different products and fragrances. Ideally learners should wear a blindfold for this activity, but they could also close their eyes.Talk about smells that they do not like. Write a list of things they like and do not like the smell of.Talk about when it is useful to smell something bad e.g. mouldy bread, sour milk, mouldy fruit.Discuss animals that have better senses of smell than humans. This could include local examples and/or sniffer dogs. | Some familiar fragranced products to smell.Blindfold.Pencils, paper or exercise books.Pictures of animals with good senses of smell. | Be aware of any allergies amongst the learners. |
| 1Bh4 | Explore how senses enable humans and animals to be aware of the world around them | Senses summaryPrepare a worksheet for learners to match pictures of sense organs to their associated sense. This can include pictures of humans and animals.Show learners pictures of a range of animals and discuss their senses. E.g. *How does good eyesight help a hawk? Why does a bat have good hearing?* If learners have not already discussed animals with a good sense of smell, then this can be done here (dogs, elephants etc.). | Worksheet: My Senses.Pictures of animals with good eyesight, hearing and smell. |  |

# Unit 1.2: What is it made of?

It is recommended that this unit takes approximately **50% of the term.**

In this unit, learners

* identify and describe different materials
* discuss the characteristics of different materials
* sort objects and materials based on their characteristics and properties.

## Scientific Enquiry work includes:

* exploring and observing in order to collect evidence (measurements and observations) to answer questions
* trying to answer questions by collecting evidence through observation
* making predictions
* deciding what to do to try to answer a science question
* making comparisons.

## Recommended vocabulary for this unit:

* materials, wood, paper, glass, plastic, metal
* characteristics, properties, elastic, waterproof, transparent.

| Framework code | Learning objective | Suggested activities to choose from | Resources  | Comments  |
| --- | --- | --- | --- | --- |
| 1Cp3 | Recognise and name common materials | To elicit prior knowledge, ask the learners to name something in the room and tell you what it is made of.Show or point to some everyday objects and ask ‘*What is it made from?’*Introduce different materials as blocks and ask learners to find objects that use the materials.Place ‘Snap’ with object and material cards. Snap is called when an object is matched with an appropriate material. (this may vary based on personal experience) e.g. chair is matched with wood and/or plastic. Some objects may be made from more than one material. Introduce different materials as blocks and discuss with learners where the materials have come from and where we see them in the world around us.  | A selection of everyday objects and materials e.g. blocks of wood, metal, plastic.Material and object snap cards.  | Learners may have, or develop, the misconception that object and material are interchangeable words. Make clear to children that objects are made of materials, sometimes one and sometimes more than one. |
| 1Cp11Eo1 | Use senses to explore and talk about different materialsExplore and observe in order to collect evidence (measurements and observations) to answer questions | Discuss how our senses can help us to identify different materials.In pairs, find materials from around the classroom e.g. *Which are hard/soft/smooth/rough?* Question their findings: *How do you know this is…?* Learners explain through their senses e.g. ‘*It felt…*’ Make a class display where the learners can bring in objects to fit the labels e.g. rough/ hard/shiny.Play a game: *Bring me…* Ask the learners to bring you a particular type of object e.g. rough/smooth/flat.Talk about the senses again, and which ones help us when identifying materials – seeing and touching, sometimes smell, and hearing (when you bang/knock a material). Discuss how it isn’t always safe to taste materials so we avoid this in science unless identified as safe. Choose a material (could be as part of an object)that can be described using each of the senses. Talk about it with the class, asking questions such as *What does it look/sound/feel/smell like?* This is an opportunity to model how to record observations in a table.  | A selection of everyday objects around the classroom with a variety of shapes, textures e.g. wooden rulers, plants, metal spoons, aluminium foil, rocks, fabrics, plastic toys.A selection of everyday objects flipchart and markers or whiteboard worksheet pencils.Blocks of materials e.g. wood/plastic/glass/metal. | Some learners may be frightened of being blindfolded, always ask their permission.You could extend these groupings to include natural or manufactured materials. |
| 1Cp21Ep11Ep31Ep41Eo4 | Identify the characteristics of different materials.Try to answer questions by collecting evidence through observationMake predictionsDecide what to do to try to answer a science questionMake comparisons | Select and describe characteristics of different materials. Do one together as a class as an example. Learners record their observations (e.g. on a worksheet). Ask them to tell you something that is…shiny/smooth/heavy.In pairs or groups, give each pair or group a word e.g. hard/soft/rough. Provide collage materials for them to make a collage using things that describe the characteristic. Give out large sheets of paper with the word written in the centre. Learners create the collage around the word. Display these when complete. Introduce vocabulary; elastic, waterproof and transparent. Talk about examples that the learners will be familiar with for each of these descriptions. Ask them how they could find out if a material has any of these properties. (Discuss each property in turn).Activities to investigate these qualities:**Elastic**: Try and stretch it. If it goes back to its original shape it is elastic.**Waterproof**: Drip drops of water on the material. If the drops can still be seen, or run off, it is waterproof.**Transparent**: If you can see through it clearly, it is transparent.**Scientific Enquiry activity**Talk about going out in the rain. *What would be the best covering to keep you/a toy dry in case it rains?*Lead the discussion to the fact that the material chosen has to have good waterproof qualities. Show a range of materials. *How can we investigate the best waterproof material from these?* Ask learners to predict which material will be the best, before carrying out the investigation.  | Blocks of materials.Objects made from the same materials.Worksheet to record observations.Collage backing sheets (large), glue, materials for collage such as paper, fabric, buttons, seeds, or other natural materials.Vocabulary flashcards.A selection of different materials including elastic and transparent.Plastic droppers (or drinking straws), water, plastic cups, paper towels.Different types of covering to test (e.g. aluminium foil, fabric, paper, newspaper, tissue, polythene bag, paper bag).Water, plastic droppers (or drinking straws), paper or plastic cups, rubber bands. | Explain that all objects are made from materials and that we can describe different characteristics of them by looking. Scientists use the word material to mean ‘the stuff that something is made of’ Objects can be made of more than one material. Everything is made of materials/stuff. Design the worksheet to be completed using a check box or ‘x’ if the learners are not confident writers. |
| 1Cp4 | Sort objects into groups based on the properties of their materials | Provide a selection of objects. As a class decide different ways in which the objects can be grouped.Make some different groupings of the materials in objects by properties and ask why you have grouped them in that particular way. How did the learners test the object and/or material? Provide some pictures of objects for the learners to cut out. Stick them on another piece of paper and name the group you have placed them in.Play a sorting game (see link for an online example where learners sort materials according to their properties).Provide some pictures of objects e.g. wooden spoon, cushion, glass jar, coin, rock, silk. Stick them on a page in boxes titled shiny/rough/soft/hard/transparent/smooth. | A selection of everyday objects.Pictures of objects, scissors, glue, paper for groupings.Sorting and using materials game (requires Javascript enabled and Flash installed).<http://www.bbc.co.uk/schools/scienceclips/ages/5_6/sorting_using_mate.shtml>Pictures of objects, scissors, glue. |  |

# Unit 1.3 Living and growing

It is recommended that this unit takes approximately **60% of the term.**

In this unit, learners

* identify that plants and animals are living things
* learn that all living things grow and change
* discuss what makes a healthy diet.

## Scientific Enquiry work includes:

* suggesting ideas and follow instructions
* making comparisons
* exploring and observing in order to collect evidence (measurements and observations) to answer questions.

## Recommended vocabulary for this unit:

* human, animal, plant
* living, alive, once alive, never alive
* grow, move, food, die, offspring, young, old
* eat, drink, diet, healthy, unhealthy, fruit, vegetables, protein, whole grains, oils, sugar, salt, fat, water
* similar, different, compare.

| Framework code | Learning objective | Suggested activities to choose from | Resources  | Comments  |
| --- | --- | --- | --- | --- |
| 1Bp2 | Know that there are living things and things that have never been alive | Prepare a collection of things that:* are living (e.g. a plant, pictures of animals)
* were once alive (a piece of fruit, a flower, a leather shoe, a twig, an empty shell)
* were never alive (e.g. a rock, plastic spoon, glass bottle, metal coin).

Ask learners to identify the objects that are living. Place these in a group. Elicit from learners how they worked out these things were alive.Group the remaining pictures or objects into two groups: ‘once alive’ and ‘never alive’ but do not tell the learners why you have done this. Ask them why they think you have grouped them like this. Discuss their responses and introduce the vocabulary ‘once alive’ and ‘never alive’.Agree some features of things that are alive:* can move
* can grow
* need food
* can have offspring.

Provide a worksheet or pictures for them to classify things as once alive or never alive. Learners could name the pictures, circle the once alive things, and/or cut or copy writing or pictures into a table headed ‘once alive’ and ‘never alive’ columns. Go through the correct responses.Learners explore the classroom or school grounds and draw pictures or take photographs of things that are living, once alive, never alive. Use a quiz to determine if learners can classify things as living or non-living. This can use items in the classroom or an online game. | Collection of things that includes examples of:* living
* once alive
* never alive.

Worksheet.Paper and pencils or cameras.Example online game (requires Javascript enabled and Flash installed).<http://www.bbc.co.uk/schools/scienceclips/ages/5_6/ourselves.shtml> | You may need to explain to learners the source of some of the objects (e.g. where leather and plastic comes from). |
| 1Bp11Eo2 | Know that plants are living thingsSuggest ideas and follow instructions | Take learners into the school grounds (if possible) and ask them to spot plants.OR Show pictures of a variety of plants and animals. Ask learners to identify the plants.Show learners pictures (or specimens) of living and dead plants. Ask how learners can tell that the plants have died. Explain that if something can die, then it must have been alive.Remind learners of some of the features of things that are alive:* can move
* can grow
* need food
* can have offspring.

In pairs, learners talk about how we grow and how plants grow. Give plenty of thinking time, then listen to and discuss their responses.Show learners some time-lapse footage of a plant moving (e.g. towards a light source).Explain that plants have to make their own food – they cannot move to another place to get it or find it. | Pictures of plants (including a wide variety such as grass, trees, flowers etc.) and animals.Pictures or specimens of living and dead plants.Time-lapse footage of a plant moving.<http://www.bbc.co.uk/programmes/p00lxwrh>  |  |
| 1Bp31Eo11Eo4 | Explore ways that different animals and plants inhabit local environmentsExplore and observe in order to collect evidence (measurements and observations) to answer questionsMake comparisons | In pairs talk about animals that could be found around the school grounds and where you can find them.Go outside to look for animals in the school grounds. Allocate a designated area to search. This should include different environments (e.g. under rock, in shade, under tree, near path).Record animals and plants and where they were found – write, draw or take digital photos.Discuss the variety of different plants and animals found in the school grounds. Show learners pictures of animals found in water (e.g. local rivers, lakes or sea). In pairs learners compare animals found in water and on land.  | Paper and pencils, clipboards, magnifying glasses, digital cameras. | Make sure that hands are washed before and after handling things that are found.Talk about the importance of not picking plants and not eating seeds and berries because they might be poisonous.  |
| 1Bh31Eo2 | Know about the need for a healthy diet including the right types of food and waterSuggest ideas and follow instructions | Discuss foods eaten so far today by learners. *Why do we need to eat?*Food gives us energy to move and grow.Water keeps us hydrated, it is suggested that it aids concentration.Talk about which types of foods should be eaten daily and why: * fruits and vegetables
* protein (e.g. fish, meat, eggs, dairy, lentils, beans, tofu, nuts)
* whole grains (e.g. brown bread, brown rice)
* healthy oils (e.g. olive oil, vegetable oil).

Give learners a plate split into sections for each type of food. Learners draw a healthy, balanced meal. Then they offer it to a friend to ‘eat’ and talk about what they like to eat that is healthy on the plate.Explain that some foods contain a lot of sugar, salt and fat. Too much of these things can damage our bodies e.g. sugar allows plaque to grow and damage teeth, make us dehydrated or put on weight. To be healthy we need a balanced diet with appropriate amounts of each food group. Give out a sheet containing pictures of healthy foods and drinks for learners to mark healthy food choices.Give learners a drink of water. Talk about why it is important to drink enough clean water regularly throughout the day. | Paper plates or circles of paper drawing pens/pencils or paints.Worksheet. | This is an opportunity to discuss safe sources of drinking water. |
| 1Bh5 | Know that humans and animals produce offspring which grow into adults | Read a story about an animal growing up and going through its life cycle e.g. a tadpole changing into a frog or a caterpillar turning into a butterfly. Show pictures of adult animals and adult humans.Show pictures of animal and human offspring and name them. Match these with the parent. Provide a worksheet containing a matching activity to join lines between pictures of the parent and offspring of different animals.Talk about animals that have different names to their offspring e.g. tadpole – frog, caterpillar – butterfly, kitten – cat.In pairs talk about how they have changed since they were born. Identify that the learners were once babies and will become adults over time. A visit to a farm (or similar) to see young and adult animals can support this topic. Alternatively invite a visitor to show the children animals of different ages.  | Story book or web link. E.g. ‘The Very Hungry Caterpillar’ by Eric Carle.Pictures (internet or books) of parent and offspring of animals, including humans.Worksheet.Rulers.Pencils. |  |

# Unit 1.4 Pushes and pulls

It is recommended that this unit takes approximately **40% of the term.**

In this unit, learners

* understand movement in terms of pushes and pulls
* learn about different sorts of movement and how to describe these
* relate their understanding of movement in everyday contexts e.g. road safety.

## Scientific Enquiry work includes:

* trying to answer questions by collecting evidence through observation
* exploring and observe in order to collect evidence (measurements and observations) to answer questions
* suggesting ideas and follow instructions.

## Recommended vocabulary for this unit:

* move, movement, moving
* push, pull, force
* bend, press, turn, swing
* fast, faster, fastest, slow, slower, slowest.

| Framework code | Learning objective | Suggested activities to choose from | Resources | Comments  |
| --- | --- | --- | --- | --- |
| 1Pf11Ep11Eo1* 1Eo2
 | Explore, talk about and describe the movement of familiar thingsTry to answer questions by collecting evidence through observationExplore and observe in order to collect evidence (measurements and observations) to answer questionsSuggest ideas and follow instructions | Sing and participate in singing an action song that requires moving different parts of the body.Prepare some picture cards of different actions. Ask the learners to describe some of the ways they moved their bodies whilst singing the song.Move in different ways to different music or to instructions by the teacher, e.g. fast, slow, quietly, backwards, forwards. In pairs talk about a favourite animal. *How can the animal move like we can? Can it move in any other ways?* Discuss as a class different ways in which other animals move e.g. fish swim, kangaroos hop.Compare humans’ movement with birds, for example describe how birds can fly unaided, but humans cannot fly.Act out some of these animal-like movements. Invite learners to mime other animal movements for their friends to guess which animal they are being.**Science Enquiry activity**Choose a toy. *How does it move?* Learners show the rest of the class how to make it move. Encourage them to use good descriptive words to explain how the toy moves. As a class, discuss ways in which the toys move in the same ways that humans can move.Go outside and repeat the activity on sit-and-ride toys e.g. bicycles if available.Ask the learners to draw pictures of the toys and indicate how they move.**Science Enquiry activity**In pairs ask: *How many different ways can you make a ball move?* Observe them as they work together. Allow some pairs to demonstrate a method to the rest of the class. Encourage use of appropriate vocabulary e.g. bounce, roll, kick, throw.Provide some pictures on a worksheet of toys that move in different ways. Ask the learners to draw in what is needed to make the toy move e.g. a football needs to be kicked (they draw a foot). | Internet access.Music system and recorded music.Pictures of action movements used in the song.A selection of toys that move or have moving parts.Balls – footballs or large enough for learners to handle easily.Worksheet. | Misconception alert:Some learners will only recognise movement as going from place to place.Misconception alert:If wind-up toys are used the reason for the movement can be complex. Make sure children understand a mechanism is being used to move the toy which requires a motion from whoever is winding up the toy.  |
| 1Pf2 | Recognise that both pushes and pulls are forces | Play an interactive game that asks learners to identify pushes and pulls.Learners hold hands and act out pushing and pulling and discuss how it feels. Explore pushes and pulls on objects around the class and they create motion. Discuss these are called ‘forces’ and all forces can be called either a push or a pull. In pairs talk about things they have done today that have involved a push or a pull e.g. getting dressed, opening doors. *What things use pushes and/or pulls to make them move?*Mime or ask the learners to mime some everyday activities that involve pushing or pulling. Identify the push and pull in each case. Introduce the word ‘force’ and define it as a push or a pull. Invite learners to find things around the classroom that require pushes and/or pulls to move. Talk about how they are ‘applying a force’.Provide pictures of objects on a worksheet that can be made to move by applying a push or a pull. Learners draw arrows ( ) to show the direction of movement. They can draw a hand to show where the force causing the movement is coming from. Draw or cut out and stick pictures of things that use pushes in one group. Do the same for other things that use pulls. Discuss how the same objects can appear in both groups.  | <http://www.bbc.co.uk/schools/scienceclips/ages/5_6/pushes_pulls.shtml>Worksheet.Paper and pencils or workbooks, scissors, glue. | Misconception alert:Children may think some objects need either a push or a pull when in truth a push or a pull can be applied to anything. Whether it has an affect depends on the size of the force and the design of the object. Misconception alert:Forces are generally shown in diagrams via block arrows. To distinguish them from movement, we suggest using a different type of arrow for movement direction.  |
| 1Pf21Pf3 | Recognise that both pushes and pulls are forcesRecognise that when things speed up, slow down or change direction there is a cause | Discuss vehicles that move because they contain a motor (e.g. cars) which turns the wheels and the wheels push or pull against the ground. Discuss how before motors we used animals to pull and push vehicles.Show some toy vehicles to the class. *How can we make the car move? How could you make your vehicle speed up?* Allow some learners to demonstrate with their models.In a large space ask learners to move slowly, speed up, then stop. Try this for different types of movement e.g. walking, running skipping hopping. Discuss how easy or difficult it is to slow down or stop for each type of movement. Talk about what changes when you changed speed or direction.Have several balls and in a circle the children roll them between each other. Ask some children to roll the balls gently or push hard. Discuss the different speeds. Have a child, or several children, go in the middle and get them to intercept balls and push in a different direction. Talk about how they applied a new force and the balls changed direction. *Who was the ball going to? Who is it going to now?*  | Toy vehicles and/or junk modelling materials for learners to make their own vehicles e.g. empty boxes and cartons, string, wheels, scissors, glue, sticky tape, rubber bands.Space for learners to run and move safely.Balls. |  |

# Unit 1.5 Growing plants

It is recommended that this unit takes approximately **60% of the term.**

Note: the investigations of plant growth will take several days between lessons.

In this unit, learners

* revise that plants are living things
* investigate plant growth.

## Scientific Enquiry work includes:

* trying to answer questions by collecting evidence through observation
* asking questions and contribute to discussions about how to seek answers
* making predictions
* exploring and observing in order to collect evidence (measurements and observations) to answer questions
* making comparisons
* suggesting ideas and follow instructions
* comparing what happened with predictions
* modelling and communicating ideas in order to share, explain and develop them.

## Recommended vocabulary for this unit:

* plant, leaf, leaves, stem, shoot, root, flower, petal, seed
* grow, plant seeds, light, water.

| Framework code | Learning objective | Suggested activities to choose from | Resources  | Comments  |
| --- | --- | --- | --- | --- |
| 1Bp41Eo11Eo4 | Name the major parts of a plant, looking at real plants and models Explore and observe in order to collect evidence (measurements and observations) to answer questionsMake comparisons | Show learners real plants and name the parts – roots, leaves, stems and flowers (if present). Learners draw them and label them.Go on a walk around the school site and look for leaves. Learners:* consider shape, size, colour and similarities and differences
* name any leaves found
* use a magnifying glass to look closely at a leaf that has been found.

Describe and show veins (raised ridges on the back of the leaf). Learners make leaf rubbings by placing the leaf under paper and rubbing over with a wax crayon or pencil.Learners make plant collage pictures and label the plant parts.In pairs: Learners look at pictures of different plants and compare them. They can compare real and artificial flowers.Prepare a worksheet with two different, unfamiliar plants and the plant parts listed. Ask learners to put a tick next to things that are the same or an X if they are different. Draw a leaf from each plant. | Pictures or samples of real plants.Leaves, reference books or internet access, magnifying glasses.Leaves, paper, pencils, wax crayons.Paper, scissors, glue, fabric, paper, string, drinking straws, cupcake cases.Pictures of different plants. Real and artificial flowers.Worksheet. | Health and safety: Remind learners not to eat leaves or put them in their mouths. Learners should wash their hands after handling leaves.Misconception alert: It is important to show learners plants with no flowers so they don’t think all plants have flowers and avoid learners thinking if there isn’t a flower it isn’t a plant.  |
| 1Bp61Ep11Ep31Eo11Eo21Eo5 | Explore how seeds grow into flowering plantsTry to answer questions by collecting evidence through observationMake predictionsExplore and observe in order to collect evidence (measurements and observations) to answer questionsSuggest ideas and follow instructionsCompare what happened with predictions | Show learners patterns of fruit seeds inside cut fruits. Ask learners *What is a seed?*In pairs learners talk about *What do you need to plant seeds?***Science Enquiry activity**Ask learners to predict what happens when a seed is planted. *Do the roots or shoots grow first?* Keep a record of learners’ predictions. Plant and grow some seeds that will grow quickly e.g. mustard and cress. Explain that cress seeds do not need soil or compost. This can be investigated as an extension.* Show the seeds and allow the learners to handle them.
* Place damp cotton wool in an empty egg shell or egg box compartment.
* Sprinkle some seeds on the damp cotton wool and keep them moist.
* Observe daily, drawing pictures or taking photographs to show how the seeds grow.
* Ask learners to compare the results with their predictions – *Do the roots or shoots grow first? How do they know?*

Show learners some time-lapse footage of a plant growing from a seed. Learners compare the results with their prediction. *Do the roots or shoots grow first? How do they know?*Learners draw a storyboard showing the stages in a plant growing from seeds. | Fruit alphabet of different fruits from around the world.<http://www.thefruitpages.com/alphabet.shtml>Seeds, cotton wool, water, jug, empty egg shells or egg cartons. Digital camera, paper and pencils or workbooks.Time lapse of plant growth showing root and shoot growth <https://www.youtube.com/watch?v=iZMjBO6A7AE> Paper, pens. | Make sure that they do not eat any of the seeds. |
| 1Bp51Ep11Ep11Ep21Eo21Eo51Eo6 | Know that plants need light and water to growTry to answer questions by collecting evidence through observationMake predictionsAsk questions and contribute to discussions about how to seek answersSuggest ideas and follow instructionsCompare what happened with predictionsModel and communicate ideas in order to share, explain and develop them | **Science Enquiry activity**Watering investigationLook at and compare two healthy plants. Discuss as a class what would happen if you did not water one of them for a few days. *How could we find out and show if plants need water?** Set up an experiment where one plant is regularly watered and the other isn’t. Learners predict what will happen.
* Use the same amount of water each time you water the plant.
* Keep the plants in similar locations.
* Make sure that they are not pot bound because roots need space to grow.
* Record differences by drawing or taking photographs for display. This will need to take place outside of the usual lesson time and is time dependent.

Learners communicate the results from the experiment and compare this with their predictions. This could be through drawings, talking or writing.**Science Enquiry activity**Light investigationLook at and compare two healthy plants. Discuss as a class what would happen if one of them was kept in the dark for a few days. *How could we find out and show if plants need light?** Set up an experiment where one plant is kept in the light and one is kept in the dark (e.g. in a cupboard or box). Learners predict what will happen.
* Water both plants regularly with the same amount of water.
* Make sure that they are not pot bound as roots need space to grow.
* Record differences by drawing or taking photographs for display. This will need to take place outside of the usual lesson time and is time dependent.

Learners communicate the results from the experiment and compare this with their predictions. This could be through drawings, talking or writing. | Two similar/identical plants, water, jug.Paper and pencils or workbooks, digital cameraTwo similar/identical plants, water, jugPaper and pencils or workbooks, digital camera |  |

# Unit 1.6 Making sounds

It is recommended that this unit takes approximately **40% of the term.**

In this unit, learners

* develop their understanding of the huge variety of sounds and sources of sound they encounter day-by-day
* begin to relate sounds to their sense of hearing
* are introduced to the idea that sounds travel away from the source

## Scientific Enquiry work includes:

* making predictions
* exploring and observing in order to collect evidence (measurements and observations) to answer questions
* making comparisons
* comparing what happened with predictions.

## Recommended vocabulary for this unit:

* sound, loud, quiet
* ears, mouth, voice, hear.

| Framework code | Learning objective | Suggested activities to choose from | Resources  | Comments  |
| --- | --- | --- | --- | --- |
| 1Ps2 | Know that we hear when sound enters our ear | Ask the learners to place their hands over their ears. They then try to guess what you are saying. (Mouth the words to a familiar rhyme or song.) Repeat this game several times – allow the learners to be the leader, mouthing a rhyme or song for their classmates to guess.Give each learner a pair of paper cups with the bases cut out to place over their ears. Ask them to turn towards and away from a sound source and compare what happens. Discuss the difference in hearing when you turn towards and away from the sound source.Have the learners work in pairs. They speak to each other and talk about how they are hearing. Ask them to cover their eyes. *Can you still hear?* Repeat with covering their nose, mouth and ears in turn. *What happened? Can you still hear?* Have one learner go around a corner and make a sound. *Can you still hear?* Talk about how sound can go around objects but it sounds fainter. Test this with a range of obstacles e.g. under a table and different volumes of voice.  | Paper cups with the bases cut out. |  |
| 1Ps1 | Identify many sources of sound  | Ask learners to close their eyes for one minute and listen carefully. They can then draw pictures to represent any sounds they heard.Introduce the word ‘source’ for where a sound comes from.Show objects that make sounds – these are sources of sound. Learners explore how objects make sounds by actions like banging, blowing, shaking etc. Ask them to try making soft and loud sounds. Each time ask: *What is the name of this sound source?* Provide a worksheet containing pictures of different sound sources. Ask the learners to indicate by drawing arrows or circling where the sounds comes from.Talk about sounds in nature e.g. birdsong, weather sounds and play recordings of these sounds.Do a ‘sound walk’ around the school; listening and identifying the sounds around them and their sources. Make a sound log and identify where there are loud sounds, quiet sounds, lots of different sounds, or no/few sounds. Sing songs in different voices: loud, quiet, happy, hum, whistle. Discuss the many different ways in which we can use our voices.Explain that dogs and horses produce sound in the same way that we are able to speak. Discuss/identify the different sounds that animals make. *How do crickets make a sound?* (They rub their back legs together).Explore different ways of making sounds with your body e.g. clapping, clicking fingers, tapping.Look at and name different musical instruments. In groups, work with a particular instrument to find out how it makes sounds and to explore the range of sounds it can make. In pairs talk about how different instruments make loud and quiet sounds. Play a range of different instruments. Try to make the loudest and quietest sounds with each instrument. | Objects that make sounds e.g. musical instruments, toys, bells, whistles.Worksheet. Recording of sounds made in nature. | Hearing impaired children will need particular support during this unit e.g. visual demonstration of musical instruments.Misconception alert:Some learners will think their action is the source of the sound. Ask learners to carry out an action without an object and talk about if there is still a sound or not. Show how something has to happen to an object to make a sound.  |
| 1Ps31Ep31Eo11Eo41Eo5 | Recognise that as sound travels from a source it becomes fainterMake predictionsExplore and observe in order to collect evidence (measurements and observations) to answer questionsMake comparisonsCompare what happened with predictions  | Play an interactive game that helps distinguish between sounds that are getting closer or further away. In pairs talk about everyday sounds that come and go e.g. emergency vehicles, traffic. Discuss and share ideas as a whole class.Go to a large space (e.g. outside) and ask the learners to make a circle. Take a musical instrument or something else that makes a sound to use as a sound signal. Ask the learners to face outwards. Stand in the middle of the circle and make a sound. Instruct the learners to move away from you until they can no longer hear the sound, then to sit down. Remain seated until everyone is seated, then look at their relative positions. *What do you notice the further away you get from the sound source?* **Science Enquiry activity**In groups: Investigation to test different sound sources e.g. cymbals and triangles (small musical instruments).Give learners a small musical instrument as a sound source. Learner test it to see over what distance it can be heard. Allow the groups to plan (talk about), predict and carry out their suggested activity. *Which sound source was best? How do you know?* Compare the different sound sources used and the results obtained by different groups. Ask the learners to write or draw to show what happened. | Interactive game such as <http://www.bbc.co.uk/bitesize/ks1/science/sounds_and_pitch/play/> (Choose the hard level activity.)Sound source (e.g. a musical instrument).Triangles and cymbals and/or objects that make quite quiet sounds.Pencils and paper or workbooks. | Arrange the groups separately outside where they will not be disturbed by other sound sources from other groups. |