



# YEAR 1

# SCIENCE CURRICULUM



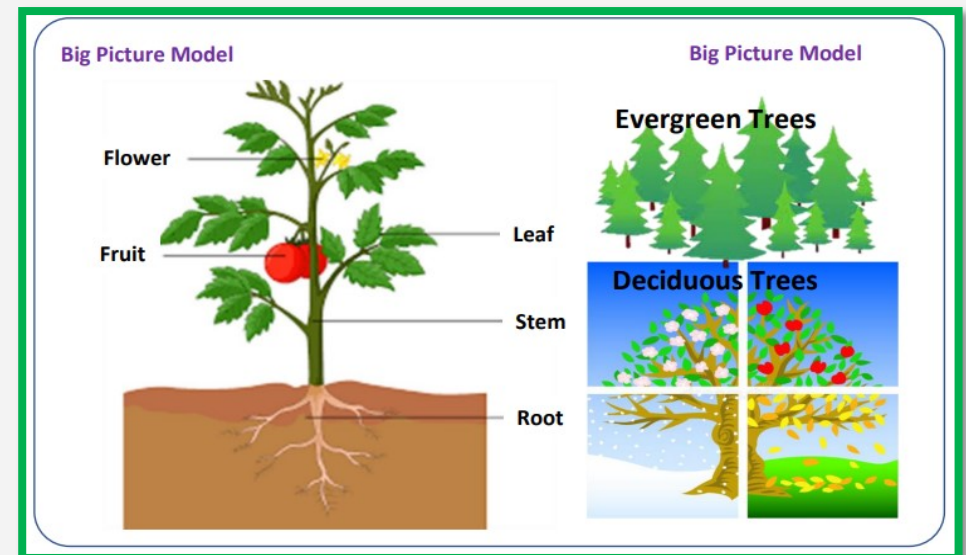
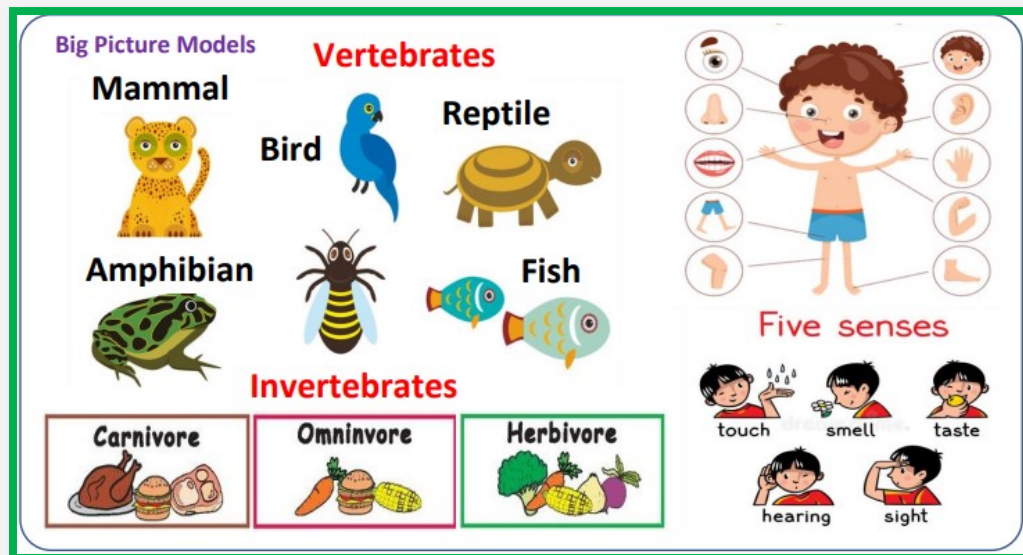
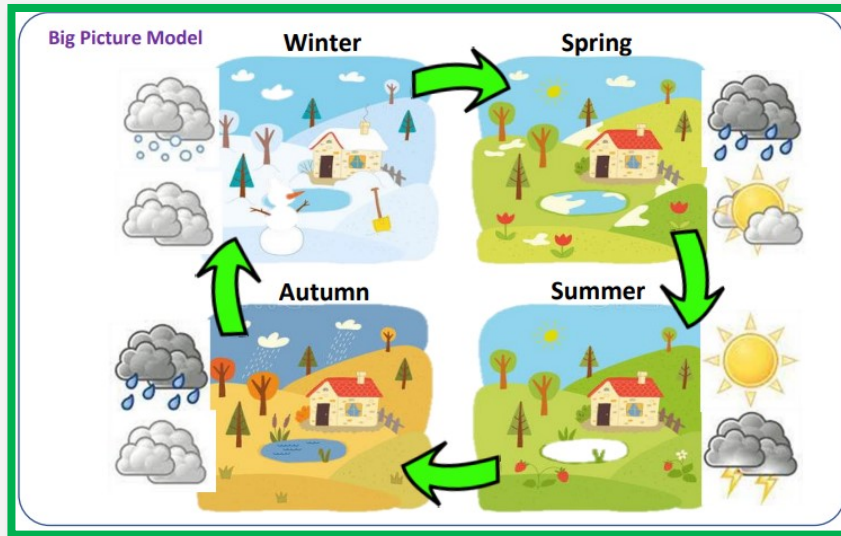
# KNOW IT:

# YEAR 1

## TOPICS OF STUDY FOR YEAR 1

**SEASONAL CHANGES:** ENERGY TRANSFER/KINGDOMS **EVERYDAY MATERIALS:** PARTICLES **ANIMALS, INCLUDING HUMANS:** KINGDOMS **PLANTS:** KINGDOMS

## CONCEPTUAL MODELS FOR YEAR 1



## DISCIPLINARY KNOWLEDGE AND SCIENTIFIC ENQUIRY:

# YEAR 1

### How we 'work' and 'think' like a Scientist.

#### EXPLAINING SCIENCE

- I remember some simple facts about science.
- I use and remember relevant science words during activities.
- I describe what is happening using science words (with help).
- I add science word labels to diagrams (with help).
- I select science facts to use in an answer.

#### CLASSIFICATION

- I sort using simple yes /no statements.
- I group by difference or similarity.
- I link properties of materials to an application (with help).

#### DESIGNING EXPERIMENTS

- I suggest what might happen with help.
- I use a limited range of science equipment correctly (with help).
- I notice risk and can list some common dangers.
- I suggest an idea to investigate and ask questions.
- I begin to identify variables in an investigation.
- I follow short demonstrations, spoken and picture instructions.

#### DATA, TABLES AND GRAPHS

- I position numbers on a number track up to 100.
- I measure in non-standard and compare e.g. heavier/ lighter.
- I use a simple table by recording words and numbers.
- I use a frame to add to pictograms and block charts.
- I add to block charts by counting up.

#### MAKING CONCLUSIONS

- I recognise, create and describe simple number patterns.
- I use 'more or less' to compare numbers.
- I describe the changes that are happening.
- I explore different ways to do things through play.

KEY OBJECTIVES (STATUTORY)		KEY SKILLS OBJECTIVES		VOCABULARY
<ul style="list-style-type: none"><li>Observe changes across the four seasons.</li></ul>	<u>EXPLAINING SCIENCE</u> <ul style="list-style-type: none"><li>⇒ Remember some simple science facts with help.</li><li>⇒ Remember some simple science facts;</li><li>⇒ Use science words during and activity with help.</li><li>⇒ Use and remember relevant science words during activities;</li><li>⇒ Use appropriate pictures and words to label items.</li><li>⇒ Describe what is happening using science.</li></ul>	<u>DATA, TABLES &amp; GRAPHS</u> <ul style="list-style-type: none"><li>⇒ Use a simple table by recording in pictures and words.</li><li>⇒ Use a simple table by recording in words and numbers.</li><li>⇒ Use prepared pictograms to record observations.</li><li>⇒ Use a frame to add to pictograms.</li><li>⇒ Add to pictograms by counting up.</li><li>⇒ Add to block charts and pictograms by counting up.</li></ul>	<ul style="list-style-type: none"><li>Season</li><li>Sun</li><li>Sky</li><li>Autumn</li><li>Winter</li><li>Spring</li><li>Summer</li><li>Year</li><li>Month</li><li>Week</li><li>Day</li><li>Weather</li><li>Temperature</li><li>Rainfall</li><li>Daylength</li><li>Shadow</li></ul>	
<u>PRIOR LEARNING</u>		<u>KEY SUBSTANTIVE KNOWLEDGE AND UNDERSTANDING</u>		
<u>EYFS FOUNDATIONS FOR SCIENCE</u> <ul style="list-style-type: none"><li>Learn about each season and identify the features and changes that take place within and across each.</li><li>Learn about weather conditions and understand that weather changes and that animals hibernate.</li><li>Learn that light comes from the sun, as part of their work on the Earth and Solar System.</li><li>Have some awareness of shadows.</li><li>Understand how sunlight alters during different seasons.</li><li>Know that plants need light from the sun to grow.</li></ul>	<u>SEASONAL CHANGES</u> <ul style="list-style-type: none"><li>⇒ There are four seasons within a year.</li><li>⇒ Changes take place within these seasons e.g. weather, plants including trees and animal hibernation.</li><li>⇒ There are different weather conditions and these can be represented through symbols.</li><li>⇒ Different types of weather are linked to different seasons.</li><li>⇒ The sun provides heat and light-energy.</li><li>⇒ Although the sun appears to move across the sky, it does not.</li><li>⇒ The sun rises earlier and sets later in the summer than in the winter.</li><li>⇒ This means long days of sunlight during the summer and shorter, darker days during the winter.</li><li>⇒ The weather changes within each of the seasons; humans, animals and plants adapt to these changes.</li></ul>			

### **PRIOR LEARNING LINKS**

**EYFS Foundations for Science:** Learn about each season and identify the features and changes that take place within and across each one. Learn about weather conditions and understand that weather changes and that some animals hibernate. Learn that heat and light comes from the sun, as part of their work on the Earth and Solar System. Have some awareness of shadows. Understand how sunlight alters during different seasons. Know that plants need sunlight from the sun to grow.

### **FUTURE LEARNING LINKS**

**Y5 Earth and Space:** Learn about the solar system. Learn about how the earth and other planets orbit the sun and that day and night are caused by the earth's rotation.

## **Year 1 Science**

### **Unit of Learning: Seasonal Changes**

### **Teaching and Learning Sequence for this Unit.**

#### **What do we know about weather?**

What types of weather are there and what symbols can be used to represent these?

##### **Key Skill:**

Use and remember scientific words during an activity.

#### **How does the weather change across the seasons?**

What kinds of weather do we link with each of the seasons?

##### **Key Skill:**

Use and remember scientific words during an activity.

#### **How does day length vary between the seasons?**

What is sunrise and sunset?  
Why does the length of day change?

##### **Key Skill:**

Use and remember scientific words during an activity.

#### **How do humans, plants and animals adapt to seasonal changes?**

**Key Skill:**  
Use and remember scientific words during an activity.

#### **Can we set up a weather station to monitor and record different weather over time?**

##### **Key Skill:**

Add to block charts or pictograms by counting up.

### **Key Learning Objectives:**

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

### **Key Conceptual Knowledge and Understanding - Seasonal Changes**

- The sun provides heat and light energy.
- Although the sun appears to move across the sky, it does not.
- The sun rises earlier and sets later in the summer than in the winter.
- This means long days of sunlight during the summer and shorter days during the winter.
- The weather changes within each of the seasons; humans, animals and plants adapt to these changes.

KEY OBJECTIVES (STATUTORY)		KEY SKILLS OBJECTIVES		VOCABULARY
<ul style="list-style-type: none"><li>Distinguish between an object and the material from which it is made.</li></ul>	<u>EXPLAINING SCIENCE</u>  ⇒ Remember some simple science facts with help. ⇒ Remember some simple science facts.  ⇒ Use science words during and activity with help. ⇒ Use and remember relevant science words during activities.  ⇒ Use appropriate pictures and words to label items. ⇒ Add science labels to diagrams.	<u>CLASSIFICATION</u>  ⇒ Sort using instructions or pictures. ⇒ Sort using yes/no statements.  ⇒ Group by familiar features e.g. size, shape, colour etc. ⇒ Group by difference or similarity.  ⇒ Use senses to identify properties of materials. ⇒ Link properties of materials to an application.	<ul style="list-style-type: none"><li>Materials</li><li>Wood</li><li>Plastic</li><li>Glass</li><li>Metal</li><li>Water</li><li>Rock</li><li>Brick</li><li>Paper</li><li>Fabrics</li><li>Elastic</li><li>Foil</li><li>Properties</li><li>Hard/ soft</li><li>Stretchy/ stiff</li><li>Shiny/ dull</li><li>Rough/ smooth</li><li>Bendy/ not bendy</li><li>Waterproof/ not waterproof</li><li>Absorbent/ not absorbent</li></ul>	
<ul style="list-style-type: none"><li>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li></ul>				
<ul style="list-style-type: none"><li>Describe the simple physical properties of a variety of everyday materials.</li></ul>				
<ul style="list-style-type: none"><li>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li></ul>				
PRIOR LEARNING		KEY CONCEPTUAL KNOWLEDGE AND UNDERSTANDING		
<u>EYFS FOUNDATIONS FOR SCIENCE</u>  <ul style="list-style-type: none"><li>Learn about common materials in the immediate environment.</li><li>Begin to describe properties of these materials using basic vocabulary.</li><li>Observe changes to materials through heating, cooling, squashing, stretching etc.</li></ul>	<u>EVERYDAY MATERIALS: PARTICLES</u>  ⇒ Know the names of some common materials in the immediate environment. ⇒ Know vocabulary used to describe basic properties of common materials. ⇒ Know that some materials can change through heating and cooling. ⇒ Objects are made from different materials; ⇒ All objects are solid; ⇒ The materials that they are made from have different properties; ⇒ These properties affect their appearance and determine how they might be used.			



### PRIOR LEARNING LINKS

**EYFS Understanding the World: The Natural World:** Learn about common materials in the immediate environment. Begin to describe properties of these materials using basic vocabulary. Observe changes to materials through heating, cooling, squashing, stretching etc.

## Year 1 Science

### Unit of Learning: Everyday Materials

### FUTURE LEARNING LINKS

- **Y2 Uses of Everyday Materials:** Recap common everyday materials and their basic properties. Compare the suitability of different materials for particular purposes. Investigate how the shape of solid objects can be changed by twisting, bending etc.
- **Y5 Properties and Changes of materials:** More complex properties such as, solubility, transparency, conductivity.

### Teaching and Learning Sequence for this Unit.

#### What is a material?

What materials are everyday objects made from?  
What are the most common?

#### Key Skill

Remember some science facts and words.

#### How can we sort everyday objects according to the material they are made from?

Can we sort a set of objects in to different groups?

#### Key Skill

Sort using yes/no statements.

#### What are the properties of common materials?

How can we describe different materials?  
What vocabulary do we use to describe them?

#### Key Skill

Add science word labels to diagrams.

#### How do we sort materials based on their properties?

How can we sort materials according to their properties?

#### Key Skill

Sort using yes/no statements.

#### Which materials would be best and why?

How can we decide which materials are best for creating an object?

#### Key Skill

Link properties of materials to an application and words.

### Key Learning Objectives:

- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.
- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

### Key Conceptual Knowledge and Understanding - Particles

- Objects are made from different materials;
- All objects are solid.
- The materials from which they are made from have different properties.
- These properties affect their appearance and determine how they might be used.

KEY OBJECTIVES (STATUTORY)		KEY SKILLS OBJECTIVES		VOCABULARY	
<ul style="list-style-type: none"><li>Identify and name a variety of common animals that are birds, fish, amphibians and mammals.</li></ul>	<p><u>EXPLAINING SCIENCE</u></p> <p>⇒ Remember some simple science facts with help.</p> <p>⇒ Remember some simple science facts;</p> <p>⇒ Use science words during and activity with help.</p> <p>⇒ Use and remember relevant science words during activities;</p> <p>⇒ Use appropriate pictures and words to label items.</p> <p>⇒ Add science labels to diagrams.</p>	<p><u>CLASSIFICATION</u></p> <p>⇒ Sort using instructions or pictures.</p> <p>⇒ Sort using yes/no statements;</p> <p>⇒ Group by familiar features e.g. size, shape, colour etc.</p> <p>⇒ Group by difference or similarity;</p>	<ul style="list-style-type: none"><li>Animals</li><li>Invertebrate</li><li>Worm</li><li>spider,</li><li>insect</li><li>Woodlouse</li><li>Fish</li><li>Amphibian</li><li>Reptile</li><li>Bird</li><li>Mammal</li><li>Head</li><li>Neck</li><li>Arm</li><li>Elbow</li><li>hand</li><li>Leg</li><li>Knee</li><li>Mouth</li><li>taste</li></ul>	<ul style="list-style-type: none"><li>Eye</li><li>Sight</li><li>Ear</li><li>Hear</li><li>Nose</li><li>Smell</li><li>Touch</li></ul>	
<ul style="list-style-type: none"><li>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li></ul>					
<ul style="list-style-type: none"><li>Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets).</li></ul>					
<ul style="list-style-type: none"><li>Identify, name, draw and label the basic parts of the human body and say which parts of the body is associated with each sense.</li></ul>					
PRIOR LEARNING		KEY CONCEPTUAL KNOWLEDGE AND UNDERSTANDING			
<u>EYFS FOUNDATIONS FOR SCIENCE</u>		<u>ANIMALS, INCLUDING HUMANS: KINGDOMS</u>			
<ul style="list-style-type: none"><li>Learn about a variety of different animals. Understand that animals have different physical features such as, legs, scales, fins, wings etc and that they eat different food.</li><li>Learn the names of different human body parts and locate them on their own body and on images.</li><li>Explore different aspects of their environment using all of their senses.</li></ul>	⇒	Know the names of a variety of animals and their basic physical features.			
	⇒	Know that different types of animals eat different foods.			
	⇒	Know and identify the names of their own body parts.			
	⇒	Know the vocabulary linked to the senses.			
	⇒	Animals need to move freely, eat other things and need water.			
	⇒	An animal is not a plant, does not make food from the sun and is not rooted to the ground.			
	⇒	Animals can be grouped into five different category: mammals, birds, amphibians, reptiles and fish.			
	⇒	Mammals are warm-blooded, have skin, hair or fur, give birth to live young and breathe air; humans are mammals.			
	⇒	Birds are warm-blooded, have feathers, beaks and wings, lay eggs and breathe air.			
	⇒	Amphibians are cold-blooded, have slimy skin, lay soft eggs and most can breathe underwater and on land.			
	⇒	Reptiles are cold-blooded, have scaly skin, lay harder eggs and breathe air.			
	⇒	Fish are cold-blooded, have fins and scales, lay soft eggs in water and breathe underwater.			
	⇒	A carnivore only eats other animals and no plants.			
	⇒	A herbivore only eats plants and not animals.			
⇒	An omnivore eats plants and animals.				



### PRIOR LEARNING LINKS

#### EYFS: Understanding the World:

Learn about a variety of different animals. Understand that animals have different physical features such as, legs, scales, fins, wings etc and that they eat different food. Learn the names of different human body parts and locate them on their own body and on images. Explore different aspects of their environment using all of their senses.

### FUTURE LEARNING LINKS

#### Y2 Animals including Humans:

Learn about vertebrates and invertebrates. Describe all the things that animals can do (MRS GREN). Understand that all humans and animals grow and change. Learn that food, water and air are essential for survival and that healthy eating, exercise and hygiene are important lifestyle choices.

## Year 1 Science

### Unit of Learning: Animals, including Humans

### Teaching and Learning Sequence for this Unit.

#### What are the parts of our body?

What job does each body part have?

#### Key Skill

Add science word labels to diagrams.

#### What are our senses?

Which body parts are our senses linked to?  
What do our senses help us to do?

#### Key Skill

Add science word labels to diagrams.

#### Are there different kinds of animal?

What common animals do we know? What kind of animal are they?

#### Key Skill

Group by difference or similarity.

#### What makes a bird a bird? A fish a fish? A reptile a reptile? etc

What is special about their body parts?  
How can we use this to group them?

#### Key Skill

Sort using yes/no statements.

#### Do animals have the same senses as humans?

How do they use them for survival?

#### Key Skill

Remember some simple facts about

#### Do animals feed in different ways?

Which animals are carnivores/ herbivores/ omnivores?

#### Key Skill

Group by difference or similarity.

### Key Learning Objectives:

- Identify, name, draw and label the basic parts of the human body and say which parts of the body is associated with each sense.
- Identify and name a variety of common animals that are birds, fish, amphibians and mammals.
- Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets).
- Identify, name, draw and label the basic parts of the human body and say which parts of the body are associated with each sense.

### Key Conceptual Knowledge and Understanding - Animals including Humans

- ⇒ Animals need to move freely, eat other things and need water.
- ⇒ An animal is not a plant, does not make food from the sun and is not rooted to the ground.
- ⇒ Animals can be grouped into five different category: mammals, birds, amphibians, reptiles and fish.
- ⇒ Mammals are warm-blooded, have skin, hair or fur, give birth to live young and breathe air; humans are mammals.
- ⇒ Birds are warm-blooded, have skin, feathers, beaks and wings, lay eggs and breathe air.
- ⇒ Amphibians are cold-blooded, have slimy skin, lay soft eggs and most can breathe underwater and on land.
- ⇒ Reptiles are cold-blooded, have scaly skin, lay harder eggs and breathe air.
- ⇒ Fish are cold-blooded, have fins and scales, lay soft eggs in water and breathe underwater.
- ⇒ A carnivore only eats other animals and no plants.
- ⇒ A herbivore only eats plants and not animals.
- ⇒ An omnivore eats plants and animals.

KEY OBJECTIVES (STATUTORY)		KEY SKILLS OBJECTIVES		VOCABULARY	
<ul style="list-style-type: none"><li>Identify and name a variety of common, wild and garden plants, including deciduous and evergreen trees.</li></ul>	<p><u>EXPLAINING SCIENCE</u></p> <p>⇒ Remember some simple science facts with help.</p> <p>⇒ Remember some simple science facts.</p> <p>⇒ Use science words during and activity with help.</p> <p>⇒ Use and remember relevant science words during activities.</p> <p>⇒ Use appropriate pictures and words to label items.</p> <p>⇒ Add science labels to diagrams (with help).</p>	<p><u>CLASSIFICATION</u></p> <p>⇒ Sort using instructions or pictures.</p> <p>⇒ Sort using yes/no statements.</p> <p>⇒ Group by familiar features e.g. size, shape, colour etc.</p> <p>⇒ Group by difference or similarity.</p>	<p>plant</p> <p>roots</p> <p>stem</p> <p>trunk</p> <p>branches</p> <p>Twigs</p> <p>bark</p> <p>crown</p> <p>leaves</p> <p>flower</p> <p>petals</p> <p>fruit</p> <p>bulb</p> <p>seed</p> <p>evergreen</p> <p>deciduous</p> <p>vegetables</p> <p>wild</p> <p>naturally</p> <p>garden</p>	<p>daisy</p> <p>dandelion</p> <p>thistle</p> <p>daffodil</p> <p>rose</p> <p>tulip</p>	
<ul style="list-style-type: none"><li>Identify and describe the basic structure of a variety of common flowering plants, including trees.</li></ul>					
PRIOR LEARNING		KEY CONCEPTUAL KNOWLEDGE AND UNDERSTANDING			
<p><u>EYFS FOUNDATIONS FOR SCIENCE</u></p> <ul style="list-style-type: none"><li>Learn about the growth of plants through practical experience and observation.</li><li>Learn that plants need light from the sun to grow.</li><li>Begin to name parts of a plant including seed, root, stem, leaf and flower.</li><li>Begin to develop their understanding of the conditions plants need to grow.</li></ul>	<p><u>PLANTS: KINGDOMS</u></p> <p>⇒ Plants are living things that grow in the earth.</p> <p>⇒ Most plants have stems, leaves and roots and some have flowers.</p> <p>⇒ Plants grow from seeds.</p> <p>⇒ Plants need water to grow and stay healthy.</p> <p>⇒ There are different types of plants: wild plants that grow naturally and garden plants which are chosen and helped to grow.</p> <p>⇒ A tree is a plant. It is part of the plant kingdom because it has roots, stems, leaves and some have flowers. It also has a crown, which is formed by branches, twigs and leaves growing outwards from the trunk. The trunk is the stem of a tree and branches grow from it. It has an outer covering called bark which offers protection.</p> <p>⇒ There are different types of trees: deciduous trees drop their leaves in autumn and grow new ones during the spring; evergreen trees keep their leaves all year round.</p>				

### PRIOR LEARNING LINKS

#### EYFS Understanding the World-The

**Natural World:** Learn about the growth of plants through practical experience and observation. Learn that plants need light from the sun to grow. Begin to name parts of a plant including seed, root, stem, leaf and flower. Begin to develop their understanding of the conditions plants need to grow.

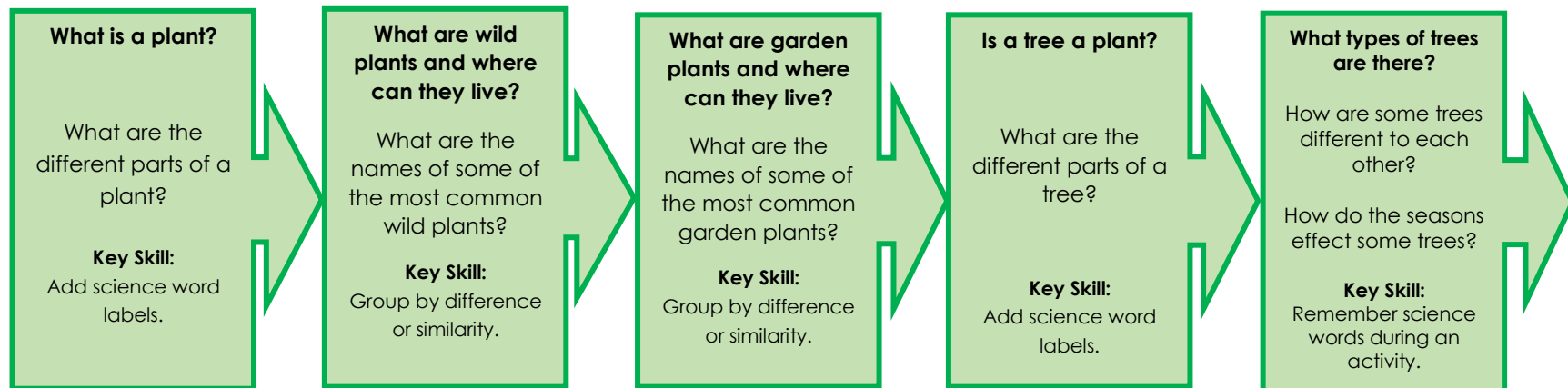
## Year 1 Science

### Unit of Learning: Plants

### FUTURE LEARNING LINKS

**Y2 Plants:** Learn different parts of a plant. Understand how plants grow through seed germination and bulbs sprouting. Learn about the condition plants need to grow and stay healthy. Learn about the basic lifecycle of a plant.

### Teaching and Learning Sequence for this Unit.



### Key Learning Objectives:

- Identify and name a variety of common, wild and garden plants, including deciduous and evergreen trees.
- Identify and describe the basic structure of a variety of common flowering plants, including trees.

### Key Conceptual Knowledge and Understanding BIG PICTURE-PLANTS

- ⇒ There are different types of plants: wild plants that grow naturally and garden plants which are chosen and helped to grow.
- ⇒ A tree is a plant. It is part of the plant kingdom because it has roots, stems, leaves and some have flowers. It also has a crown, which is formed by branches, twigs and leaves growing outwards from the trunk. The trunk is the stem of a tree and branches grow from it. It has an outer covering called bark which offers protection.
- ⇒ There are different types of trees: deciduous trees drop their leaves in autumn and grow new ones during the spring; evergreen trees keep their leaves all year round.

CHILDREN SHOULD BE SUPPORTED TO DEVELOP THEIR UNDERSTANDING OF SCIENTIFIC IDEAS BY USING DIFFERENT TYPES OF SCIENTIFIC ENQUIRY THROUGHOUT ALL TEACHING.

## WORKING SCIENTIFICALLY

During Years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills, through the teaching of the programmes of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

## POSSIBLE SCIENTIFIC INVESTIGATIONS:

### Seasonal Changes:

- Keep a daily record of the weather.
- Compare the weather in other countries.
- Which trees lose their leaves first in the autumn?
- Which trees are the first to grow new leaves in the spring?
- How many hours of daylight are there? Create block charts for the first day of each month.

### Everyday Materials:

- How do different materials feel?
- How many properties can you link to any one object?
- Which materials would be best and why?
- Did the materials work well? What would you change? Why?

### Animals, including Humans:

- Label human body parts as well as animal- what is the same? What is different?
- Play games to investigate senses-link each sense to a body part. Who has the fastest reactions?

### Plants:

- What different types of trees can we find in our school grounds?
- What plants including trees can we find in two different areas? Which are garden plants and which are wild?