Science in Year 1

Working Scientifically

Year 1/ 2

Working Scientifically Skills

Key stage 1 programme of study – years 1 and 2

Working scientifically

Statutory requirements

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme 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.

Children must…

- Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science
- Know that we can use magnifying glasses to observe objects closely
- Know that we can test our questions to see if they are true
- Know that objects can be identified or sorted into groups based on their observable properties
- Know that we can write down numbers and words or draw pictures to record what we find.

Year 1	Area of NC: Animals, including humans (Biology)

Animals, including humans

Statutory requirements

Pupils should be taught to:

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores

Statutory requirements

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

<u>Pupils do not need to be taught the following content, which they will learn in later year groups:</u>

Y2 will look at what animals and humans need to survive and food chains,

Y3 will identify the names of parts in the skeleton and muscular system and their functions,

Y4 will look at teeth of herbivore, carnivores and omnivores, the digestive organs and more complex food chains,

Y6 will look at other internal organs and the circulatory system.



- Odd one out – A dog, a monkey and a lion…etc.
- Odd one out – dog, rabbit and shark
- PMI – What if there were no carnivores in the world?
- What is the same, what is different about these animals?
- Odd one out – insect, human, fish (comparing bodies of animals)
- What is the same, what is different? Snake, human ears, elephant ears.
- Odd one out – human nose, dog nose, beak

SEE ALSO: RETRIEVAL IDEAS



- Sort animal life cycles (caterpillars, chickens, tadpoles…etc)
- Discuss how animals change over time.
- Match adult and young photos.
- Talk about the different sounds that animals make.
- Name a variety of domestic/wild animals.
- Know how to look after domestic animals.

TIER 3 VOCABULARY:

Amphibian, reptile, mammal, fish, bird, carnivore, herbivore, omnivore, vertebrate, offspring, habitat, skeleton, organ, domestic animal, wild animal.

SEE ALSO: https://www.stem.org.uk/primary/resources

Learning Objective	Objective Broken Down into Differentiation		
	Below	***Expected***	***Above***
Identify and label parts of the human body	Pupil can point to different parts of the body and suggest names (not always correct)	Pupil can identify and name the main parts of the human body independently	Pupil can name main parts of the human body and explain their functions
Identify and name which part of the body is associated with each sense.	Pupil begins to identify that we have 5 different senses.	Pupil recognises that we have 5 different senses and explain which part of the body is associated with each	Pupil can accurately name each sense and explain why we need these senses and how they are useful to us

Identify and name a variety of common animals (including fish, amphibians, reptiles, birds, invertebrates and mammals)	With support, pupils can identify common animals	Pupils can identify common animals from their local environment as well as around the world independently	Pupils can identify a number of common animals from each animal group
Name some common domestic and wild animals and the differences between them	Pupil can name animals that are pets and some that are not pets	Pupil can identify why some animals are domestic and why some are wild, can explain the differences between them	Pupil can identify how we care for domestic animals in comparison to wild ones.
Compare bodies of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	Pupils begin to recognise some basic differences between two animals e.g. legs and no legs	Pupil recognises the different structure of common animals and can use these to group some animals	Pupil recognises the different structure of common animals from each animal group and can compare the human body to other animal groups
Identify and name a variety of animals based on what they eat (carnivores, herbivores and omnivores).	Pupil knows that not all animals eat the same food and that some eat only other animals, others eat only plants and some eat a mix of both (they may not use the terms carnivore, herbivore and omnivore)	Pupil can explain the difference between carnivores, herbivores and omnivores	Pupil can explain the difference between carnivores, herbivores and omnivores and give a number of examples of animals in those groups
Sort and group animals based on how they are different, (fish, amphibians, reptiles, birds and mammals, including pets).	Pupil, with support, can identify differences in the animals they see around them and may loosely group them according to these feature	Pupil recognises how to sort animals based on their differences. Then can do this independently with given criteria.	Pupil recognises how to sort animals based on their similarities and differences. Then can do this independently and create their own criteria.

Year 1	Area of NC: Plants (Biology)

Plants

Statutory requirements

Pupils should be taught to:

- 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.

<u>Pupils do not need to be taught the following content, which they will learn in later year groups:</u>

Y2 they will look at how seeds and bulbs grow into mature plants and they will learn what plants needs to survive.

Y3 they will learn the functions of different parts of a flower and about plant lifecycles as well as classifying different types of plants in Y4 and Y6.



- Odd one out - Tree, grass and a daffodil
- Odd one out – root, stem, flower petals
- Are all plants green?
- Are trees plants? Is grass a plant?
- Similarities and differences – deciduous v evergreen tree, common, wild plants...etc.

SEE ALSO: <u>RETRIEVAL IDEAS</u>



- Name some plants and flowers.
- Match some plants/flowers and pictures.
- Talk about their favourite plants and flowers and why.
- Use their senses to talk and explore the world around them.

TIER 3 VOCABULARY:

Deciduous, evergreen, roots, stem, leaf, trunk, blossom, petals, buds, bark, flowering plant.

SEE ALSO: https://www.stem.org.uk/primary/resources

Learning Objective	Objective Broken Down into Differentiation		
	Below	***Expected***	***Above***
Identify and describe the basic parts of a flowering plant **Forest school**	Pupil can use some vocabulary accurately to name parts of a plant (may not be consistent across a range of plants)	Pupil can accurately and consistently name the main parts of a plant over a range of plants	Pupil can identify similarities and differences in the structure of plants e.g. not all stems are green
Identify and name a variety of common wild and garden plants **Forest school**	Pupil can identify and name a limited number of plants usually requiring support	Pupil can identify and name accurately a range of plants (particularly those they see regularly)	Pupil begins to notice similarities and differences between the plants they identify, they could suggest ways to sort them
Identify and name the basic structure of trees **Forest school**	Pupil can use some vocabulary accurately to name parts of a tree, with support	Pupil can accurately and consistently name the main parts of a tree, using the correct vocabulary	Pupil can describe what the different parts of a tree are using scientific vocabulary
Identify and sort deciduous and evergreen trees **Forest school**	Pupil can recognise that some trees do/do not have leaves in winter	Pupil can name trees they see regularly Pupil can identify which trees lose their leaves and which keep them for the whole year and use the correct vocabulary of deciduous and evergreen	Pupil can give some reason as to how to identify between deciduous and evergreen trees

Year 1	Area of NC: Seasonal Change (Biology/Physics)

Seasonal changes

Statutory requirements

Pupils should be taught to:

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

<u>Pupils do not need to be taught the following content, which they will learn in later year groups:</u>

In Y3 children will be taught about sun safety.

In Y5 children will learn about day and night length being a result of the Earth's rotation



- PMI – What if we only had Summer/Autumn?
- PMI – What if we only had Spring/Winter?
- Odd one out – picture of a tree in the four seasons.
- What if it always got dark at the same time?
- Pictures of different seasons – what is similar, what is different?
- Odd one out- coat, wellies, deciduous tree , pumpkin.

SEE ALSO: <u>RETRIEVAL IDEAS</u>



- Name the four seasons.
- Talk about the four seasons.
- Have an experience of some of the seasons and be able to explore and discuss them.
- Make links between the seasons and how to dress in them.
- Know about sun safety.

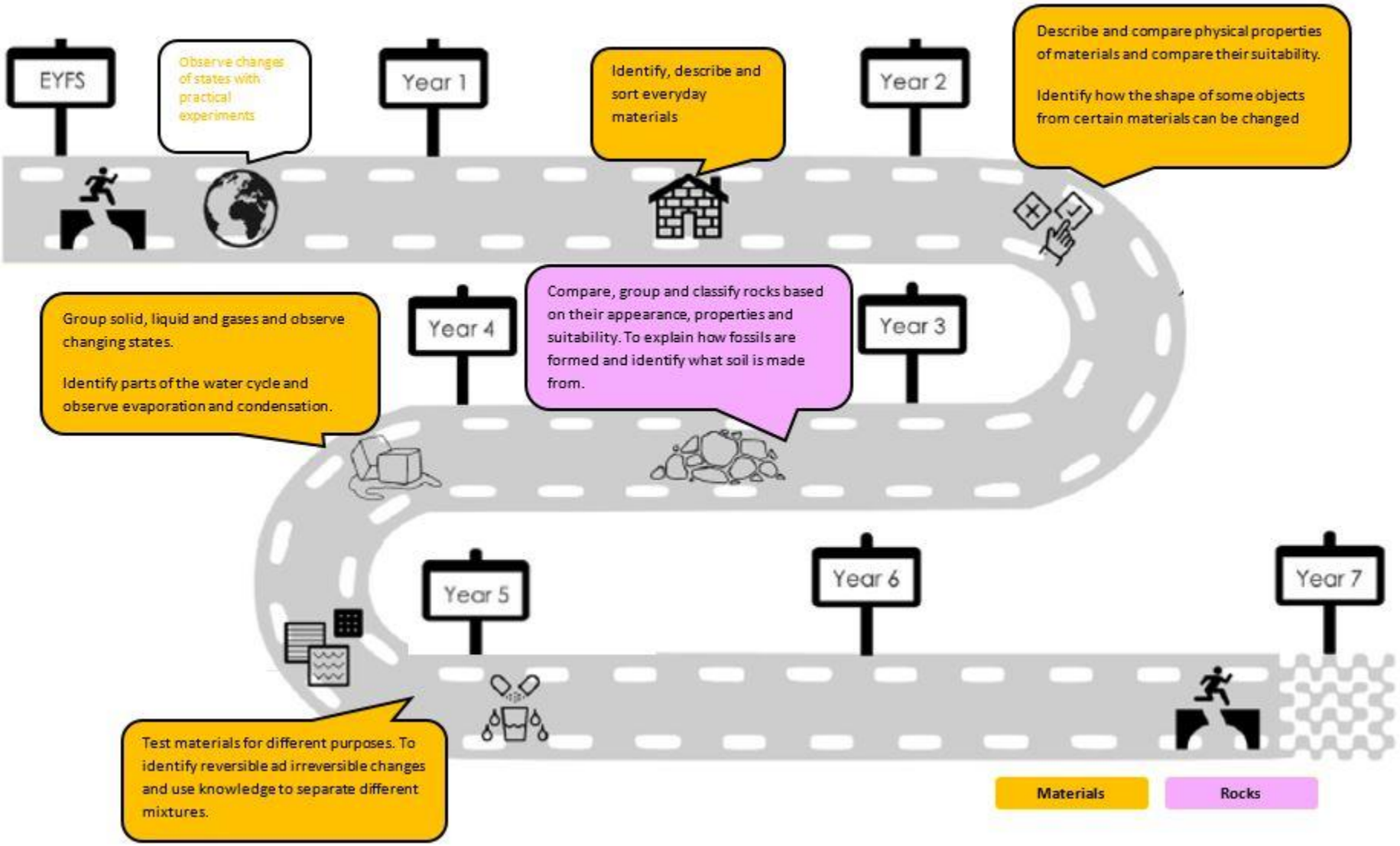
TIER 3 VOCABULARY:

Orbit, reflection, freezing, melting, temperature, sunrise, sunset, forecast, frost, sleet, hail, blizzard.

SEE ALSO: https://www.stem.org.uk/primary/resources

Learning Objective	**Objective Broken Down into Differentiation**		
	Below	***Expected***	***Above***
To be able to name the four seasons	Pupil knows that there are four different seasons	Pupil knows the names of the seasons and the months they occur	Pupil knows the names of the seasons and the months they occur understanding it is cyclical (rather than Winter is first in January etc)
To be able to observe and describe changes across the four seasons **Forest school**	Pupil can make some simple observations and comparisons between all the seasons	Pupil can identify features of each season and compares and contrasts seasonal change using their observations from the local area. They use accurate vocabulary.	When pupil describes differences and similarities across the seasons they make reference to the effect of the seasons on plants, animals and humans Some children may even recognise that seasons around the world contrast to ours in the UK
To be able to observe and describe weather associated with the seasons **Forest school**	Pupil knows that it is warmer in spring and summer and colder in winter and autumn	Pupil records simple weather information on a chart or in a diary and explains the changes they observe over the seasons	Pupil uses information about the seasons and daily weather patterns to predict changes/expected conditions
To be able to observe and describes how day length varies across the seasons	Pupil can identify that at some points of the year it becomes darker at an earlier time	Pupil understands that there is more daylight in summer and less in winter	Pupil can independently describe day length in each season

Chemistry


EYFS
Observe changes of states with practical experiments
Year 1
Identify, describe and sort everyday materials
Year 2
Describe and compare physical properties of materials and compare their suitability.
Identify how the shape of some objects from certain materials can be changed
Year 3
Compare, group and classify rocks based on their appearance, properties and suitability. To explain how fossils are formed and identify what soil is made from.
Year 4
Group solid, liquid and gases and observe changing states.
Identify parts of the water cycle and observe evaporation and condensation.
Year 5
Test materials for different purposes. To identify reversible ad irreversible changes and use knowledge to separate different mixtures.
Year 6
Year 7
Materials
Rocks

Year 1	Area of NC: Everyday Materials (Chemistry)

Everyday materials

Statutory requirements

Pupils should be taught to:

- 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.

<u>Pupils do not need to be taught the following content, which they will learn in later year groups:</u>

In Y2chidlren Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses and find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Further reversible and irreversible changes of materials will be looked at in Y4 and Y5.



- What if a pencil was made from jelly?
- Which house would survive a storm? – brick, straw or sticks?
- Odd one out - Plastic spoon, ball of wool and a wooden block
- Odd one out - Glass cup, window, glass slipper from Cinderella?
- Odd one out – rough and smooth materials



- Talk about how ice cream/chocolate might react in the sun.
- Explain why a snowman doesn't last all year.
- Talk about how cooking can change how a food might look/taste (pizza, cakes, eggs...etc.)

• Odd one out – see through and non-see through materials **SEE ALSO:** RETRIEVAL IDEAS	

TIER 3 VOCABULARY:

Material, absorption, matter, property, waterproof, absorbent, transparent, flexible, elastic, wood, plastic, glass, metal, rock.

SEE ALSO: https://www.stem.org.uk/primary/resources

Learning Objective	Objective Broken Down into Differentiation		
	Below	***Expected***	***Above***
Name and identify a variety of everyday materials (including wood, plastic, glass, metal, water, rubber and rock)	Pupils, with support, can identify common everyday materials.	Pupils can independently identify and name a wider range of materials	Pupils can identify a range of material accurately and can identify those that are natural and man-made materials.
Identify an object from the material it is made. .	Pupils, with support, can identify the object from the material in which it is made	Pupils can independently and correctly label a picture or diagram of an object identifying the material it is made from	Pupils can accurately distinguish between the object and multiple materials upon which an object is made.
Describe a variety of everyday materials	Pupil uses limited vocabulary to express the properties of materials	Pupil can use a range of vocabulary and their senses to describe the properties of materials	Pupil has a wide-ranging vocabulary to accurately describe the properties of a range of materials
Compare and group together a variety of everyday materials based on their simple properties	Pupils can sort materials using a range of properties given to them	Pupils compares and groups together a variety of everyday materials based on given criteria, explaining how the two materials are similar or different	Pupils can compare and group materials based on criteria that they come up with Pupils can choose an appropriate method for testing an object for a particular property