



Science

Topics and Skills

2022-2023

Nursery

Use all their senses in hands-on exploration of natural materials.

Explore collections of materials with similar and/or different properties.

Talk about what they see, using a wide vocabulary.

1. Forces

Explore and talk about different forces they can feel.

Explore collections of materials with similar and/or different properties.

2. Materials

Talk about the differences between materials and changes they notice.

Explore collections of materials with similar and/or different properties.

3. Plants growing

Plant seeds and care for growing plants.

Understand the key features of the life cycle of a plant and an animal.

Begin to understand the need to respect and care for the natural environment and all living things.

4. Animals growing

Understand the key features of the life cycle of a plant and an animal.

Begin to understand the need to respect and care for the natural environment and all living things.

Reception

Explore the natural world around them.

Describe what they see, hear and feel whilst outside.

Understand the effect of changing seasons on the natural world around them.

1. Natural world around them – Plants

Explore the natural world around them, making observations and drawing pictures of (animals and) plants.

Ideas: name and draw **autumn leaves, bare trees, daffodils and bluebells**, see, hear, feel and smell

2. Natural world around them – Animals

Explore the natural world around them, making observations and drawing pictures of animals and plants.

Ideas: name and draw **squirrel, woodpigeon, spider and butterfly**, see, hear (listen for birdsong), feel (cobwebs)

3. Natural world – weather

Understand some important processes and changes in the natural world around them, including the seasons (and changing states of matter).

Ideas: see (rain, snow, sunshine, fog, frost), hear (wind, rain on roof or hood), feel (snow, wind, rain, sunshine)

Observe each season, effect on natural world and weather, name season and type of weather we're experiencing

N.B. Year 1 deal with **changing seasons**

4. Changing states of matter

Understand some important processes and changes in the natural world around them, including (the seasons and) changing states of matter.

Ideas: snow/ice/frost melting (Sneezy the snowman by Maureen Wright)

Light (transparency) /shadows or light and dark

Sticky web science experiment (Twinkl)

Floating and sinking

Pushes and pulls

Year 1

Topic 1 - Animals including humans - Ourselves

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Animals, including humans

Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Ideas - find more detail and lesson plans/resources to adapt from Hamilton trust.

Look at how we've changed, compare against baby photos – match children to baby photos (time tunnel – photos inside a tunnel), discuss changes and similarities, BBC bitesize video - How do humans change during their lifetime? Baby, adult, growing

Look at our bodies – need hook which needs children to measure hands / feet, work like scientists to find out if people with larger feet need bigger gloves too. Measure own hands and feet to find out, See Hamilton trust lesson plan for more details. Compare, measure, record

What can we hear? Name all 5 senses and associated body parts. Identify sounds

<https://www.bbc.co.uk/sounds/play/b03g6w17>

Investigate hearing the playground whistle or hearing the teacher in outdoor PE lessons e.g. can you hear when you're facing away, have your hood up? Etc.

How can we sort things using senses? - Hamilton trust lesson, fruit and veg market, or choose own theme for sorting e.g. toys, clothes

Sense explorers – explore outside environment with different children focussing on just 1 sense (pick card from feely bag to decide sense). Blindfolds in pairs to feel trees/move around – how did that feel? How did blindfolded friends move?

<https://www.bbc.co.uk/bitesize/topics/zqbxqfr/articles/zxy987h>

Sensory boards and bottles – make a sensory board or bottles for Explorers class which cover as many senses as possible safely (hook – letter from Nursery teacher/children)

Topic 2 - Everyday Materials – Let's build

Skills to be covered:

Working scientifically

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Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Everyday materials

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.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

What materials can we find? Investigate 3 zones – 1 - compare similarities and differences, 2 - explore look and feel of different objects/materials, 3 – describe the properties

Challenge children to find 3 things in room made of particular material– photographs or sketch them. Sort materials from investigation zones to finish.

Matching materials Play material snap with card with material name on, when say snap both children find something in class made from that material and compare. Make up songs to tune of Frere Jacques for each material. BBC bitesize – Which material do we use?

Magnets and metal Exploration with magnets. Challenge – how can you get a paperclip out of a pot of water without getting wet? Making own magnet game or activity.

Odd one out Teacher has tray with 4 wooden objects and 1 metal, which is the odd one out? - discuss and repeat. Children do own trays in small groups and children move round to discuss other trays.

Three Little pigs. Play what's my material game? - children have pictures of objects on backs and ask questions to find out material. Use variety of different material to make own houses for pigs – which is strongest/weakest - why? Etc. **Could adapt to build a stable/manger for baby Jesus.**

Alternative 3 little pigs Recap findings from previous weeks. Make houses from edible resources. Investigate which is strongest, flimsiest etc. **Could adapt to build a stable/manger for baby Jesus.**

Topic 3 - Everyday materials - Marvellous materials

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Everyday materials

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.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Mending a torn umbrella part 1

Mending a torn umbrella part 2

Ice observation

Frozen!

Puddle observation part 1

Puddle observation part 2

Topic 4 - Animals including humans – Our pets

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Animals, including humans

Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.

Identify a variety of common animals that are carnivores, herbivores and omnivores.

Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Environment exploration

Where do woodlice like to live?

The puppy has made a mess!

Imaginary pets

My pet is happy and healthy!

Bring your pet to school day

Topic 5 - Seasonal changes – Wonderful weather

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Seasonal changes

Observe changes across the four seasons.

Observe and describe weather associated with the seasons and how day length varies.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

What do we know about weather?

Weather watching

Shadow fun

Your weather station: rainfall

Your weather station: wind direction

Your weather station: temperature

Topic 6 - Plants

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Plants

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.
Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Going and growing outside

One potato, two potato

Garden centres and seeds

What lives in the garden? - naming and labelling some common plants in school grounds (don't use Hamilton lesson!)

What is inside a flower?

What is inside a tree?

Year 2

Topic 1 - Everyday materials – Materials matter

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Uses of everyday materials

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Mopping up

Are bricks absorbent?

Waterproofing materials

Printing

Resist the wax

Melting and moulding

Topic 2 - Everyday materials – Squash, Bend, Twist, Stretch

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Uses of everyday materials

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Which ball is the bounciest?
 Which fabric is the stretchiest?
 Testing rigidity
 Tough and flexible
 Which is the strongest paper?
 Paper bridges

Topic 3 - Animals including humans – Healthy animals

Skills to be covered:

Working scientifically

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Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Animals, including humans

Notice that animals, including humans, have offspring which grow into adults.

Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).

Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Hatching eggs! (1 kit, eggs, plus rehoming by the company around £250-300 – PA funded?)

Babies!

Stranded!

Healthy Hearts!

Deep inside my lunch box

Pack a healthy picnic!

Topic 4 - Living things and their habitats - Habitats

Skills to be covered:

Working scientifically

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Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Living things and their habitats

Explore and compare the differences between things that are living, dead, and things that have never been alive.

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.

Identify and name a variety of plants and animals in their habitats, including micro-habitats.
Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Dead or alive!

Microhabitats

Go large!

Food chains

Designing a bug hotel!

Making a bug hotel!

Topic 5 - Plants – Ready, Steady, Grow

Skills to be covered:

Working scientifically

Ask simple questions and recognise that they can be answered in different ways.

Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

Use their observations and ideas to suggest answers to questions.

Gather and record data to help answer questions.

Plants

Observe and describe how seeds and bulbs grow into mature plants.

Find out and describe how plants need water, light & suitable temperature to grow and stay healthy.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Spreading seeds Part 1

Spreading seeds part 2

Hydroponics in the classroom

Growing cress

How has the been grown?

Eating cress

Topic 6 - Living things and their habitats – Gardens and allotments

Skills to be covered:

Working scientifically

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Observe closely, using simple equipment.

Perform simple tests.

Identify and classify.

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Gather and record data to help answer questions.

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Identify and name a variety of plants and animals in their habitats, including micro-habitats.

Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Ideas – find more detail and lesson plans/resources to adapt from Hamilton trust.

Making a playground allotment

Making a micro-habitat

Farming and food chains

Food chain games

Transfer of energy

Eating the spoils