NAC Early Level

Outdoor Science Resource

North Ayrshire Council
Comhairle Siorrachd Àir a Tuath

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Rationale Ideas

Young children need multiple and varied opportunities to engage in scientific exploration and discovery. Curriculum for Excellence has enabled practitioners to use different approaches to learning to inspire a lifelong passion for science in children by connecting their learning to the real world. Promoting curiosity, inquiry and creativity is one of the principal drivers in '**Building the Ambition – National Practice Guidance on Early Learning and Childcare, August 2014.**

The Early Level Outdoor Science Resource has been created to:

- build capacity of practitioners to provide opportunities for science learning
- further develop the interests and natural curiosity of children
- enable children to understand the connections between science and the world around them.

At an early age, all children have the capacity and propensity to observe, explore and discover. Through their innate curiosity and sense of wonder, connections between science and the outside world can be fostered, developing scientifically literate citizens with a lifelong interest in science and helping all children see themselves as scientists.

'Increased recognition of the role and value of early years, including their approaches to learning and teaching and use of outdoor learning, in setting the direction of travel for the lifelong journey of learning by all children'

– p:15, Putting Pupils at the Centre, Ken Muir Report, MAR 2022

The resource suggests experiences and approaches to science learning outdoors in early learning and childcare settings and primary schools. It has been created by Early Years and Primary One practitioners and therefore offers a broad range of experiences across the Early Level. This resource provides opportunities and activities for children and practitioners to explore, inquire, discover, and construct within the natural environment and with natural materials outdoors. These experiences should be viewed as useful starting points and suggestions and are in no way prescriptive.

Outdoor Science Resource

Rationale Ideas

By following and building on children's motivations and interests, we can support young children to make the most of the outdoor environment for learning and development.

– Realising the Ambition, Ed Scotland, 2020

Learning in science links to Learning for Sustainability and the UN Sustainable Development Goals. This helps children to understand how the sciences play a vital role in finding solutions to real world issues or challenges. Experiencing science outdoors encourages considered thought about our use of natural resources and allows children to learn and interact with an ever-changing world.

The use of natural materials in this resource such as sticks stones and leaves are of particular value because they are open ended, multi-sensory and non-uniform and as such encourage learning experiences that can contribute to a greater depth of problem solving, and exploration, higher order thinking and communication skills.

Experiences And Outcomes

In the Sciences – Principles and practice document it states the following key aims of learning states that:

'Through learning in the sciences, children and young people develop their interest in, and understanding of, the living, material, and physical world. They engage in a wide range of collaborative investigative tasks, which allows them to develop important skills to become creative, inventive, and enterprising adults in a world where the skills and knowledge of the sciences are needed across all sectors.'

Early Years Centres across North Ayrshire Council are encouraged to use centrally developed bundles of Experience and Outcomes. The science themes in this resource were developed to reflect these bundles. These themes are:

- Growing (Bundle 1)
- Forces and Movement (Bundle 2)
- Water (Bundle 3)
- Planets/Science Stories (Bundle 4)
- Electricity (Bundle 5)- Not used in this outdoor resource
- Sound (Bundle 6)
- Senses (Bundle 7)
- Materials (Bundle 8)

The use of science stories (Bundle 4)in this resource have been included throughout this resource to *'develop an understanding of science and the world around them.'* **SCN 0-20a**. Science stories can be real or imagined and can support childrens' involvement in science. They can help children to relate to the world around them, stimulating interest and questions which can be used as the starting point, and support and develop discussion and investigation.

Rationale Ideas

In addition, there are key skills embedded within the curriculum and developed progressively under the headings:

Inquiry And Investigative Skills

Scientific Analytical Thinking Skills

Skills And Attributes Of Scientifically Literate Citizens

Practitioners should also include the development of the following scientific approaches to ensure that children acquire knowledge through exploration and discovery.

Prediction	guessing and thinking
Observation	looking and listening
Recording	taking photos, videos, drawing, and mark making
Reporting	talking and displaying
Design and create	designing and creating using a range of media
Hypothesising	explaining why

Planning

"The important role of the practitioner is to support the quality learning environment and high-quality interactions which enables children to support and extend their learning, deepen thinking and make progress."

– Realising the Ambition, Ed Scotland, 2020

We have provided both responsive and intentional learning experiences through the development of the practitioners' guide and support cards. This enables practitioners to respond to the needs of the children alongside planning and implementing intentional experiences to further develop the children's skills, knowledge and understanding of the world around them. It provides experiences that connect with and extend children's interests and motivations.

To ensure these experiences offer developmentally appropriate content, the NAC Early Years milestones document has been referenced in each activity.

Developing meaningful connections between the curriculum areas is paramount. Whilst structured activities are beneficial for some children, most learning takes place through careful consideration of provocation materials, the environment and the interactions of the practitioners and children who are embarking on a learning journey together.

By following and building on children's motivations and interests, we can support young children to make the most of the outdoor environment for learning and development.

– Realising the Ambition, Ed Scotland, 2020

Practitioners may find it helpful to use and follow the possible lines of development (PLODS) based on child led themes and curricular areas, schemas observed, and activities linked to real world events.

Outdoor Science Resource

Rationale Ideas

Questioning To Extend Learning.

The Early Level Outdoor Science Resource has a range of suggested questions and STEM links for each experience that should stimulate science inquiry, supporting rich adult-child interactions that capture the imagination and develop scientific reasoning. Through effective questioning children will demonstrate early problem-solving skills and begin to use their wider knowledge and experience to transfer and use their skills in different contexts.

At an early level encouraging children to come up with questions to explore is a great way for them to explore science themes:

- How could we...?
- What happens if?...
- I wonder whether?...
- What would...?
- How would we find...?
- Do you think...?
- Can we find a way to...?
- Where do...?
- Would you expect...?
- How does...?

Assessment

Assessment in this resource for outdoor science experiences will focus on children's knowledge and understanding of key concepts in the living, material and physical world, inquiry and investigative skills, scientific and analytical thinking skills, and scientific literacy. Practitioners can gather evidence as apart of day-to-day learning, and specific assessment experiences will also be important in assessing progress at key points of learning.

'Effective assessment...supports greater breadth and depth of learning and a greater focus on skills development.'

– Education Scotland, Building the curriculum 5, 2021

Observations of children's actions, needs and words will inform responsive and intentional planning. Intentional and responsive planning ensures that children's interests are developed. Using the Early Level Outdoor Science resource will ensure that high quality interactions and experiences will scaffold the children's learning to see relevance of their skills learned beyond the setting and in a constantly changing environment.

A young child's voice is interpreted by our observations of their actions, emotions, and words. These observations are central to assessment and inform us what children need.'

– Pg: 46 Realising the Ambition, 2020

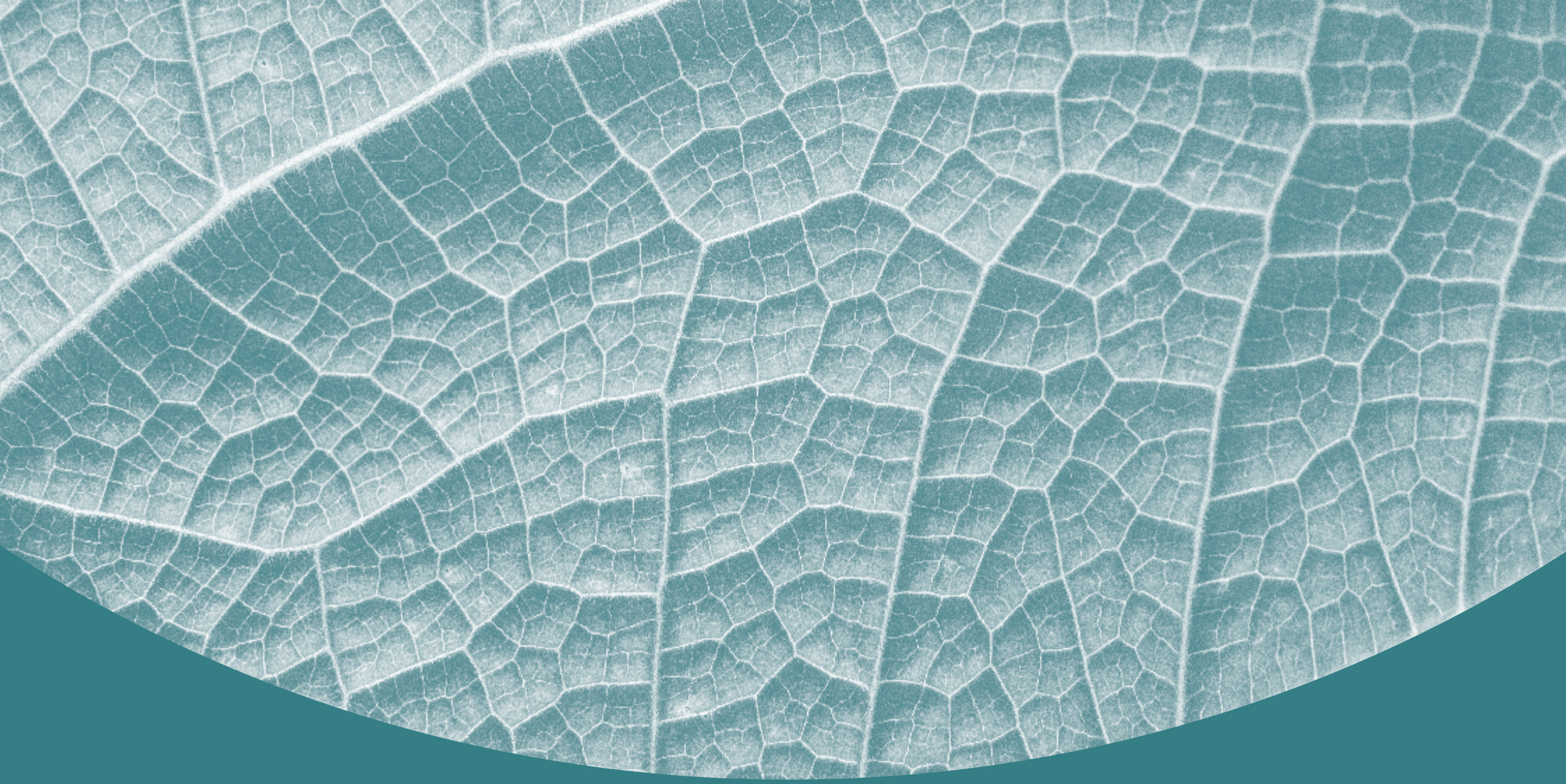
Rationale Ideas

Children at Early Level can be assessed in a range of ways:

- Talking
- Mind Maps- to evaluate what they have learned and what they want to find out next
- Observations
- Questioning
- Photos
- Filming
- Recording
- Displays
- Pieces of work
- Floor books
- Individual interest books
- My learning journey.

Well-constructed and well-planned outdoor learning supports our children to develop the skills of enquiry, critical thinking and reflection and can improve the quality of the curriculum by taking it outdoors: teaching skills for learning, skills for work and skills for life. Essential in order to meet the unpredictable challenges of life in the 21st century.

(HMIE, Thematic Report – Successful Approaches to Learning Outdoors, FEB 2022)



Bundle 1:
Growing

Outdoor Science Resource

Experience: Growing

What Plants Need To Grow

Provocation Materials:

Plant pots, seeds, water, labels, camera, box/cover, soil, water.

Experience Outline:

Plant one seed in a pot with soil and give it water and sunlight.

Plant another in soil with no sunlight.

Plant another with sunlight and water but no soil.

Observe/document what happens next.

seeds | shoots | roots | plants | sun

light | dark | soil | water | strong

healthy | nourished | limp | yellow/ brown leaves | healthy, green leaves

buds | shade | nutrients | fortified

Outdoor Science Resource

Experience: Growing

What Plants Need To Grow

PLOD: Possible Lines of Development

Experiences:

What happens to plants that get too much water?

How does fertilizer effect the growth of a plant?

Questions:

What do you think seeds and young plants need in order to grow into healthy plants?

What do you think will happen if the plant gets water, but no light?

What will happen to the leaves and stem of a plant if it does not have water and sun?

Is there anything else that we need to test in order to show what a plant needs to allow it to grow into a strong, healthy plant?

STEM Links

(Using key vocabulary to explain)

What is growth?

Growth is an increase in size. Throughout its life, a living organism continues to grow in different ways. Most living organisms need oxygen, water and food to grow. Plants are a special case because they produce their own food in their leaves using light from the sun. Other living organisms eat plants or other animals for food.

What do plants need to grow?

For successful growth plants need water, light, a suitable temperature, air and time. Plants need sunlight and water for the process that makes energy for the plant to grow. Plants also need water to absorb nutrients from the soil.

Development Milestones:

31. Uses small tools effectively and with control, e.g. scissors, tweezers & paintbrushes, computer controls.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

Jasper's Beanstalk
by Mick Inkpen

The Tiny Seed
by Eric Carle

The Enormous Turnip
Traditional

Outdoor Science Resource

Experience: Growing

What Plants Need To Grow

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other.
SCN 0-01a

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them.
SCN 0-03a

Benchmarks:

SCN 0-01a

- Explores and sorts objects as living, non-living or once living.
- Describes characteristics of livings things and how they depend on each other, for example, animals which depend on plants for food.

SCN 0-03a

- Explores, observes and discusses basic needs of plants and what they need to grow including water, heat, sunlight and soil.
- Demonstrates understanding of how plants grow from seeds.

Outdoor Science Resource

Experience: Growing

What Plants Need To Grow

Early Level Skills

Inquiry and Investigative skills:

- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Measuring plant growth and room for growth. **MNU 0-11a**
- Duration of plant growth and calendar dates for growing seasons. **MNU 0-10a**
- Record when plants need to be watered. **MNU 0-20c**
- Adjectives describing healthy and unhealthy plants. **LIT 0-10a**
- Labelling a plant growing. **SCN 0-03a**
- Plants in stories. **LIT 0-07a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Zero hunger.
- Climate action.
- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living organisms and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Gardener/Horticulturist
- Botanist
- Farmer

Experience: Growing

Parts Of A Plant

Provocation Materials:

Playing field with daisies and dandelions, woodland or garden with flowering plants.

Experience Outline:

Children find a plant in the garden and identify the flower, stem, leaves, bud and root. Dissect the flower and name the parts.

plants | soil | roots | stem | leaf

flower | bud | water | germination | dissect

Outdoor Science Resource

Experience: Growing

Parts Of A Plant

PLOD: Possible Lines of Development

Experiences:

Compare shapes and sizes of plant leaves and flowers.

Pull up a dandelion or daisy to look at the roots under the soil.

Sunflower growing competition.

Grow a bean seed in a jar to see the stem and roots.

Investigate the 'pipes'in celery.

Sort living and non living objects found outdoors.

Sort living and moving objects found outdoors.

Questions:

What different parts of the plant can you see?

Which part helps the plant stand up tall?

Why do you think plants have flowers?

What do you think the roots do to help the plant?

How many different types of plants can you find?

STEM Links

(Using key vocabulary to explain)

What is growth?

Growth is an increase in size. Throughout its life, a living organism continues to grow in different ways. Most living organisms need oxygen, water and food to grow. Plants are a special case because they produce their own food in their leaves using light from the sun. Other living organisms eat plants or other animals for food.

What is germination?

Germination happens when a seed starts to sprout and grow.

What are the parts of a plant?

Flowers are bright and smell nice to attract insects. Insects help plants make seeds. The leaf uses sunshine to make food for the plant. The roots keep the plant anchored in the soil and absorbs water from the soil. The stem is like a pipe that takes water from the roots to different parts of the plant.

Development Milestones:

12. Concentrates on activities with sustained interest.

13. Uses sentences of 4-6 words and uses language for a variety of reasons.

Science story:

SCN 0-20a

Plant The Tiny Seed
By Christine Matheson

A Seed In Need
by My Bees

Outdoor Science Resource

Experience: Growing

Parts Of A Plant

Experiences and Outcomes:	Benchmarks:
 I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**	**SCN 0-01a** • Explores and sorts objects as living, non-living or once living. • Describes characteristics of living organisms and how they depend on each other, for example, animals which depend on plants for food. • Explores, observes and discusses basic needs of plants and what they need to grow, including, water, heat, sunlight and soil.
 I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**	**SCN 0-03a** • Explores, observes and discusses basic needs of plants and what they need to grow including water, heat, sunlight and soil. • Demonstrates understanding of how plants grow from seeds.

Outdoor Science Resource

Experience: Growing

Parts of a plant

Early Level Skills

Inquiry and Investigative skills:

- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.

Interdisciplinary Learning:

- Label parts of a plant. **SCN 0-03a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living organisms and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Botanist
- Horticulturist

Outdoor Science Resource

Experience: Growing

Seed Dispersal

Provocation Materials:

Woodland or park walk,
conkers or large seeds.

Experience Outline:

Children go for a walk in the school grounds, woodland area, park or garden and look for different types of seeds such as berries, conkers, acorns, cones or seed helicopters. Seeds can also be found inside fruit and flower heads. Sort the seeds into different groups. Compare the size, shape and colour of seeds.

Encourage the children to find a dandelion and blow the 'puffs' (the white seed heads).

Outdoor Science Resource

Experience: Growing

Seed Dispersal

PLOD: Possible Lines of Development

Experiences:

Make a seed bomb to disperse seeds.

Make an exploding seed pod filling a balloon with seeds and then pop it.

Look at seed helicopters and discover how some seeds travel.

How are the seeds different to one another?

Look inside fruit and dried flowers for seeds

Collect some seeds to plant and grow.

Can the children find the seeds that have been hidden?

Look inside fruit and dried flowers for seeds

Collect some seeds to plant and grow.

Questions:

How do plants and trees spread their seeds?

Do all seeds look the same?

How many seeds can you find?

Can you think of ways these seeds might be spread?

STEM Links

(Using key vocabulary to explain)

What is seed dispersal?

This is the way a seed travels. As plants can't walk around and take their seeds with them, they have found ways to move their seeds.

What ways can seeds be dispersed?

Seeds can be dispersed by wind, gravity, water, animals, people, explosion and fire.

What is growth?

Growth is an increase in size. Throughout its life, a living organism continues to grow in different ways. Most living organisms need oxygen, water and food to grow. Plants are a special case because they produce their own food in their leaves using light from the sun. Other living organisms eat plants or other animals for food.

What do plants need to grow?

For successful growth plants need water, light, a suitable temperature, air and time. Plants need sunlight and water for the process that makes energy for the plant to grow. Plants also need water to absorb nutrients from the soil.

Plants and trees spread their seeds so new young plants can grow. Seeds come in different forms including berries, conkers, acorns, catkins, cones, seed helicopters, and seeds inside flowers. These seeds can be moved to a new place to grow by the wind, water, animals or through the design of the seed.

Development Milestones:

36. Matches and sorts using 1 criterion and is able to explain what they are doing.

38. Estimates in contexts of number and measurement using the appropriate language.

Science story:

SCN 0-20a

The Tiny Seed
by Eric Carle

A Fruit Is A Fruit Case For Seeds
by Lean Richards

Outdoor Science Resource

Experience: Growing

Seed Dispersal

Experiences and Outcomes:	Benchmarks:
 I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**	**SCN 0-01a** • Explores and sorts objects as living, non-living or once living. • Describes characteristics of livings things and how they depend on each other, for example, animals which depend on plants for food.
 I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**	**SCN 0-03a** • Explores, observes and discusses basic needs of plants and what they need to grow including water, heat, sunlight and soil. • Demonstrates understanding of how plants grow from seeds.

Bundle 1 B1.3

Outdoor Science Resource

Experience: Growing

Seed Dispersal

Early Level Skills

Inquiry and Investigative skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.
- Recognises similarities, patterns and differences in the findings and links these to the original question.
- Identifies and discusses new knowledge and understanding.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Sort seeds according to type. **MNU 0-20b**
- Draw pictures of different types of seeds. **EXA 0-04a**
- Count how many seeds, conkers or cones you have. **MNU 0-02a**
- Talk about the different ways that seeds travel to find soil to grow in. **LIT 0-09a**
- Seed gym. Act out their seed dispersal method e.g dandelion- blown, sycamore-spin, conker-drop, roll and bounce. **HWB 0-18a/0-22a, EXA 0-14a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living organisms and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Forest worker
- Gardener
- Horticulturist

Outdoor Science Resource

Experience: Growing

Growing Plants For Butterflies

Provocation Materials:

Container, lavender seeds or plants, oregano seeds or plants, soil, water, small gardening tools.

Experience Outline:

Children grow plants like lavender or oregano in containers or in the garden in early spring to attract and feed butterflies. Let the oregano and lavender flower to attract the butterflies. Watch for butterflies feeding on your flowers.

seeds | plants | soil | water | grow

light | food | nectar | flowers | butterflies

pollination

Outdoor Science Resource

Experience: Growing

Growing Plants For Butterflies

PLOD: Possible Lines of Development

Experiences:

Grow plants to attract bees and other wildlife.

Try growing different types of plants to support wildlife.

Build a bug hotel.

Questions:

How can we look after these seeds and young plants to help them grow?

How do we know these seeds and plants are growing and are healthy?

How do the plants change as they grow?

Why do you think butterflies like these plants?

Can you describe what these plants smell like?

How do these plants help the butterflies?

STEM Links

(Using key vocabulary to explain)

What is growth?

Growth is an increase in size. Throughout its life, a living organism continues to grow in different ways. Most living organisms need oxygen, water and food to grow. Plants are a special case because they produce their own food in their leaves using light from the sun. Other living organisms eat plants or other animals for food.

What do plants need to grow?

For successful growth plants need water, light, a suitable temperature, air and time. Plants need sunlight and water for the process that makes energy for the plant to grow. Plants also need water to absorb nutrients from the soil.

Adult butterflies feed on nectar which is the sugary liquid produced by many flowers. Butterflies have long tongues that helps them get nectar from long tubular shaped flowers.

What is pollination?

Pollination is when pollen from one part of a plant is carried by the wind or insects to another plant.

Development Milestones:

20. Follows more complex instructions.

31. Uses small tools effectively and with control, e.g. scissors, tweezers & paintbrushes, computer controls.

Science story:

SCN 0-20a

My Butterfly Bouquet
by Nicola Davies

Outdoor Science Resource

Experience: Growing

Growing Plants For Butterflies

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**

Benchmarks:

SCN 0-01a

- Explores and sorts objects as living, non-living or once living.
- Describes characteristics of livings things and how they depend on each other, for example, animals which depend on plants for food.

SCN 0-03a

- Explores, observes and discusses basic needs of plants and what they need to grow including water, heat, sunlight and soil.
- Demonstrates understanding of how plants grow from seeds.

Outdoor Science Resource

Experience: Growing

Growing Plants For Butterflies

Early Level Skills

Inquiry and Investigative skills:

- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Which plants are tallest or shortest. **MNU 0-11a**
- How many days before the seeds grew. **MNU 0-10a, MNU 0-02a**
- Listen and watch for information about how to plant seeds or plants. **LIT 0-04a**
- Talk about how to grow and look after plants. **LIT 0-09a**
- Make pictures of the plants as they grow. **EXA 0-04a**
- Talk about how growing plants outdoors makes you feel and enjoy the benefits. **HWB 0-02a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living organisms and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Ecologist
- Botanist
- Gardener

Outdoor Science Resource

Experience: Growing

Lifecycle Of A Butterfly

Provocation Materials:

Story book 'The Hungry Caterpillar', plants that attract butterflies like lavender or oregano in flower.

Experience Outline:

Children listen to the story 'The Hungry Caterpillar' while sitting outside within view of plants such as lavender or oregano in flower. They talk about the sequence of events in the story describing the caterpillar's growth into a butterfly. Pupils look for caterpillars and butterflies. They create their own transient art life cycle using natural objects.

Outdoor Science Resource

Experience: Growing

Lifecycle Of A Butterfly

PLOD: Possible Lines of Development

Experiences:

Talk about the lifecycle of frogs.

Discuss changes and development in children's own growth.

Look at caterpillars through magnifying glass.

Identify colours and types of butterflies that children might see.

Questions:

Where do butterflies come from?

Do they start off as baby butterflies?

Why did the caterpillar eat so much food at the beginning of the story?

What did the caterpillar do once it grew bigger and bigger?

Did you expect a butterfly to come out of the cocoon?

Can you retell the story about caterpillars growing into butterflies?

Can you see any butterflies flying around?

STEM Links

(Using key vocabulary to explain)

What is growth?

Growth is an increase in size. Throughout its life, a living organism continues to grow in different ways. Most living organisms need oxygen, water and food to grow. Plants are a special case because they produce their own food in their leaves using light from the sun. Other living organisms eat plants or other animals for food.

What is the life cycle of a butterfly?

Butterflies develop through the process of metamorphosis. This involves an amazing transformation as the caterpillar grows and changes to become a butterfly. The caterpillar starts to grow inside the egg. It hatches from the egg and eats vast amounts of leaves and plants growing larger and larger. Once fully grown, the caterpillar forms itself into a "pupa" (or chrysalis). This vessel protects the caterpillar while it changes into a butterfly. The pupa splits open and the butterfly emerges. Once its wings are dry and plump up, the butterfly can fly away looking for flowers to feed on.

Development Milestones:

1. Is happy, settled and engages in learning.

18. Listens and responds to who, what and where.

Science story:

SCN 0-20a

The Hungry Caterpillar
by Eric Carle

Outdoor Science Resource

Experience: Growing

Lifecycle Of A Butterfly

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

Benchmarks:

SCN 0-01a

- Explores and sorts objects as living, non-living or once living.
- Describes characteristics of livings things and how they depend on each other, for example, animals which depend on plants for food.

Outdoor Science Resource

Experience: Growing

Lifecycle Of A Butterfly

Early Level Skills

Inquiry and Investigative skills:

- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Talk about the food the caterpillar ate and food the children like to eat that helps them grow. **HWB 0-29a**
- Retell the events in the story showing the growth of the caterpillar into a butterfly. **LIT 0-19a**
- Draw to show the different stages of development id the story. **EXA 0-04a**
- In drama show the different movements of a caterpillar and butterfly. **EXA 0-14a**
- How many caterpillars or butterflies can you count outside. **MNU 0-02a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living organisms and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Countryside Ranger
- Environmentalist
- Biologist

Outdoor Science Resource

Experience: Growing

Growing – Minibeast Hunt

Provocation Materials:

Hand held magnifying glasses, stone, felt tip pens.

Experience Outline:

Children go on a mini beast hunt carefully looking under stones and logs. Stress the importance of being kind and respectful to even the tiniest creature. Look carefully through a magnifying glass if possible at different types of mini beasts.

Draw on a stone or wood disc the minibeast that you found and leave it at the habitat for other children to find.

growth | living things | minibeasts | backbone | logs | stones

leaves | plants | ants | ladybirds | worms | spiders

caterpillars | slugs | snails | flies | butterflies | bees

beetles | camouflage | predator

Outdoor Science Resource

Experience: Growing

Growing – Minibeast Hunt

PLOD: Possible Lines of Development

Experiences:

Make a bug hotel.

Identify the minibeasts you find.

Is it easy to find the minibeasts or are some camouflaged in their surroundings?

Can you find the minibeast that is drawn on the stone or wood disc?

Minibeast stone painting.

Questions:

Where do minibeasts live?

How many different minibeasts can you find?

How easy is it to find the minibeast?

Are the minibeasts camouflaged?

How many legs does the minibeast have?

What colour is the minibeast?

How is the minibeast moving?

What do you think minibeasts eat?

STEM Links

(Using key vocabulary to explain)

What is growth?

Growth is an increase in size. Throughout its life, a living organism continues to grow in different ways. Most living organisms need oxygen, water and food to grow. Plants are a special case because they produce their own food with their leaves using the light from the sun. Other living organisms eat plants or other animals for food.

What are minibeasts?

Minibeasts are very small animals with no backbone. Minibeasts are important because they pollinate crops and flowers, tidy up remains of dead plants and animals and are food for other garden animals like birds and frogs. Minibeasts live under logs, stones or leaves, in ponds, in trees, in grass and in the soil. Most minibeasts eat plant foods such as leaves, fruit, nectar or pollen. Minibeasts you might see include ants, ladybirds, worms, spiders, caterpillars, slugs, snails, flies, butterflies, bees and beetles.

What is camouflage?

The colour and texture of an animal can help it blend in with its surroundings. This is important for animals to hide from predators that might eat them.

Development Milestones:

13. Uses sentences of 4-6 words and uses language for a variety of reasons.

31. Uses small tools effectively and with control, e.g. scissors, tweezers & paintbrushes, computer controls.

Science story:

SCN 0-20a

Out Of Nowhere
by Chris Naylor- Ballesteros

The Very Busy Spider
By Eric Carle

The Bug Collector
by Alex Griffiths

Outdoor Science Resource

Experience: Growing

Growing – Minibeast Hunt

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

Benchmarks:

SCN 0-01a

- Explores and sorts objects as living, non-living or once living.
- Describes characteristics of livings things and how they depend on each other, for example, animals which depend on plants for food.
- Talks about the science they encounter in their everyday experiences.
- Explores, through role-play, how science and science skills are used in a variety of jobs.

Outdoor Science Resource

Experience: Growing

Growing – Minibeast Hunt

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Count how many legs a minibeast has. **MNU 0-02a**
- Sing songs about minibeasts. **EXA 0-16a**
- Read stories about minibeasts. **LIT 0-01b, LIT 0-19a**
- Move like different minibeasts. **EXA 0-12a, EXA 0-14a**
- Make a bug hotel. **TCH 0-09a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Climate action.
- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living organisms and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Zoologist
- Biologist
- Environmentalist

Growing:
What Plants Need To Grow

What to do:

Plant one seed in a pot with soil and give it water and sunlight.

Plant another in soil with no sunlight.

Plant another with sunlight and water but no soil.

Observe/document what happens next.

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**

I Wonder...
What will happen to plants if they are kept in the dark?

I See...
How the plant grows...

I Know...
Plants need water, sunlight and food.

Safety
Use equipment safely.

Equipment
Labels, camera, box/cover, pots, seeds, soil.

Support Card

Growing: B1.1

Variation of Experience...

What happens to plants that get too much water?

How does fertilizer effect the growth of a plant?

Questions:

What do you think seeds and young plants need in order to grow into healthy plants?

What do you think will happen if the plant gets water, but no light?

What will happen to the leaves and stem of a plant if it does not have water and sun?

Is there anything else that we need to test in order to show what a plant needs to allow it to grow into a strong, healthy plant?

Skills:

- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Respects living organisms and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Gardener/ Horticulturist
- Botanist
- Farmer

Story Link

SCN 0-20a
Jasper's Beanstalk
The Enormous Turnip

Growing:
Parts Of A Plant

What to do:

Children find a plant in the garden and identify the flower, stem, leaves, bud and root. Dissect (pull apart) and name the parts of a plant.

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**

I Wonder...
What are the different parts of a plant and what do they do?

I See...
The plant has different parts that have different jobs.

I Know...
The flower, stem, leaves and roots and what they do for the plant.

Safety
Some plants can be harmful.

Equipment
Playing field with daisies and dandelions, woodland or garden with flowering plants.

Support Card

Growing: B1.2

Variation of Experience...

Compare shapes and sizes of plant leaves and flowers.

Pull up a dandelion or daisy to look at the roots under the soil.

Sort living and non living objects found outdoors.

Questions:

What different parts of the plant can you see?

Which part helps the plant stand up tall?

Why do you think plants have flowers?

What do you think the roots do to help the plant?

How many different types of plants can you find?

Skills:

- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Demonstrates natural curiosity.
- Respects living organisms and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Botanist
- Horticulturist

Story Link

SCN 0-20a
Plant The Tiny Seed by Christine Matheson
A Seed In Need by My Bees

plants soil roots stem leaf flower bud water germination dissect

Growing:
Seed Dispersal

What to do:

Children go for a walk in the school grounds, woodland area, park or garden and look for different types of seeds. Seeds can also be found inside fruit and flower heads. Sort the seeds into different groups. Compare the size, shape and colour of seeds.

Encourage the children to find a dandelion and blow the 'puffs" (seed heads).

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**

I Wonder...
How do new plants grow from seeds in nature?

I See...
Trees and plants spread their seeds in different ways so new plants grow.

I Know...
Seeds can be found inside fruit, berries, conkers, cones, acorns and flowers.

Safety
Do not eat any seeds or berries.

Equipment
Woodland, park or school grounds, conkers or large seeds.

Support Card

Growing: B1.3

Variation of Experience...

Make a seed bomb to disperse seed.

Make an exploding seed pod filling a balloon with seeds, and then pop it.

Look at seed helicopters and discover how some seeds travel.

Look inside fruit and dried flowers for seeds.

Collect some seeds to plant and grow.

Questions:

How do plants and trees spread their seeds?

Do all seeds look the same?

How many seeds can you find?

Can you think of ways these seeds might spread around on the ground?

How are the seeds different from one another?

Skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.
- Recognises similarities, patterns and differences in the findings and links these to the original question.
- Identifies and discusses new knowledge and understanding.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Respects living organisms and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Forest worker
- Horticulturist
- Gardener

Story Link

SCN 0-20a
The Tiny Seed by Eric Carle
A Fruit Is A Fruit Case For Seeds by Lean Richards

Growing:
Growing Plants For Butterflies

What to do:

Children grow plants like lavender or oregano in containers or in the garden in early spring to attract and feed butterflies. Let the oregano and lavender flower to attract the butterflies. Watch for butterflies feeding on your flowers.

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**

I Wonder...
How do butterflies get food from flowers?

I See...
Butterflies come to the flowers and land on them.

I Know...
Butterflies feed on nectar in flowers. Butterflies need flowers for food.

Safety
Use equipment safely.

Equipment
Pots, seeds, soil, water, flowers.

Support Card

Growing: B1.4

Variation of Experience...

Grow plants to attract bees and other wildlife.

Try growing different types of plants to support wildlife.

Build a bug hotel.

Questions:

How can we look after these seeds and young plants to help them grow?

How do we know these seeds and plants are growing and are healthy?

How do the plants change as they grow?

Why do you think butterflies like these plants?

Can you describe what these plants smell like?

How do these plants help the butterflies?

Skills:

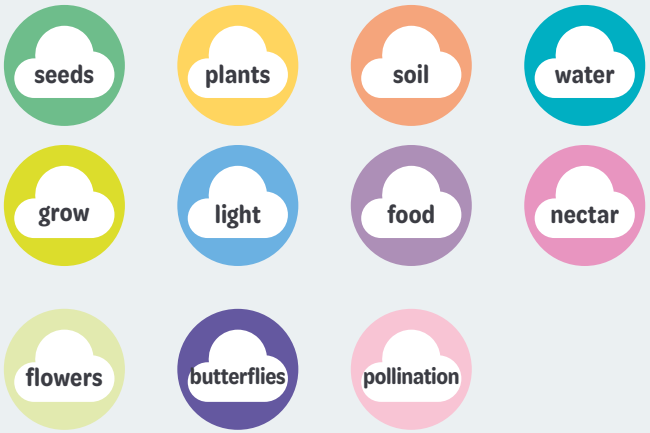
- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Respects living organisms and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Ecologist
- Botanist
- Gardener

Story Link

SCN 0-20a
My Butterfly Bouquet by Nicola Davies



Growing:
Life Cycle Of A Butterfly

What to do:

Children listen to the story 'The Hungry Caterpillar' while sitting outside within view of plants such as lavender or oregano in flower. They talk about the sequence of events in the story describing the caterpillar's growth into a butterfly. Pupils look for caterpillars and butterflies. They create their own transient art life cycle using natural materials.

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I Wonder...	I See...	I Know...
What happens to caterpillars as they grow?	Some animals change shape as they grow.	Caterpillars make a pupa and grow into butterflies.

Safety
Follow teacher's instructions.

Equipment
Story book 'The Hungry Caterpillar', plants that attract butterflies like lavender or oregano in flower.

Support Card

Growing: B1.5

Variation of Experience...

Talk about the lifecycle of frogs.

Discuss changes and development in growth of children.

Look at caterpillars through magnifying glass.

Identify colours and types of butterflies that children might see.

15 LIFE ON LAND

Questions:

Where do butterflies come from?

Do they start off as baby butterflies?

Why did the caterpillar eat so much food at the beginning of the story?

What did the caterpillar do once it grew bigger and bigger?

Did you expect a butterfly to come out of the cocoon?

Can you retell the story about caterpillars growing into butterflies?

Can you see any butterflies flying around?

Skills:

- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Respects living organisms and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Countryside Ranger
- Environmentalist
- Biologist

Story Link

SCN 0-20a
The Hungry Caterpillar by Eric Carle

butterfly

pupa

caterpillar

growth

change

egg

hatch

leaves

flowers

Growing:
Minibeast Hunt

What to do:

Children go on a mini beast hunt carefully looking under stones and logs. Stress the importance of being kind and respectful to even the tiniest creature.
Look carefully through a magnifying glass if possible at different types of mini beasts.

Draw the minibeast that you have found on a stone or wood disc and leave by the habitat for others to find.

Experiences and Outcomes:

I have observed living organisms in the environment over time and am becoming aware of how they depend on each other.
SCN 0-01a

I Wonder...
How many different minibeasts can I see?

I See...
Minibeasts are different shapes and colours. They have different numbers of legs.

I Know...
Minibeasts eat plants and live under logs, stones, leaves and in trees, grass and soil.

Safety
Wash hands after activity.

Equipment
Hand held magnifying glasses, stone/wood disc, felt tip pens.

Support Card

Growing: B1.6

Variation of Experience...

Make a bug hotel.

Identify the minibeasts you found.

Minibeast stone painting and craft activities.

Play a camouflage game using natural objects.

Questions:

How many different minibeasts can you find?
Where do minibeasts live?
How many legs does the minibeast have?
How easy is it to find minibeasts?
What colour is the minibeast?
How is the minibeast moving?
What do you think minibeasts eat?
Are minibeasts camouflaged?

Skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Respects living organisms and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Zoologist
- Biologist
- Environmentalist

Story Link

SCN 0-20a
The Bug Collector By Alex Griffiths
The Very Busy Spider by Eric Carle

Bundle 2:
Forces and Movement

Outdoor Science Resource

Experience: Forces and Movement

Balancing Scales

Provocation Materials:

Scales, small seesaw or teeter totter, outdoor objects
e.g. pebbles, pinecones, stones, loose parts.

Experience Outline:

Children collect a variety of outdoor objects.
They are invited to place these objects on a scale. Children then observe the effect the objects places on the scale.

Create their own scales/seesaw from loose parts.

gravity | weight | scale | heavy | up

balance | light | force | move | down

rise | fall

Outdoor Science Resource

Experience: Forces and Movement

Balancing Scales

PLOD: Possible Lines of Development

Experiences:

Explore if bigger objects are always heavier than small ones.

Make predictions and estimations based on two objects.

Examine everyday contexts e.g. seesaw in the playground. Other playground objects that move and promote the concept of forces. (Roundabouts spin, swings, down the chute.)

Questions:

What will happen to the scales when I place an object on it?

Can I make the scales balance?

Can I make the scale fall to the floor?

What happens when I put the same number of objects on each side?

What do different objects do to the scale?

How can I make one side of the scale go up/rise?

STEM Links:

(Using key vocabulary to explain)

What is a force?

A force is a push or a pull. You can't see forces, but you can see how they affect things. A force can make something speed up, slow down, or change direction or shape.

What is gravity?

Gravity is a force that pulls things together. The Earth's gravity is a force that pulls everything on the planet towards the ground.

What does balance mean?

Forces acting on both sides of the scale are equal.

What does weight mean?

How heavy an object is.

Weight is the force an object experiences due to gravity.

How can you measure weight?

Using a balancing scale. This is an object that has two sides that hang from or rest on a bar. It is used to compare the weight of different objects.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

38. Estimates in contexts of number and measurement using the appropriate language.

Science story:

SCN 0-20a

Balancing Act
by Ellen Stoll Walsh

Equal Schmequal
by Virginia Kroll

Outdoor Science Resource

Experience: Forces and Movement

Balancing Scales

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do 'when they work'. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

Benchmarks:

SCN 0-04a

- Ask questions and describe what can make things go, for example; batteries, windup toys and sunlight.
- Talk about toys, common appliances and what they do when they work, for example; produce heat, light, movement and sound.

SCN 0-07a

- Explore and sorts toys and objects into groups according to whether they need to be pushed or pulled.
- Measures using simple equipment, how the movement of an object is affected by the size of the force or weight of the object.
- Demonstrates through play how a force can make an object stay still, start to move, speed up, slow down and change shape.

Outdoor Science Resource

Experience: Forces and Movement

Balancing Scales

Early Level Skills

Inquiry and Investigative skills:

- Explore and observes through play.
- Asks questions arising from play activities.
- Uses their senses to acquire information.
- Makes simple predictions of what might happen.

Interdisciplinary Learning:

- Numeracy: weight and counting. **MNU 0-02a, MNU 0-11a**
- Create own scales. **TCH 0-09a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Industry innovation and Infrastructure.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Chef
- Baker
- Gymnast
- Construction Industry

Outdoor Science Resource

Experience: Forces and Movement

Flight-Bubbles

Provocation Materials:

Bubble mixture, a variety of wands (commercially produced or homemade).

Experience Outline:

Children use a variety of wands to create bubbles. They observe the effects of their environment and apparatus on the bubbles.

float fly high low big

small blow wand air travel

change shape flight

Outdoor Science Resource

Experience: Forces and Movement

Flight-Bubbles

PLOD: Possible Lines of Development

Experiences:

Experiment with the concentration of bubble mixture.

Explore the effect of wand size on bubbles.

Examine effects of blowing bubbles in different weather conditions.

Questions:

What happens when I blow the bubble mixture from the wand?

How can I make bigger bubbles?

Are all bubbles the same size?

What happens to the bubbles when windy?

What directions do bubbles go in and why?

STEM Links

(Using key vocabulary to explain)

What is the science behind bubbles?

Soap molecules are attracted to each other. When you blow through a bubble wand the soap mixture sticks to itself trapping the air inside.

What makes bubbles float/fly?

Bubbles have a similar density to the surrounding air which makes them float.

Why do bubbles change shape?

Bubbles are always round, when bubbles attach to one another they can create all sorts of shapes.

Why do they change colour?

The soap mixture splits sunlight into the colour of the rainbow. When you see yellow or black on the bubble it is about to pop!

Development Milestones:

12. Concentrates on activities with sustained interest.

21. Ask who, what, where, when, what and how questions.

40. Is number confident to 5.

Science story:

SCN 0-20a

Curly's Fun With Bubbles
by Sherri Boddie

Outdoor Science Resource

Experience: Forces and Movement

Flight-Bubbles

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do 'when they work'. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

Benchmarks:

SCN 0-04a

- Talks about toys and common appliances and what they do when they work, for example, produce heat, light, movement or sound.

SCN 0-07a

- Demonstrates, through play, how a force can make an object stay still, start to move, speed up, slow down and change shape.

Bundle 2 B2.2

Outdoor Science Resource

Experience: Forces and Movement

Flight-Bubbles

Early Level Skills

Inquiry and Investigative skills:

- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Counting bubbles. **MNU 0-02a/0-03a**
- Using different shape wands. **MNU 0-16a**
- Creative writing – bubbles. **LIT 0-20a**
- Music – I'm forever blowing bubbles. **EXA 0-16a**

Scientific analytical thinking skills:

- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Good health and wellbeing.
- Clean water and sanitation.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Aviation Industry

Outdoor Science Resource

Experience: Forces and Movement

Magnetism – Magnetic Scavenger Hunt

Provocation Materials:

Magnets, optional googly eyes.

Experience Outline:

Children explore the outdoor area and find objects of interest (for example a fence post, gate or wall). They are invited to test these items with a magnet (or magnetic googly eyes) to discover if they are magnetic or non-magnetic. Children can record their results.

magnets | metal | magnetic | non-magnetic | material

force | attraction | iron | steel | repel

north pole | south pole

Outdoor Science Resource

Experience: Forces and Movement

Magnetism – Magnetic Scavenger Hunt

PLOD: Possible Lines of Development

Experiences:

To explore magnetic toys, such as a brio train set take learning indoors to examine magnetic objects. Can children go on another forces scavenger hunt? For example search for items that pull, items that push.

Use magnets to identify items in the playground made of iron or steel.

Questions:

What objects will the magnet stick to?

What objects does it not stick to?

What do the magnetic objects have in common?

What do magnetic objects feel like?

What can you feel when you place a magnet on something that is magnetic?

STEM Links

(Using key vocabulary to explain)

What does Magnetic mean?

A magnet attracts some types of metal towards it by a force called magnetism. It also attracts other magnets. The metals iron, nickel and cobalt are all attracted to magnets.

What are Magnetic Materials?

A magnetic material is one that is attracted to a magnet. It can only be attracted to a magnet – never repelled by one.

What are Non-magnetic materials?

Materials that aren't attracted to magnets are described as non-magnetic.

What happens when magnets stick together?

A magnet's North pole will always pull towards another magnet's South pole. This is described as magnetic attraction.

What happens when magnets won't stick together?

Two poles of the same type always push each other way. This is described as magnetic repulsion.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

Magnet Max
by Monica Lozano Hughes

Outdoor Science Resource

Experience: Forces and Movement

Magnetism – Magnetic Scavenger Hunt

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do 'when they work'. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects. I can recognise simple types of forces and describe their effects. **SCN 0-07a**

Benchmarks:

SCN 0-04a

- Ask questions and describe what can make things go, for example; batteries, windup toys and sunlight.
- Talk about toys, common appliances and what they do when they work, for example, heat, light, movement and sound.

SCN 0-07a

- Explore and sorts toys and objects into groups according to whether they need to be pushed or pulled.
- Measures using simple equipment, how the movement of an object is affected by the size of the force or weight of the object.
- Demonstrates through play how a force can make an object stay still, start to move, speed up, slow down and change shape.

Outdoor Science Resource

Experience: Forces and Movement

Magnetism – Magnetic Scavenger Hunt

Early Level Skills

Inquiry and Investigative skills:

- Makes simple predictions of what might happen.
- Explores and observes through play.

Interdisciplinary Learning:

- Match and sort objects. **MNU 0-02b**
- To help care for the environment, I reduce, reuse and recycle the resources I use. **TCH 0-06a**

Scientific analytical thinking skills:

- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Industry innovation and infrastructure.
- Responsible production and consumption.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Construction Industry
- Recycling Plants

Outdoor Science Resource

Experience: Forces and Movement

Push and Pull – Loose Parts and Ramps

Provocation Materials:

Ramp (suggested materials – plank, guttering), objects that roll.

Experience Outline:

Children are given a variety of loose parts that can be rolled down a ramp. They experiment with natural objects that roll easily/don't roll. Children can be challenged to change the gradient of ramp and observe what this does to the object in question.

push | pull | roll | start | stop

hold | shape | slope | gradient | ramp

slide | gravity | speed

Outdoor Science Resource

Experience: Forces and Movement

Push and Pull – Loose Parts and Ramps

PLOD: Possible Lines of Development

Experiences:

Explore ramps in real life, use as stimulus for examining playgrounds. Accessibility to buildings. Use of ramps in construction.

Questions:

What will happen to the object when we place it at the top of the ramp?

Why does the object roll down the ramp?

Why will an object not roll down the ramp?

Why does the object stop rolling?

What happens if we change the gradient of the ramp?

What happens if we change the surface of the ramp?

What is the object that will roll down the ramp fastest?

STEM Links

(Using key vocabulary to explain)

What does Motion mean?

Motion is how something moves. For an object to move, a force has to act on it, so if something is not moving, a force is needed to start it moving.

What is a Force?

A force is a push or a pull. You can't see forces, but you can see how they affect objects. A force can make something speed up, slow down or change direction or change shape.

When we apply force in a direction away from us, it is called a push force.

When we apply force in a direction towards us, then it is called a pull force.

What does gradient mean?

It is the steepness and direction of a slope.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

Roll, Slope And Slide
by Michael Dahl

Outdoor Science Resource

Experience: Forces and Movement

Push and Pull – Loose Parts and Ramps

Experiences and Outcomes:

I have experienced, used, and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do 'when they work'. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

Benchmarks:

SCN 0-04a

- Asks questions and describe what can make things go, for example; batteries, windup toys and sunlight.
- Talk about toys, common appliances and what they do when they work, for example, heat, light, movement and sound.

SCN 0-07a

- Explore and sorts toys and objects into groups according to whether they need to be pushed or pulled.
- Measures using simple equipment, how the movement of an object is affected by the size of the force or weight of the object.
- Demonstrates through play how a force can make an object stay still, start to move, speed up, slow down and change shape.

Outdoor Science Resource

Experience: Forces and Movement

Push and Pull – Loose Parts and Ramps

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- PE: Teams games that require pupils to start and stop, for example 'traffic lights' 'what's the time Mr Wolf?' **HWB 0-22a**
- Numeracy and Mathematics: Using programmable toys that start and stop. **MTH 0–17a**
- Technology: Creating ramps and slides using construction. **TCH 0-09a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Industry innovation and infrastructure.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Mechanical Engineer
- Product Designer
- Skateboarders
- Ship Building

Outdoor Science Resource

Experience: Forces and Movement

Forces of Nature – Wind

Provocation Materials:

Leaves and different seeds e.g. sycamore, maple and ash seeds have wings.
Dandelions – seeds that act like parachutes.

Experience Outline:

Explain that there are natural forces pushing and pulling in the world.
Talk about the weather and natural forces, like the wind, hurricanes, rain.

If it is a windy day, go outside and let the children experience the force of the wind using leaves and seeds.

push | pull | fast | slow | straight

motion | force | away | close | towards

speed

Outdoor Science Resource

Experience: Forces and Movement

Forces of Nature – Wind

PLOD: Possible Lines of Development

Experiences:

Use different sized pinwheels to watch how the wind is making them turn.

Use ribbons, scarves and other materials to hold up in the wind.

Place pinwheels in various places in the outdoor space

Experiment with force placed on the wheel (either by breath or through push or pull).

Run against the wind. Create wings with your jacket.

Cloud racing – watch the clouds move.

Parachute Games

Questions:

What do we need to make the leaves and seeds move?

Does it matter where we stand?

Can we make the leaves and seeds move faster or slower or change direction?

Can the leaves, seeds and other natural objects move on their own?

Does the size or shape of the leaves or seeds make any difference to how fast they move?

What happens to the leaves when we throw them higher or lower?

STEM Links

(Using key vocabulary to explain)

What is wind?

Wind is a movement of air. Heat causes air to expand and rise. This creates an area of low pressure below. Air from the surrounding areas moves into fill their region of low pressure.

How does the wind blow objects?

Moving air colliding with an object can create a force large enough to move the object.

Does the wind strength make objects move faster?

Speed is how quickly an object moves. The more force applied by the wind to an object, the faster the object will move.

Do bigger and heavier leaves and seeds fall faster?

The shape of the leaves affects how fast they fall. Round, flat leaves will fall slower than long, thin leaves.

How can you measure wind direction?

Wind can blow in different directions. Wind direction can be measured in a number of ways including weather vanes, flags and wind socks.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

The Tiny Seed
by Eric Carle

The Wind Blew
by Pat Hutchins

Outdoor Science Resource

Experience: Forces and Movement

Forces of Nature – Wind

Experiences and Outcomes:	Benchmarks:
 I have experienced, used, and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do 'when they work'. **SCN 0-04a**	**SCN 0-04a** • Ask questions and describe what can make things go, for example; batteries, windup toys and sunlight. • Talk about toys, common appliances and what they do when they work, for example, heat, light, movement and sound.
 Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**	**SCN 0-07a** • Explore and sorts toys and objects into groups according to whether they need to be pushed or pulled. • Measure using simple equipment, the movement of an object . • Demonstrates through play how a force can make an object stay still, speed up, slow down or change shape.

Outdoor Science Resource

Experience: Forces and Movement

Forces of Nature – Wind

Early Level Skills

Inquiry and Investigative skills:

- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.

Interdisciplinary Learning:

- Exploring and making Windmills/Renewables /kites. **TCH 0-05a**
- RE – Judaism: Dreidel. **RME 0-04a**
- Spin Art **EXA 0-05a**
- Fairy Tales with spinning wheels – Sleeping Beauty, Rumpelstiltskin. **LIT 0-09b**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Affordable and clean energy.
- Climate action.

Skills and attributes of scientifically literate citizens:

- Talks about science, showing developing understanding of risks and benefits, and listens to the views of others.
- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Renewable Energy Industry – Wind Turbine Engineer
- Meteorologist
- Sailor

Outdoor Science Resource

Experience: Forces and Movement

Gravity – Zip Line

Provocation Materials:

String, materials to hang on string e.g. bucket, toilet roll tube.
Loose parts that could be carried.

Experience Outline:

Children are given a variety of loose parts that could go down a zip line.
They can build a carriage to carry things.

push | pull | hold | lighter | heavier

quickest | motion | force | gravity

Outdoor Science Resource

Experience: Forces and Movement

Gravity-Zip Line

PLOD: Possible Lines of Development

Experiences:

Change the length/height of the string, the weight of the items being carried, tighten and loosen the string.

Questions:

What will happen to the object when we place it at the top of the string?

Does the object need a push to start?

How can you pull the items up?

Which travels quickest – lighter or heavier objects?

What moves the best along the string – items on a tube or in a bucket?

What happens if we change the gradient of the string?

STEM Links

(Using key vocabulary to explain)

What does Motion mean?

Motion is how something moves. For an object to move, a force has to act on it, so if something is not moving, a force is needed to start it moving.

What is a Force?

A force is a push or a pull. You can't see forces, but you can see how they affect objects. A force can make something speed up, slow down or change direction.

When we apply force in a direction away from us it is called a push force.

When we apply force in a direction towards us it is called a pull force.

What is gravity?

The Earth's gravity is the force that pulls everything on the planet towards the ground.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

The Day Gravity Goes Loco
by Ryan Maloneye

Outdoor Science Resource

Experience: Forces and Movement

Gravity-Zip Line

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do 'when they work'. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

Benchmarks:

SCN 0-04a

- Asks questions and describe what can make things go, for example; batteries, windup toys and sunlight.
- Talk about toys, common appliances and what they do when they work, for example, heat, light, movement and sound.

SCN 0-07a

- Explore and sorts toys and objects into groups according to whether they need to be pushed or pulled.
- Measures using simple equipment, how the movement of an object is affected by the size of the force or weight of the object.
- Demonstrates through play how a force can make an object stay still, start to move, speed up, slow down and change shape.

Outdoor Science Resource

Experience: Forces and Movement

Gravity-Zip Line

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Within real and imaginary situations, I share experiences and feelings, ideas and information in a way that communicates my message. **LIT 0-09a**
- Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**
- To help care for the environment, I reduce, re-use and recycle the resources I use. **TCH 0-06a**
- I explore ways to design and construct models. **TCH 0-09a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Industry innovation and infrastructure.
- Responsible consumption and production.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Mechanical Engineer
- Product Designer

Balancing:
Using Seesaws And Balances

What to do:

Children collect a variety of outdoor objects. They are invited to place these objects on a scale. Children then observe the affect of the object on the scale.

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do when they work. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

I Wonder...
What will happen to the scale when I place an object on it?

I See...
The scale moves up and down when we place objects of different weight on it.

I Know...
That gravity pushes objects to the ground.

Safety
Be careful with smaller objects and ensure they are clean.

Equipment
Scales, Small Seesaw or Teeter Totter, Outdoor objects (e.g. pebbles, pinecones or conkers).

Support Card

Forces and Movement: B2.1

Variation of Experience...

Explore if bigger objects are always heavier than smaller ones.

Make predictions and estimations based on two objects.

Examine everyday contexts – e.g. seesaw in the playground. Other playground objects that move and promote the concept of forces. (roundabouts spin, swings, down the chute)

Questions:

Can I make the scales balance?

Can I make the scale fall to the floor?

What happens when I put the same number of objects on each side?

What do different objects do to the scale?

How can I make one side of the scale go up/rise?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Uses their senses to acquire information.
- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates natural curiosity.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills for jobs.

My world of work

- Chef
- Baker
- Gymnast
- Construction Industry

Story Link

SCN 0-20a
Balancing Act by Ellen Stoll Walsh
Equal Schmequal by Virginia Kroll

gravity
weight
scale
heavy
up
balance
light
force
move
down
rise
fall

Flight:
Blowing Bubbles

What to do:

Children use a variety of wands to create their bubbles. They observe the effects that their environment, their actions and the apparatus have on producing the bubbles.

Experiences and Outcomes:

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

I Wonder...	I See...	I Know...
If all bubbles are the same?.	That bubbles are different shapes and sizes. They travel in different directions and float to different heights.	Bubbles are different shapes and size due to the conditions they are created in.

Safety
Bubble mixture, a variety of wands (commercially produced or homemade)

Equipment
Please ensure that wands are held in a safe manner. Never drink bubble mixture.

Support Card

Forces and Movement: B2.2

Variation of Experience...

Experiment with the concentration of bubble mixture

Explore the effect of wand size on bubbles

Examine effects of blowing bubbles in different weather conditions (windy or wet weather for example)

Questions:

What happens when I blow the bubble mixture from the wand?

Are all bubbles the same?

How can I make bigger bubbles?

What direction do bubbles go in and why?

What happens to the bubbles when it is windy?

Skills:

- Asks questions and makes simple predictions of what might happen.
- Provides oral descriptions about what was done and what happened.
- Uses their senses to acquire information.
- Identifies and discusses new knowledge and understanding.
- Discusses with support, how experiments might be improved.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates natural curiosity.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Aviation

Story Link

SCN 0-20a
Read Curly's Fun with Bubbles
by Sherri Boddie

Magnetism:
A Magnetic Scavenger Hunt

What to do:

Children explore the outdoor area and find objects of interest (for example a fence post, gate or wall). They are invited to test these items with a magnet (or magnetic googly eyes) to discover if they are magnetic or non-magnetic. Children can record their results.

Experiences and Outcomes:

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

I Wonder...
What objects in my outdoor space are magnetic?

I See...
The magnet attracts to some objects.

I Know...
That some metals are magnetic.

Safety
Always be careful with small objects.

Equipment
Magnets or magnetic googly eyes.

Support Card

Forces and Movement: B2.3

Variation of Experience...

Can you find common traits between objects that are magnetic and non-magnetic?

Look beyond your outdoor space for magnetic items?

What happens when you place two magnets together?

Experiment with a variety of magnets. Do you notice a difference?

Questions:

What objects will the magnet stick to?

What objects does it not stick to?

What do magnetic objects have in common?

What do magnetic objects feel like?

What can you feel when you place a magnet on something that is magnetic?

Skills:

- Asks questions and makes simple predictions of what might happen.
- Explores and observes through play.
- Recognises similarities, patterns and differences in the findings and links these to the original question.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Construction Industry
- Recycling Plant Worker

Story Link

SCN 0-20a

Magnet Max by Monica Lozano Hughes

magnet
metal
iron
magnetic
non-magnetic
attraction
repel
north pole
material
force
steel
south pole

Push and Pull:
Loose Parts And Ramps

What to do:

Children explore a variety of loose parts. After an opportunity to play and explore these objects, they are encouraged to experiment with, and observe how different objects travel down a ramp.

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say, 'what makes it go' and say what they do when they work. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

I Wonder...
How can I make a toy move?

I See...
Toys moving when we push or pull them.

I Know...
That pushing and pulling are forces which make objects move.

Safety
Clear instructions
Awareness of others

Equipment
Loose parts.

Support Card

Forces and Movement: B2.4

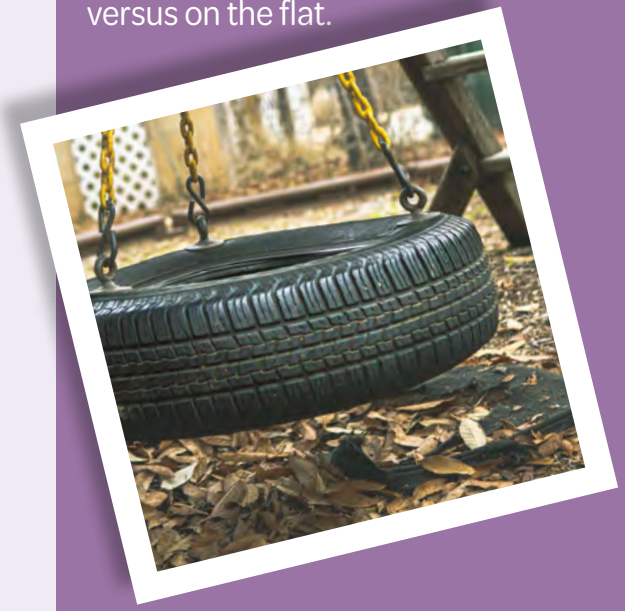
Variation of Experience...

Look at objects, beyond toys, that push and pull e.g. appliances such as lawnmowers, zips.

Move on to sorting activities based on other forces – toys you can twist , stretch or squeeze .

Examine the size of the force and its effects on how far an object can move.

Adding different gradients as a factor when pushing an object – pushing a bike up a hill versus on the flat.



Questions:

Are there toys that can be pushed and pulled?

Are some toys easier to push than others?

Are some toys harder to pull than others?

Is it easier to push a toy on the playground or the grass?

Are smaller toys easier to push than bigger ones?

Do all pushed toys travel in a straight line?

Skills:

- Explores and observes through play.
- Asks questions and makes simple predictions.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Engineer
- Ship Building

Story Link

SCN 0-20a
Roll, Slope And Slide by Michael Dahl

Natural Forces:
Wind

What to do:

Explain that there are natural forces pushing and pulling in the world. Talk about weather and natural forces such as wind.

If it is a windy day go outside and let the children experience the wind using leaves and seeds.

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do when they work. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

I Wonder...
How can we get the leaves and seeds to move?

I See...
The leaves and seeds move around when the wind blows or we blow them. The heavier seeds fall the fastest to the ground.

I Know...
That the wind is a natural force that can move things around. The speed and direction of the wind can change the way objects move.

Safety
Awareness of others. Don't let objects blow near faces.

Equipment
Leaves, seeds, scarves, ribbons, jackets.

Support Card

Forces and Movement: B2.5

Variation of Experience...

Watch the wind blow through different trees and look at how different trees cope.
Use ribbons, scarves and other materials to hold up in the wind.
Run against the wind. Create wings with your jacket.
Place pinwheels in various outdoor spaces.
Make a weathervane, flag or windsock to check wind direction.
Fly a kite.

Questions:

What do we need to make objects move ?
Does it matter where we stand?
Can we make our pinwheel spin faster?
Can we make the leaves and seeds move faster or slower or change direction?
Can the wheel move on its own?
Does the size, shape or weight of the leaves or seeds make any difference to how fast they move?

Skills:

- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Identifies and discusses new knowledge and understanding.
- Demonstrates natural curiosity.
- Talks about science, the ways in which people use science and science skills for jobs.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Renewable Energy Industry – Wind Turbine Engineer
- Meteorologist
- Sailor

Story Link

SCN 0-20a
The Tiny Seed by Eric Carle
The Wind Blew by Pat Hutchins

wind speed force direction slow fast motion away towards

Gravity:
Zip Line

What to do:

Children are given a variety of loose parts that could go down a zip line. They can build a carriage to carry things.

Experiences and Outcomes:

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do when they work. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

I Wonder...
What I could put on the line?

I See...
That I can carry things down the zip line.

I Know...
That changing the height of the zip line and the connection affects speed.

Safety
Clear instructions. Awareness of others. Adult to tie up the string.

Equipment
String, materials to hang on string e.g. bucket, toilet roll tube. Loose parts that could be carried.

Support Card

Forces and Movement: B2.6

Variation of Experience...

Change the length/height of the string.

The weight of the items being carried.

Tighten and loosen the string.

Questions:

What will happen to the object when we place it at the top of the string?

Does the object need a push to start?

How can you pull the items up?

Which travels quickest – lighter or heavier objects?

What moves the best along the string – items on a tube or in a bucket?

What happens if we changed the gradient of the string?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Mechanical Engineer
- Product Designer

Story Link

SCN 0-20a
The Day Gravity Goes Loco by Ryan Maloney

push

pull

hold

lighter

heavier

quickest

motion

force

gravity

Bundle 3:
Water

Outdoor Science Resource

Experience: Water

Moving Water

Provocation Materials:

Plastic tubs (variety of sizes) and jugs, spoons, whisks, ladles, cups, droppers, water wheel, large plastic box or tray.

Natural objects to place in the water.

Experience Outline:

To create an outdoor water trough using plastic pipes and funnels. Observe the natural objects movement in the water.

move	still	fast	slow	big
small	wet	cold	up	down
spin	bubble	splash	direction	volume
more	less	level	speed	force

Outdoor Science Resource

Experience: Water

Moving Water

PLOD: Possible Lines of Development

Experiences:

Change size of the container and the volume of the water. Try the activity in puddles on a rainy day. Visit local streams and see how the water moves and changes.

Questions:

How can you make the water move?

What happens if you do?

What does it look like when it goes fast, slow, up or down?

How can you make the water go faster or slower, up or down?

What happens when you vary the amount of water you pour at the one time?

Predict what happens when we put a bigger/smaller object in the water?

STEM Links

(Using key vocabulary to explain)

Is water a liquid, solid or gas?

Water is a liquid which takes the shape of the receptacle it is in – whether that is a container, coastline, riverbed or pipe.

Water freezes at 0°c and turns to ice. When it is heated up to boiling point (100°c) it evaporates into a gas.

Development Milestones:

2. Plays co-operatively, shares with others and takes turns.

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

Flood
by Jacqui French

Outdoor Science Resource

Experience: Water

Moving Water

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences. **SCN 0-05a**

Benchmarks:

SCN 0-05a

- Investigates the different properties of water and shares their findings with others.
- Talks about water in nature and how it influences their everyday lives.
- Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as melting, freezing and boiling to describe changes of state.

Outdoor Science Resource

Experience: Water

Moving Water

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Ask questions arising from play activities.

Interdisciplinary Learning:

- I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others. **MNU 0-11a**
- I can match objects, and sort using my own and others criteria, sharing my ideas with others. **NUM 0-20b**
- Playing collaboratively, sharing resources. **HWB 0-23a**
- Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.
- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.

My World of Work:

- Civil Engineer
- Hydrologist

Outdoor Science Resource

Experience: Water

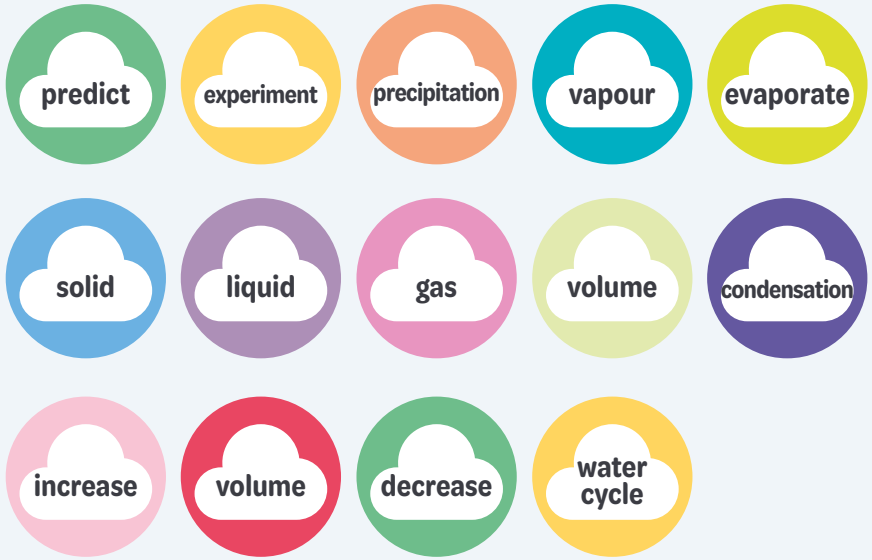
Raindrops

Provocation Materials:

Chalk to draw around the puddles, different size plastic bottles, variety of other containers, puddles, outdoor clothing/wellies, measuring tape.

Experience Outline:

To develop a way to collect raindrops and investigate how they respond to changes in the weather.



Outdoor Science Resource

Experience: Water

Raindrops

PLOD: Possible Lines of Development

Experiences:

Explore what happens when the raindrops freeze.

Observe the impact of different kinds of weather to the environment.

Design water recording equipment.

Questions:

Have you noticed what the rain does to the ground when it falls?

How can we catch raindrops?

What happens to the raindrops on a dry/sunny day?

STEM Links

(Using key vocabulary to explain)

What is rain?

Rain is a form of **precipitation**. Precipitation is any form of water that falls to the Earth, such as rain, snow, drizzle, hail and sleet.

How is rain formed?

Heat energy from the Sun causes water to evaporate from the surface of oceans, lakes and rivers and rises into the atmosphere as water vapour. This vapour cools and condenses into droplets of water that form clouds. When these droplets become too large and heavy, they fall to the Earth's surface as rain, hail or snow.

What is the water cycle?

The water cycle describes the continuous process in which water evaporates from the surface of the Earth, rises into the atmosphere, cools and condenses to form clouds and falls again to the surface of the Earth as rain, hail or snow.

What does condensation mean?

Condensation is the cooling of water vapour to form liquid water.

Development Milestones:

11. Manages fastenings independently.

12. Concentrates on activities with sustained interest.

21. Ask who, what, where, when why and how questions.

38. Estimates in contexts of number and measurement using the appropriate language.

Science story:

SCN 0-20a

The Little Raindrop
by Joanna Gray

Outdoor Science Resource

Experience: Water

Raindrops

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences. **SCN 0-05a**

Benchmarks:

SCN 0-05a

- Investigates the different properties of water and shares their findings with others.
- Talks about water in nature and how it influences their everyday lives.
- Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as melting, freezing and boiling to describe changes of state.

Outdoor Science Resource

Experience: Water

Raindrops

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Rainy day walk and puddle jumping. **HWB 0-21a**
- Raindrop painting. **EXA 0-02a**
- Rain songs – 10 little raindrops, Incy wincy spider. **EXA 0-08a**
- Rain dances. **EXA 0-09a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.
- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.

My World of Work:

- Civil Engineer
- Hydrologist
- Meteorologist

Outdoor Science Resource

Experience: Water

Water Displacement

Provocation Materials:

Clear plastic containers, stones and pebbles, plastic toy, permanent marker.

Experience Outline:

Using a variety of different sized containers, fill them with water to a marked level, and place in a plastic toy to float on the water.

The children should work together to drop in small stones/pebbles to the containers and observe what happens to the water level.

displacement submerged volume increase decrease

Outdoor Science Resource

Experience: Water

Water Displacement

PLOD: Possible Lines of Development

Experiences:

Compare two containers with different size stones. Do large or small stones move the water level faster?

Use a variety of sized stones to see what happens to the water level.

Use a variety of natural objects to place in the water container.

Jump in puddles. What happens to the water?

Talk about flooding.

Questions:

What will happen to the water level when you place stones into the water?

Why did the water rise?

What happens when you only put in large stones?

What happens when you only put in small stones?

What happened to the plastic toy?

STEM Links

(Using key vocabulary to explain)

What is water displacement?

This happens when an object is put into water and the water is pushed out of the way to make room for the object.

Why does the water level increase?

When an object is placed in the water the water moves out of the way and the only direction that the water can move is up. The water level is rising.

Development Milestones:

2. Plays cooperatively, shares and take turns.

25. Talks about the sequence of events.

40. Is number confident to 5: forwards and backwards and beyond.

Science story:

SCN 0-20a

The Crow And The Pitcher
by Aesop Fables

Mr Archimedes Bath
by Pamela Allen

Outdoor Science Resource

Experience: Water

Water Displacement

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences**. SCN 0-05a**

Benchmarks:

SCN 0-05a

- Investigates the different properties of water and shares their findings with others.
- Talks about water in nature and how it influences their everyday lives.
- Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as melting, freezing and boiling to describe changes of state.

Bundle 3 B3.3

Outdoor Science Resource

Experience: Water

Water Displacement

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Ask questions arising from play activities.

Interdisciplinary Learning:

- Estimate and count stones. **MNU 0-01a/0-03a**
- Non standard measurement. **MNU 0-11a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.
- Climate action.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.

My World of Work:

- Hydrologist
- Civil Engineer
- Plumber

Outdoor Science Resource

Experience: Water

Ice Catchers

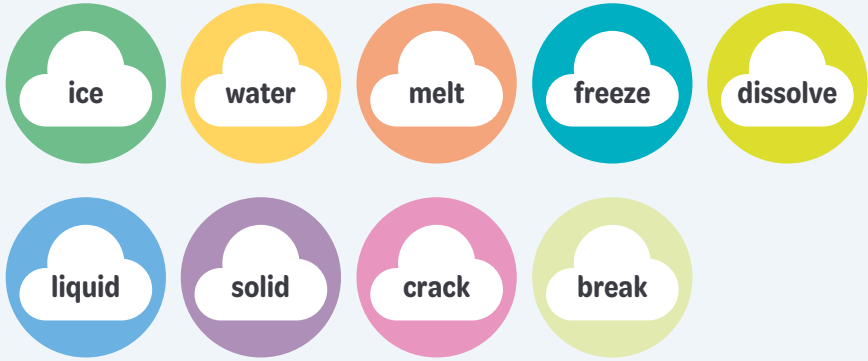
Provocation Materials:

Clear plastic containers, stones, twigs, bark, cones, flowers, leaves, water, freezer.

Experience Outline:

The children go and collect a variety of natural objects and place them in a container or mould. Water is poured into the container/mould and then put in a freezer.

Once frozen the sculpture is then hung or placed in a container. The children are given a variety of tools to get the objects back out.



Outdoor Science Resource

Experience: Water

Ice Catchers

PLOD: Possible Lines of Development

Experiences:

Collect a variety of materials add water and freeze them. Hang them up as ice sculpture decorations and watch them melt.

Using a variety of tools such as sticks, round stones, metal and wooden spoons, tweezers etc. encourage the children to dig out the frozen treasures.

Add food colouring to the water to make it more interesting for the children.

Give the children a variety of shakers with coloured salt and warm water.

Questions:

What happened to the water when it was put in the freezer?

How did it turn into ice?

How can you get the objects out of the ice using only the tools?

What helps make the ice melt quicker?

Does the amount of salt or warm water make it melt faster?

STEM Links

(Using key vocabulary to explain)

When liquid water or vapour becomes cold enough it changes into a solid called ice.

How does ice melt?

Melting is the change that occurs when a solid turns into a liquid. Melting happens when particles in a solid are heated. The heat makes particles vibrate due to the heat energy absorbed. They spread out, forming a liquid.

What melts ice?

Salt melts ice by breaking the bonds between water molecules.

Development Milestones:

2. Plays cooperatively, shares and takes turns.

25. Talks about the sequence of events.

Science story:

SCN 0-20a

Alf And The Melting Ice
by Alex and Carolina

The Polar Bear's Home
by Lara Bergen

Outdoor Science Resource

Experience: Water

Ice Catchers

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences. **SCN 0-05a**

Benchmarks:

SCN 0-05a

- Investigates the different properties of water and shares their findings with others.
- Talks about water in nature and how it influences their everyday lives.
- Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as melting, freezing and boiling to describe changes of state.

Outdoor Science Resource

Experience: Water

Ice Catchers

Early Level Skills

Inquiry and Investigative skills:

- Explore and learn through play.
- Asks questions about my findings.

Interdisciplinary Learning:

- Designing ice catchers. **EXA 0-02a/ EXA 0-04a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.
- Climate action.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.

My World of Work:

- Hydrologist
- Civil Engineer
- Environmentalist

Outdoor Science Resource

Experience: Water

Floating And Sinking

Provocation Materials:

Container, water, sticks, stones, flowers, leaves, grass, berries, moss, bark.

Experience Outline:

Put some water into a container. Go on a scavenger hunt to find a variety of natural objects such as stones, flowers, leaves, sticks, grass, berries and moss.

buoyancy sink float heavy light

Outdoor Science Resource

Experience: Water

Floating And Sinking

PLOD: Possible Lines of Development

Experiences:

Encourage the children to predict which objects they think will sink and which will float.

Through their observations children will learn that buoyant objects float, and dense objects sink.

Add food colouring or scent to create another sensory dimension to the activity.

Add drinking straws so that the children can blow the floating items around. (kinetic energy- this is when the air blown through the straw propels the floating item forward))

Questions:

What objects float?

What objects sink?

Why do you think that the stone sank?

Why did the leaf float?

What happened to the moss?

Can you make a boat out of the natural objects?

What would happen if you put an ice cube into the water?

STEM Links

Why do some objects sink, and some objects float?

When an object is in water, there are two forces acting on it. Its weight due to gravity pulling it down, and the force of the water pushing up (upthrust).

If the weight is equal to or less than the upthrust, the object will float.

If the weight of the object is greater than the upthrust, it will sink.

How do big ships float?

If placed in water, a piece of steel will sink. So why do boats made from steel float?

Most of the capacity of a ship's hull is air. This means that the mass of the ship is less than the mass of the same volume of water.

You can investigate this experimentally by showing that a ball of plasticine will sink in water. However, if you mould the same ball of plasticine into a hollow boat shape it will float.

Development Milestones:

5. Uses role play to recreate or invent situations

12. Concentrates on activities with sustained interest.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

Mr Archimedes bath
by Pamela Allen

Mr Gumpy's Outing
by John Burningham

Outdoor Science Resource

Experience: Water

Floating And Sinking

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences. **SCN 0-05a**

Benchmarks:

SCN 0-05a

- Investigates the properties of water and shares their findings with others.
- Talks about water in nature and how it influences their everyday lives.
- Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as melting, freezing and boiling to describe changes of state.

Bundle 3 B3.5

Outdoor Science Resource

Experience: Water

Floating And Sinking

Early Level Skills

Inquiry and Investigative skills:

- Explore and learn through play.
- Asks questions about my findings.

Interdisciplinary Learning:

- Play collaboratively, sharing resources. **HWB 0-23a**
- Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.
- Affordable and clean energy.
- Life below water.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.

My World of Work:

- Engineer
- Sailor
- Water Technician

Outdoor Science Resource

Experience: Water

Making a Filter

Provocation Materials:

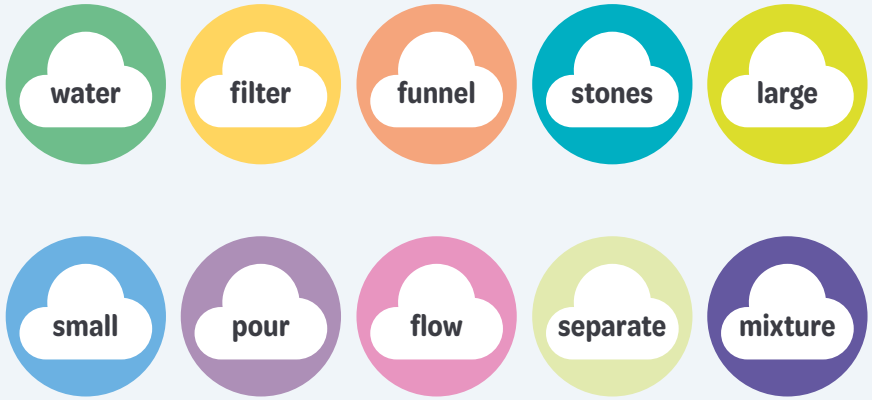
Different size stones, sticks, bark chips, water, containers, guttering.

Experience Outline:

Children create a mixture of stones, sticks and water.

Children use a piece of guttering filled with stones, sticks, bark chips etc. to filter their mixture of water.

Children can experiment with different materials in the guttering to find out which one most effectively separates the sticks and stones from their water.



Outdoor Science Resource

Experience: Water

Making a Filter

PLOD: Possible Lines of Development

Experiences:

Children can change the angle of the guttering to see if that affects how well the guttering filters the water.

Children can add additional contaminants to their mixture like sand and soil, does their guttering filter this mixture? What other materials could they add to filter out sand and soil?

Children could experiment more with filtration by using a colander in the mud kitchen.

Questions:

How do the materials in the gutter filter the water?

What do you think happens to sand and soil that can fit between the rocks in the filter?

Do you think large or small stones will filter the water better?

Does the dirty water look cleaner when it has passed through the stones?

Can we add anything to the filter to catch small pieces?

STEM Links

(Using key vocabulary to explain)

What is a mixture?

A mixture is a combination of 2 or more substances that are not chemically joined. The substances in a mixture can be separated easily.

Salt dissolved in water is a mixture. The salt and water can be easily separated by evaporating the water to leave the salt behind.

Uncooked rice and pasta is a mixture that can be easily separated using a colander.

What is filtration?

Filtration is the separation of substances from a mixture based on their size.

A colander is a simple example of a filter, water and small particles pass through the holes in the colander while larger particles are left behind.

Other examples of filters include a sieve, a coffee filter and a facemask.

In this activity, the rocks in the guttering act as a filter. Water is able to flow through the gaps in the rocks, but larger particles like sticks and stones cannot fit through these gaps. To filter out the small particles like soil, children could add sponges or kitchen cloths to their filter.

Why is clean water important?

Clean water is important for good health. Disease causing microbes can live in water supplies and make us ill if we drink them. Most countries in the world use filters to remove contaminants from water, or chemicals like chlorine to kill microbes that are too small to be removed by filters.

In some countries, access to clean water is difficult and many people can become ill if their water supply is contaminated.

Development Milestones:

2. Plays co-operatively, shares with others and takes turns.

12. Concentrates on activities with sustained interest.

38. Estimates in contexts of number and measurement using appropriate language.

Science story:

SCN 0-20a

The Water Princess
by Susan Verde

Outdoor Science Resource

Experience: Water

Making a Filter

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences. **SCN 0-05a**

Benchmarks:

SCN 0-05a

- Investigates the different properties of water and shares their findings with others.
- Talks about water in nature and how it influences their everyday lives.
- Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as 'melting', 'freezing' and 'boiling' to describe changes of state.

Outdoor Science Resource

Experience: Water

Making a Filter

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.

Interdisciplinary Learning:

- Explore ways to design and construct models. **TCH 0-09a**
- I explore a variety of products covering a range of engineering disciplines. **TCH 0-12a**
- Explore everyday items as units of measure to investigate and compare sizes. **MNU 0-11a**

Scientific analytical thinking skills:

- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Plumber
- Analytical Chemist (water sampling)

Water:
Moving Water

What to do:

Create a water trough using plastic pipes and funnels. The children pour water using a variety of different containers and observe the waters movement and flow of the water. Add natural objects and observe their movement in the water.

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences.
SCN 0-05a

I Wonder...
What will happen when I drop things slowly into the water or throw them in fast?

I See...
That the water level can change depending on the size of the object.

I Know...
That water fills the space available to it.

Safety
Clear instructions

Equipment
A clear plastic tray or box, ladels, containers, spoons, whisks, water wheel, objects to add to a tray.

Support Card

Water: B3.1

Variation of Experience...

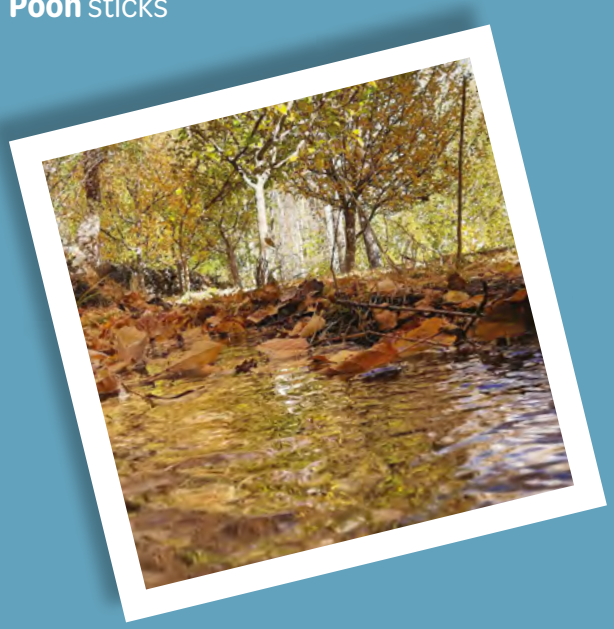
Using smaller and larger objects

Using different materials

Use a water wheel

Look at a puddle or stream

Pooh sticks



Questions:

How can you make the water move?

What happens if you do?

What does it look like when it goes fast, slow, up or down?

How can you make the water go faster or slower, up or down?

What happens when you vary the amount of water you pour at the one time?

Predict what happens when we put a bigger/smaller object in the water?

Skills:

- Explores and observes through play.
- Ask questions arising from play activities.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Civil Engineer
- Hydrologist

Story Link

SCN 0-20a
Flood by Jacqui French
Flood by Jackie French & Bruce Whatley – YouTube

Water:
Raindrops

What to do:

To develop a way to collect raindrops and investigate how they respond to changes in the weather.

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences.
SCN 0-05a

I Wonder...
What will happen when I collect my own raindrops?

I See...
The volume of my collected rainwater is changing depending on the weather.

I Know...
Raindrops react to dry/warm conditions.

Safety
Do not put objects in mouth. Be careful of slippery surfaces Use scissors appropriately. Be careful of sharp edges.

Equipment
Outdoor clothing, puddles, chalk (to draw around the puddles), scissors, rulers/measuring tape, clean bottles of different sizes.

Support Card

Water: B3.2

Variation of Experience...

Explore what happens when raindrops are exposed to freezing conditions.

Observe the impact of different kinds of weather to the environment.

Design alternative weather recording equipment

Explore how material can change state through experiments such as melting jelly cubes or gloop (Oobleck).

Questions:

Have you noticed what the rain does to the ground when it falls?

Can you find the biggest puddle or the deepest? How do you know they are?

Have you ever noticed what happens to puddles when the weather turns dry?

How can we catch our own raindrops?

What will happen to our raindrops on a dry/sunny day?

Can you create a story about your raindrops adventure?

Skills:

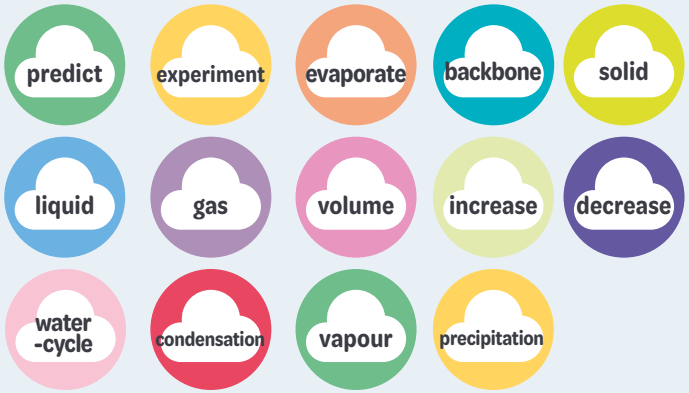
- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Civil Engineer
- Hydrologist
- Meteorologist

Story Link

SCN 0-20a
The Little Raindrop Story by Joanna Gray
Once Upon A Raindrop by James Carter



Water:
Water Displacement

What to do:

Children add stones to a variety of different sized containers partially filled with water and observe the water level changes.

To assist observations, mark the original water level with a pen and add a floating toy to the container.

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences.
SCN 0-05a

I Wonder...
What will happen when we add stones to the container of water?

I See...
The level of the water and the toy rising as I add stones.

I Know...
Displacement happens when an object is submerged in a fluid and the fluid is pushed out of the way.

Safety
Use plastic containers. Don't throw stones.

Equipment
A clear, plastic container/s, stones and rocks, plastic toy, permanent marker.

Support Card

Water: B3.3

Variation of Experience...

Use different sized containers.

Use different sized stones.

Use different materials.

Compare how many big stones it takes to move the water level up compared to small stones.

Create Stone stacks.

Questions:

What will happen to the water level when you place stones into the water?

Why did the water rise?

What happens when you only put in large stones?

What happens when you only put in small stones?

What happened to the plastic toy?

Skills:

- Explores and observes through play.
- Ask questions arising from play activities.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates a developing understanding of science in the world around them.
- Respects living things and the environment.

My world of work

- Hydrologist
- Civil Engineer

displacement

submerged

volume

increase

decrease

Story Link

SCN 0-20a
Read: The Crow And The Pitcher Story

Water:
Ice catchers

What to do:

The children go and collect a variety of natural objects and place them into a container or mould. Water is poured on top and then placed into a freezer.

Once frozen the ice catcher can either be hung up or placed into a container. The children have to try and get the objects out.

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences.
SCN 0-05a

I Wonder...
What will happen to the water when it gets put in a freezer?

I See...
That the water has turned into ice.

I Know...
Heating causes ice to melt and cooling can make liquid freeze.

Safety
Be careful when handling ice. It is very cold!

Equipment
Natural objects, containers, moulds, water, freezer

Support Card

Water: B3.4

Variation of Experience...

Using a variety of tools dig out the objects from the ice.
Use salt, sand and warm water shakers to see how the ice melts.
Add food colouring to the water to make it more interesting and compare the ice melt rate.
Make ice pops/ice cream.
Ice cube painting/mark making.

Questions:

What happens to water when it is put into a freezer?

How did it turn into ice?

How does the ice feel?

What happens when you hold the ice?

How can you get the objects out of the ice using tools, salt or warm water?

Skills:

- Explore and learn through play.
- Asks questions about my findings.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates a developing understanding of science in the world around them.
- Respects living things and the environment.

My world of work

- Civil Engineer
- Environmentalist

Story Link

SCN 0-20a
Alf And The Melting Ice by Alex and Carolina
The Polar Bear's Home by Lara Bergen

ice
water
melt
freeze
dissolve
liquid
solid
crack
break

Water:
Sinking And Floating

What to do:

Put some water in a bowl, bucket or basin. Find some natural objects e.g. stone, stick, leaf. Place the objects one at a time in the water to find out if the items float or sink.

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences.
SCN 0-05a

I Wonder...
What will happen to the heavier items?

I See...
That the lighter items float.

I Know...
Boats can carry heavy objects without sinking.

Safety
Beware of slippery surfaces caused by wet play.

Equipment
Water, containers, objects.

Support Card

Water: B3.5

Variation of Experience...

Gather more items and encourage the children to predict whether the items will float or sink.

See if you can use a floating item to stop another item from sinking.

Have a sinking race! Choose 2 items that sink and find out which one sinks the fastest.

Use ice and predict if it will float or sink.

Questions:

Which items float slowly or quickly?

Which items sink straight away or move from side to side when sinking?

Skills:

- Explore and learn through play.
- Asks questions about my findings.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates a developing understanding of science in the world around them.
- Respects living things and the environment.

My world of work

- Ship Engineer
- Boat Builder

sink

float

buoyant

heavy

light

Story Link

SCN 0-20a
Mr Archimedes Bath by Pamela Allen
Float by Daniel Miyares

Water:
Making A Filter

What to do:

Children create a mixture of stones, sticks and water.

Children use a piece of guttering filled with stones, sticks, bark chips etc. to filter their mixture of water.

Experiences and Outcomes:

By investigating how water can change from one form to another, I can relate my findings to everyday experiences.
SCN 0-05a

I Wonder...
How can we clean a mixture of water, soil, sticks and stones?

I See...
Water flows through gaps between sticks and stones in my filter.

I Know...
Objects that are too large to fit through the gaps between sticks and stones are separated from the water.

Safety
General playground safety.
Be aware of sharp points on sticks.

Equipment
Guttering, sticks, stones, jugs/bowls, water.

Support Card

Water: B3.6

Variation of Experience...

Children can change the angle of the guttering to see if that affects how well the guttering filters the water.

Children can add additional contaminants to their mixture like sand and soil, does their guttering filter this mixture? What other materials could they add to filter out sand and soil?

Children could experiment more with filtration by using a colander in the mud kitchen.

Questions:

How do the materials in the gutter filter the water?

What do you think happens to sand and soil that can fit between the rocks in the filter?

Do you think large or small stones will filter the water better?

Does the dirty water look cleaner when it has passed through the stones?

Can we add anything to the filter to catch small pieces?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Plumber
- Analytical Chemist (water sampling)

Story Link

SCN 0-20a
The Water Princess by Susan Verde

water
filter
funnel
stones
large
small
pour
flow
separate
mixture

Bundle 4:
Planets

Experience: Planets

Sky Transient Art

Provocation Materials:

Loose materials like stones & sticks also chalk.

A story about the sky/night/stars and looking at the sky.

Experience Outline:

Children could use a variety of natural materials to create transient art works to represent the sun, moon, stars or other images of daytime and night time.

Outdoor Science Resource

Experience: Planets

Sky Transient Art

PLOD: Possible Lines of Development

Experiences:

Think about the shape of the sun, the moon and the stars.

Explore how they can change at different times in a 24-hour period and across months and the year.

Questions:

Can we always see the sun and the moon, why not?

Do they stay in the same place?

Are they always the same shape?

Do stars appear in the same place in the sky?

What tells us it is night and what tells us it is day?

STEM Links

(Using key vocabulary to explain)

Stars

Stars make their own light. They are a massive ball of hot gas and burn for billions of years. They can look white, blue, yellow, orange or red.

Sun

The Sun is our closest star and is at the middle of our solar system.

Light from the sun reflects off planets and the Moon – therefore they are visible to us.

Earth

The Earth orbits the sun in just over 365 days.

The Earth spins on its axis anti-clockwise, once every 24 hours. As we turn away from the sun, we enter night.

We see the Sun rise in the east, reach its highest point at midday in the south and then set in the west. This is a daily cycle caused by the rotation of the Earth.

Moon

The moon is held in place by the gravitational pull of the Earth.

The moon's gravitational pull causes our tides.

The moon doesn't shine it just reflects light from the sun.

The moon travels round the Earth in just over 27 days.

The different shapes of the moon – crescent moon, half moon, full moon – are called phases.

The moon doesn't actually change shape it. The phase we see depends how much light from the sun is shining on it. This is due to its rotation round earth and the Earth blocking the light from the sun.

The moon starts with a waxing moon, then full moon when it is in direct view of the sun and then disappears as a waning moon until it is no longer visible.

Development Milestones:

12. Concentrates on activities with sustained interest.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

Can't You Sleep Little Bear?
By Martin Waddell

Peace At Last
by Jill Murphy

Outdoor Science Resource

Experience: Planets

Sky Transient Art

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

Benchmarks:

SCN 0-06a

- Describes how the rotation of the Earth in relation to the sun gives us day and night.
- Talks about how the pattern of night and day changes over the course of a year.

Outdoor Science Resource

Experience: Planets

Sky Transient Art

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Communicating ideas within a small group, asking questions.
  LIT 0-02a, 0-09a, 0-10a
- Playing collaboratively, sharing resources. **HWB 0-23a**
- I have the freedom to discover and choose ways to create images and objects using a variety of materials. **EXA 0-02a**
- Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.

Links to Global Citizenships (SDGs):

- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Astronaut
- Astronomer

Experience: Planets

Following Shadows

Provocation Materials:

Loose materials like stones & sticks also chalk.

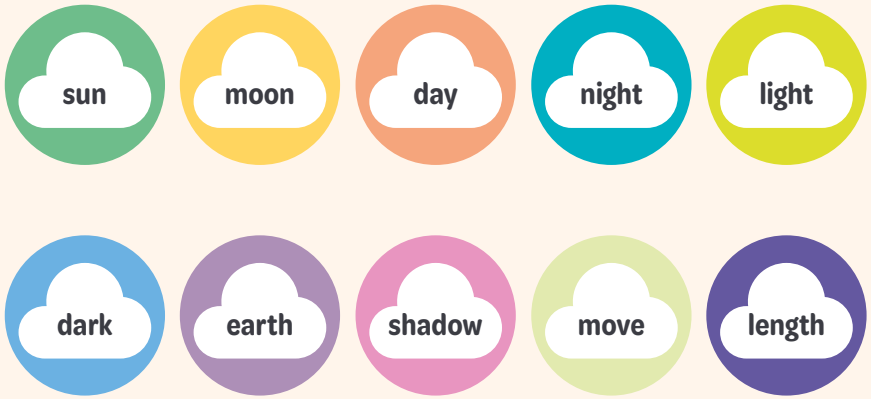
Story and looking at the sky.

Experience Outline:

Put a stick in the ground and each hour mark where the end of the stick shadow is located.

Shadow sticks are used to show the changing position of the sun.

Drawing, measuring & recording shadows of themselves to show movement of earth relative to the sun.



Outdoor Science Resource

Experience: Planets

Following Shadows

PLOD: Possible Lines of Development

Experiences:

Recognise what might be seen in the sky in the day and in the night and changes that occur.

Explore the changes the sun has during the day and across a year.

Children record length of shadows throughout the year using non standard units.

Questions:

Does the sun stay in the same place and height in the sky?

Do we see the sun all the time?

If the sun doesn't move, then what moves?

Where is the sun when it is night time?

When the sun is directly above us, does this make long or short shadows?

STEM Links

(Using key vocabulary to explain)

Light travels in straight lines.

The Sun

The Sun is a star and is at the middle of our solar system.
Stars make their own light.
Light from the sun reflects off planets and the Moon – therefore they are visible to us.

The Earth

The Earth orbits the sun in just over 365 days.
The Earth spins on its axis anti-clockwise, once every 24 hours. As we turn away from the sun, we enter night.
We see the Sun rise in the east, reach its highest point at midday in the south and then set in the west. This is a daily cycle caused by the rotation of the Earth.

The Moon

The moon is held in place by the gravitational pull of the Earth.
The moon's gravitational pull causes our tides.
The moon doesn't shine it just reflects light from the sun.
The moon travels round the Earth in just over 27 days.
The different shapes of the moon – crescent moon, half moon, full moon – are called phases.
The moon doesn't actually change shape. The phase we see depends how much light from the sun is shining on it. This is due to its rotation round earth and the Earth blocking the light from the sun.
The moon starts with a waxing moon, then full moon when it is in direct view of the sun and then disappears as a waning moon until it is no longer visible.

A Shadow

A shadow is formed when an object (or person) blocks light – we see the absence of light opposite to the light source. A shadow cast by a stationary object blocking sunlight will move in the opposite direction to the Sun. It will also change size as the Sun rises and sets in the sky.
A sundial is a clock that casts a shadow, and the direction of the shadow tells you your local time.
When the sun is directly above us, does this make long or short shadows?

Development Milestones:

12. Concentrates on activities with sustained interest.

21. Ask who, what, where, when, what and how questions.

40. Is number confident 5.

Science story:

SCN 0-20a

Night Monkey, Day Monkey
by Julia Donaldson

Outdoor Science Resource

Experience: Planets

Following Shadows

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

Benchmarks:

SCN 0-06a

- Describes how the rotation of the Earth in relation to the sun gives us day and night.
- Talks about how the pattern of night and day changes over the course of a year.

Outdoor Science Resource

Experience: Planets

Following Shadows

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Throughout my learning, I share my thoughts with others to help further develop ideas and solve problems. **TCH 0-11a**
- I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others. **MNU 0-11a**
- Communicating ideas within a small group, asking questions. **LIT 0-02a, 0-09a, 0-010a**
- Playing collaboratively, sharing resources. **HWB 0-23a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.

Links to Global Citizenships (SDGs):

- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Astronaut
- Astronomer

Outdoor Science Resource

Experience: Planets

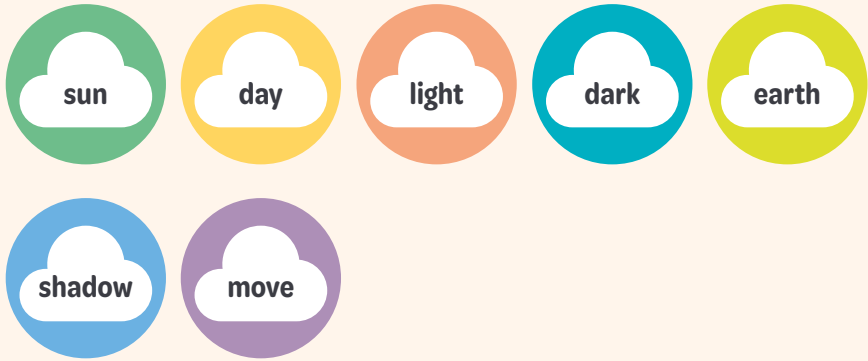
Shadow Shapes

Provocation Materials:

Go for a walk on a sunny day and look at different shadows and shapes.
Objects, chalk.

Experience Outline:

Investigate how shadows compare with the actual object and experiment with creating different shadows.



Outdoor Science Resource

Experience: Planets

Shadow Shapes

PLOD: Possible Lines of Development

Experiences:

Recognise that shadows will change depending on the height of the sun in the sky.

Explore how to make different shadows and shapes.

Gather objects of different sizes and predict if their shadows will be small, medium or large.

Individually or with a partner on the playground draw round shadow shapes with chalk to create a picture.

Questions:

Is the shadow the same height as the object?

Does the shadow have the same shape as the object?

Do we see shadows all the time? If not, why not?

Do the shadows stay the same shape and size all day?

What shapes can you make?

Can you make things that look like something else?

STEM Links

(Using key vocabulary to explain)

Light travels in straight lines.

What is the sun?

The Sun is a star and is at the middle of our solar system.

Stars make their own light.

Light from the sun reflects off planets and the Moon – therefore they are visible to us.

What is the Earth?

The Earth orbits the sun in just over 365 days.

The Earth spins on its axis anti-clockwise, once every 24 hours. As we turn away from the sun, we enter night.

We see the Sun rise in the east, reach its highest point at midday in the south and then set in the west. This is a daily cycle caused by the rotation of the Earth.

What is a shadow?

A shadow is formed when an object (or person) blocks light – we see the absence of light opposite to the light source. A shadow cast by a stationary object blocking sunlight will move in the opposite direction to the Sun. It will also change size as the Sun rises and sets in the sky.

A sundial is a clock that casts a shadow, and the direction of the shadow tells you your local time.

Development Milestones:

12. Concentrates on activities with sustained interest.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

Nothing Sticks Like A Shadow
by Ann Tompert

Outdoor Science Resource

Experience: Planets

Shadow Shapes

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

Benchmarks:

SCN 0-06a

- Describes how the rotation of the Earth in relation to the sun gives us day and night.
- Talks about how the pattern of night and day changes over the course of a year.

Outdoor Science Resource

Experience: Planets

Shadow Shapes

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- I explore ways to design and construct models. **TCH 0-11a**
- Communicating ideas within a small group, asking questions, understanding information, describing properties of materials. **LIT 0-02a, 0-09a, 0-10a**
- Playing collaboratively, sharing resources. **HWB 0-23a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.

Links to Global Citizenships (SDGs):

- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Astronomer

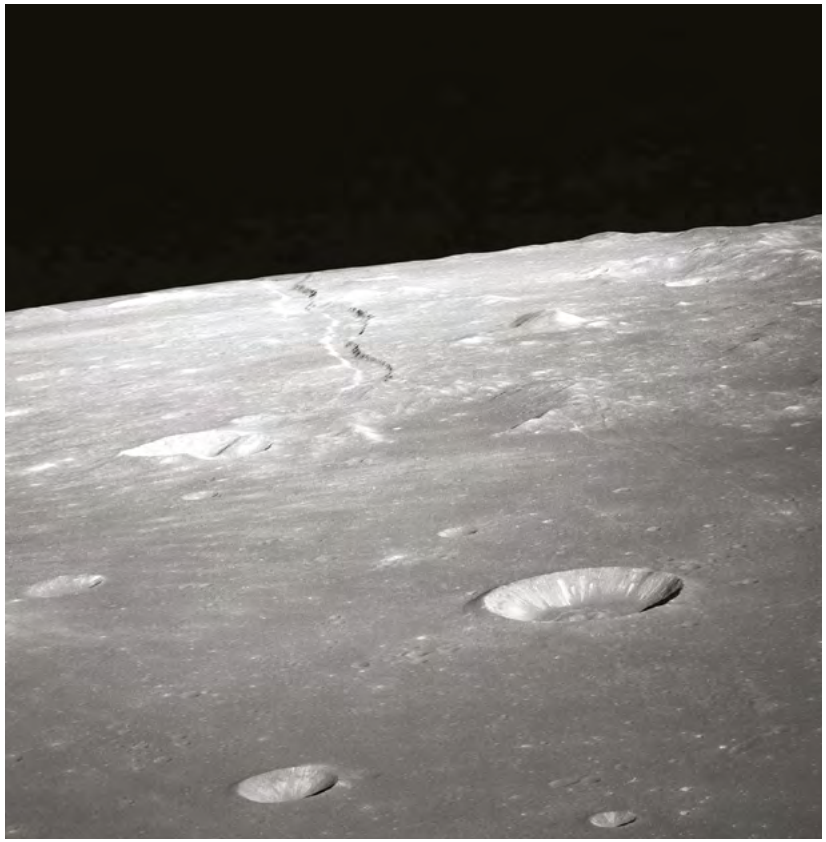
Outdoor Science Resource

Experience: Planets

Creating Craters

Provocation Materials:

Mud, soil, sand area or tray. (flour could also be used), different sized stones, balls or marbles.



Experience Outline:

Use either an area of dry soil, mud or sand. The children find different sized stones to drop onto the soil, mud or sand creating craters.

Encourage the children to predict which sized stones will make the biggest crater.

Compare the results to images of the moon craters.

Outdoor Science Resource

Experience: Planets

Creating Craters

PLOD: Possible Lines of Development

Experiences:

Measure the distance travelled by the mud ejected on impact and look at splat patterns made.

Make planets using loose parts.

Add cars and trucks to represent moon buggies.

Encourage the children to look at the stars at night-time.

Questions:

Which stones made the biggest crater?

Why do you think that the biggest stone made the biggest crater?

What happens when you drop the stone from different heights?

What happens when you throw the rock rather than drop it?

How did the creation of the craters differ in different materials, sand, soil, mud?

What happens when you add water to the materials and then drop the stone?

STEM Links

(Using key vocabulary to explain)

What are craters?

Craters form when asteroids (rocks) in space hit the surface of the moon or a planet.

The shape of the crater depends on the size and speed of the asteroids.

What makes bigger craters?

To make a large crater the stone doesn't have to be bigger. If the speed of the stones being thrown that determine the craters size. This is called velocity.

Development Milestones:

5. Uses role play to create or invent situations.

12. Concentrates on activities with sustained interest.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

I Took The Moon For A Walk
by Carolyn Curtis.

A Big Mooncake For A Little Star
by Grace Lin.

Outdoor Science Resource

Experience: Planets

Creating Craters

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

Benchmarks:

SCN 0-06a

- Describes how rotation of the Earth in relation to the sun gives us night and day.
- Talks about how the pattern of night and day and changes over the course of a year.

Outdoor Science Resource

Experience: Planets

Creating Craters

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions and can talk about my findings.

Interdisciplinary Learning:

- Snack on the moon phases using Oreos/ marshmallow constellations. **TCH 0-04a**
- I explore everyday materials in the creation of space rocket models. **TCH 0-09a-10a**
- I have experimented with imaginative ways to represent the world around me, the journeys I make and the different ways I can travel. **SOC 0-09a**
- Create Playdoh aliens. **EXA 0-02a/0-06a**

Scientific analytical thinking skills:

- Demonstrates reasoning skills by explaining choices and decisions.
- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts, for example, through asking questions experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Astronaut
- Space Engineer
- Astronomer

Outdoor Science Resource

Experience: Planets

Space Travel

Provocation Materials:

Loose parts, outdoor play equipment.

Experience Outline:

Lay down on the ground and look up at 'vastness of the sky".
What the children see?

Talk about the sun, clouds and sky.
Talk about what they might see at nighttime.

The children are then encouraged to use loose parts to create a space vehicle that will take them into space.

space | rocket | sun | moon | clouds

space station | planets | solar system

Outdoor Science Resource

Experience: Planets

Space Travel

PLOD: Possible Lines of Development

Experiences:

Cloud watching . What shapes can you see appear in the clouds?

Create a planet using large play equipment.

Recreate the Starry Night painting by Van Gough.

Use Lego and other construction materials such as K'nex and Meccano to build other types of space vehicles.

Questions:

What can you see when you look up at the sky?

How can you get to space?

What might you see when you are in space?

What do you think you will find on the moon?

Other Planets?

STEM Links

(Using key vocabulary to explain)

The Sun

The Sun is a star and is at the middle of our solar system.
Stars make their own light.
Light from the sun reflects off planets and the Moon – therefore they are visible to us.

The Earth

The Earth orbits the sun in just over 365 days.
The Earth spins on its axis anti-clockwise, once every 24 hours. As we turn away from the sun, we enter night.
We see the Sun rise in the east, reach its highest point at midday in the south and then set in the west. This is a daily cycle caused by the rotation of the Earth.

The Moon

The moon is held in place by the gravitational pull of the Earth.
The moon's gravitational pull causes our tides.
The moon doesn't shine it just reflects light from the sun.
The moon travels round the Earth in just over 27 days.
The different shapes of the moon – crescent moon, half moon, full moon – are called phases
The moon doesn't actually change shape. The phase we see depends how much light from the sun is shining on it. This is due to its rotation round earth and the Earth blocking the light from the sun.
The moon starts with a waxing moon, then full moon when it is in direct view of the sun and then disappears as a waning moon until it is no longer visible.

The Solar System

The Solar System refers to the Sun and all the objects in orbit around it. These objects include planets, dwarf planets, moons, asteroids, comets and meteoroids. There are 8 planets orbiting the sun. They are, in order of increasing distance from the sun; Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. The NASA website contains lots of interesting information and images that can be explored with children. *https://solarsystem.nasa.gov/solar-system/our-solar-system/overview/*

Development Milestones:

2. Plays cooperatively, shares with other and takes turns.

5. Uses role play to recreate or invent situations.

10. Able to hop, skip, climb and balance.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

On The Moon
by Anna Milbourne

Man On The Moon
by Simon Bartram

Outdoor Science Resource

Experience: Planets

Space Travel

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

Benchmarks:

SCN 0-06a

- Describes how the rotation of the Earth in relation to the sun gives us day and night.
- Talks about how the pattern of night and day changes over the course.

Outdoor Science Resource

Experience: Planets

Space Travel

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Throughout my learning, I share my thoughts with others to help further develop ideas and solve problems.**TCH 0-11a**
- Communicating ideas within a small group, asking questions, understanding information, describing properties of materials. **LIT 0-02a, 0-09a, 0-10a**
- Playing collaboratively, sharing resources. **HWB 0-23a**
- I have the freedom to discover and choose ways to create images and objects using Lego/Duplo, K'nex, Meccano and other construction materials. **EXA 0-02a**
- I can respond to the work of artists such as Van Gogh and recreate Starry Night using paint, chalk or any other materials. **EXA 0-07a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.

Links to Global Citizenships (SDGs):

- Affordable and clean energy.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Space Engineer
- Astronaut
- Physicist

Planets:
Sky Transient Art

What to do:

Using loose parts to create transient art pictures. These could include the sun, phases of the moon and the stars, or other images of daytime and night time.

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

I Wonder...	I See...	I Know...
Why sometimes we see the sun and sometimes the moon?	That the sun is visible in the day and the moon is visible at night with the stars.	That the Earth moves round the sun and the sun lights up the moon at night.

Safety
General playground safety.

Equipment
Loose parts such as sticks, chalk, stones, shells, etc.

Support Card

Planets: B4.1

Variation of Experience...

Think about the shape of the sun, the moon and the stars.

Explore how they can change at different times in a 24 hour period and across months and the year.

Questions:

Can we always see the sun and the moon, why not?

Do they stay in the same place?

Are they always the same shape?

Do stars appear in the same place in the sky?

What tells us it is night and what tells us it is day?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Astronaut
- Astronomer

Story Link

SCN 0-20a
Can't you sleep little bear? By Martin Waddell
Peace at last by Jill Murphy

Planets:
Following Shadows As They Change

What to do:

Put a stick in the ground and each hour mark where the end of the shadow is located

Drawing, measuring and recording shadows of themselves to show movement of earth relative to the sun.

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

I Wonder...
Why the sun moves in the sky and where does it go when the moon is out? Where does the moon go when we can see the sun?

I See...
That shadows change where they are and how big they are as the day goes on.

I Know...
That the Earth moves round the Sun. Day and night is caused by the rotation of the Earth.

Safety
General playground safety.

Equipment
Loose parts such as sticks, chalk, stones, shells, etc.

Support Card

Planets: B4.2

Variation of Experience...

Recognise what might be seen in the sky in the day and in the night and changes that occur.

Explore the changes the sun has during the day and across a year.

Children record length of shadows throughout the year using non-standard measurement.

Questions:

Does the sun stay in the same place and height in the sky?

Do we see the sun all of the time?

Where is the sun when it is night time?

If the sun doesn't move then what moves?

When the sun is directly above us, does this make long or short shadows?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Astronaut
- Astronomer

Story Link

SCN 0-20a
Night Monkey, Day Monkey by Julia Donaldson

Planets:
Shadow Shapes

What to do:

Investigate how shadows compare with the actual object and experiment with creating different shadows.

Go for a shadow walk to see what you can find. Try to get a really sunny day!

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

I Wonder...
Why I can only see shadows on certain days?

I See...
That shadows change shape and size depending on where the sun is in the sky.

I Know...
That the Earth moves round the Sun so the position of the shadow changes and I can create shapes in shadows.

Safety
General playground safety.

Equipment
Loose parts, chalk.

Support Card

Planets: B4.3

Variation of Experience...

Recognise that shadows will change depending on the angle of the sun.

Gather objects of different size and compare shadows, explore how to make different shadows.

Individually or with a partner draw round shadow shapes to create a picture.

Questions:

Is the shadow the same height and shape as the object?

Do we see shadows all the time? If not, why not?

Do the shadows stay the same shape and size all day?

What shapes can you make?

Can you make things that look like something else?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Provides oral descriptions of what was done and what happened.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Astronomer

Story Link

SCN 0-20a
Nothing Sticks Like A Shadow by Ann Tompert

Planets:
Creating Craters

What to do:

Use either an area of dry soil, mud or sand. The children find different sized stones to drop onto the soil, mud or sand creating craters.

Encourage the children to predict which sized stones will make the biggest crater.

Compare the results to images of the moon craters.

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky. **SCN 0-06a**

I Wonder...	I See...	I Know...
Why the moon has craters?	How moon craters are created.	That craters are made by rocks called asteroids.

Safety
Do not throw the stones/balls at each other

Equipment
Soil/mud, sand, stones (different sizes), marbles.

Support Card

Planets: B4.4

Variation of Experience...

Make planets using stones, mud.

Use log discs to make the planets and moon.

Star gazing – use a telescope.

Add cars and trucks to represent moon buggies to push around blocks or pretend rocks.

Questions:

Which stones made the biggest crater?
Why do you think that the biggest stone made the biggest crater?
What happens when you drop the stone from different heights?

What happens when you throw the rock rather than drop it?

How did the creation of the craters differ in different materials, sand, soil, mud?
What happens when you add water to the materials and then drop the stone?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Demonstrates creative thinking and reasoning skills.
- Explores the ways in which people use science and science skills as apart of their job.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Astronaut
- Space Engineer – NASA
- Astronomer

Story Link

SCN 0-20a
I Took The Moon For A Walk by Carolyn Curtis
A Big Mooncake For Little Star by Grace Lin

craters
moon
night
space
asteroids
telescope
planets
rocket
velocity
astronaut
materials
stars
earth
sun

Planets:
Space Travel – Loose Parts

What to do:

Lay down on the ground and look at the vastness of the sky. What can you see? What would you see if it were night time?

Sky, clouds and sun during the day and at night the moon and the stars. The children are encouraged to use loose parts to create a space vehicle that will take them into space.

Experiences and Outcomes:

I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life. **SCN 0-06a**

I Wonder...	I See...	I Know...
What is in space?	The sun, moon and stars from our planet.	That the moon, sun planets, stars are all part of the solar system and that we need space travel to be able to visit them.

Safety
Do not look directly at the sun.

Equipment
Loose parts,
outdoor play equipment.

Support Card

Planets: B4.5

Variation of Experience...

Cloud watching – what shapes can we see in the clouds?

Create a planet using an outdoor space and large play equipment.

Recreate the Starry Night painting by Van Gogh.

Use Lego and other construction such as K'nex and Meccano to build other types of space travel vehicles.

Questions:

What can you see when you look up at the sky?

How can you get to space?

What might you see when you are in space?

What do you think you will find on the moon?

What do you think you will find on other planets?

Skills:

- Explores and observes through play.
- Asks questions and makes simple predictions.
- Provides oral descriptions of what was done and what happened.
- Demonstrates creative thinking and reasoning skills.
- Talks about science, the ways in which people use science skills for jobs.

My world of work

- Space Engineer – NASA
- Astronaut
- Physicist

Story Link

SCN 0-20a
On The Moon by Anna Milbourne
Man On The Moon by Simon Bartram

space
rocket
sun
moon
clouds
stars
space station
planets
solar system

Bundle 6:
Sound

Experience: Sound

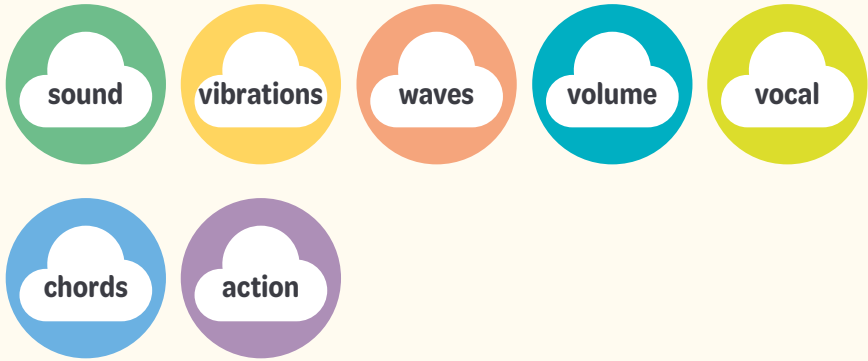
Vibrations – Worm Charming

Provocation Materials:

Grass, soil.

Experience Outline:

Find a grassed area. You can do this individually or as a group. Start to jump up and down on the same spot. You can stomp or dance, hop or skip or even hit the ground with your hands.



Outdoor Science Resource

Experience: Sound

Vibrations – Worm Charming

PLOD: Possible Lines of Development

Experiences:

Go on a sound walk.

Feel vibrations created by the sounds you make with your voice. E.g. humming, talking, shouting. Put your hand against your throat while you make a sound to feel the vibrations.

Bang a drum. Put leaves, cones etc. on top of the drum and hit the drum again. Watch the objects jump.

Create a rain stick.

Questions:

What happens when you jump up and down in the grass?

Does it make a difference if you do a different action? e.g. hop, skip

Why do the worms appear?

Does it make a difference if it is raining or has been raining?

What happens when you move the drum further away?

What happens if you make a quiet noise with the drum?

Can you feel your throat move when you make a sound?

STEM Links

(Using key vocabulary to explain)

We hear noises because of sound energy. Sound travels in invisible waves.

What is a vibration?

Vibrations that cause sounds are often invisible but if you touch a sound source you will be able to feel it move.

Jumping up and down on grass mimics the vibrations of the rain falling onto the ground.

What is a sound wave?

A sound is caused by a vibration which makes the air in and around it move. The air particles bump into each other, similar to falling dominoes, and so the vibration or sound wave travels through the air.

When objects vibrate the sound waves travel to the ear which sends messages to the brain and tells you what the sound is.

A high sound is made when things vibrate faster. It is easier to feel low sounds as they vibrate slower.

How do sounds keep us safe?

Sounds from sirens help to keep us safe when crossing the road.

How do I make sound from my mouth?

Sound is created when air passes across the vocal chords(these are 2 bands of muscles in your throat). The vocal chords vibrate when you make different sounds.

What is volume?

The volume is how loud or quiet the sound is and the unit of measurement is a decibel.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

Good Vibrations
by Mike Love

Decibella And Her 6 Inch Voice
by Julia Cook

Outdoor Science Resource

Experience: Sound

Vibrations – Worm Charming

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds.
SCN 0-11a

Benchmarks:

SCN 0-11a

- Predicts, then investigates, ways to make sounds louder and quieter.
- Identifies different sources of sound.

Outdoor Science Resource

Experience: Sound

Vibrations – Worm Charming

Early Level Skills

Inquiry and Investigative skills:

- Explore and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.
- Identifies and discusses new knowledge and understanding.

Interdisciplinary Learning:

- I enjoy playing with and exploring technologies to discover what they can do and how they can help us. **TCH 0-05a**
- I enjoy exploring and playing with the patterns and sounds of language and can use what I learn. **LIT 0-01a/LIT 0-11a/LIT 0-20a**
- I have the freedom to use my voice, musical instruments, and music technology to discover and enjoy playing with sound and rhythm. **EXA 0-17a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Musician
- Singer
- Audiologist

Experience: Sound

Acoustics

Provocation Materials:

Soil, leaves, stones, sand, grass, container, rubber bands.

Experience Outline:

Get an empty container and add rubber bands.
Go outdoors and add in different materials, one at a time.
What happens to the sound when you pluck the rubber bands?

Outdoor Science Resource

Experience: Sound

Acoustics

PLOD: Possible Lines of Development

Experiences:

Put a smooth object into the container (stone).

Put soft objects like grass, leaves in.

Vary the material in the container.

Questions:

How does the sound change depend on the thickness/ size of the rubber band?

How does the sound change when a hard object is in the container?

How does the sound compare when a soft object like a leaf is in the container?

What is the sound like when the container is fuller compared to when it is empty?

Is the sound louder or quieter?

How does the sound change when you stretch the rubber band more or less?

STEM Links

(Using key vocabulary to explain)

We hear noises because of sound energy. Sound travels in invisible waves.

What is a vibration?

Vibrations that cause sounds are often invisible but if you touch a sound source you will be able to feel it move.

What is a sound wave?

A sound is caused by a vibration which makes the air in and around it move. The air particles bump into each other, similar to falling dominoes, and so the vibration or sound wave travels through the air.

When objects vibrate the sound waves travel to the ear which sends messages to the brain and tells you what the sound is.

A high sound is made when things vibrate faster. It is easier to feel low sounds as they vibrate slower.

How do sounds keep us safe?

Sounds from sirens help to keep us safe when crossing the road.

How do I make sound from my mouth?

Sound is created when air passes across the vocal chords(these are 2 bands of muscles in your throat). The vocal chords vibrate when you make different sounds.

What is volume?

The volume is how loud or quiet the sound is and the unit of measurement is a decibel.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

A Very Special Guitar
– Short Kid Stories

Catching A Wave
by Baby Professor

Outdoor Science Resource

Experience: Sound

Acoustics

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds.
SCN 0-11a

Benchmarks:

SCN 0-11a

- Predicts, then investigates, ways to make sounds louder and quieter.
- Identifies different sources of sound.

Outdoor Science Resource

Experience: Sound

Acoustics

Early Level Skills

Inquiry and Investigative skills:

- Explore and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.
- Uses their senses to acquire information.
- Relates findings to everyday experiences.

Interdisciplinary Learning:

- I enjoy playing with and exploring technologies to discover what they can do and how they can help us. **TCH 0-05a**
- I enjoy exploring and playing with the patterns and sounds of language and can use what I learn. **LIT 0-01a/LIT 0-11a/LIT 0-20a**
- I have the freedom to use my voice, musical instruments and music technology to discover and enjoy playing with sound and rhythm. **EXA 0-17a**

Scientific analytical thinking skills:

- Demonstrates reasoning skills by explaining decisions and choices.

Links to Global Citizenships (SDGs):

- Industry, innovation and infrastructure.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Musician
- Sound Engineer

Outdoor Science Resource

Experience: Sound

Water Xylophone

Provocation Materials:

Glass jars of the same size and shape, metal spoon.

Experience Outline:

Create a water xylophone and encourage children to predict and investigate sounds produced by tapping of different levels of water, with a stick or spoon.

xylophone
levels
pitch
low
high
loud
quiet
sound
volume
vibrations
waves

Outdoor Science Resource

Experience: Sound

Water Xylophone

PLOD: Possible Lines of Development

Experiences:

Compare the pitch of sounds created.

Predict the pitch of sound created by each jar (higher and lower).

Questions:

What will happen if I hit jars of water with the spoon?

Why do jars with different levels of water make a different sound?

Is the sound produced a high or low pitch?

Can I create a tune or pattern by striking different jars?

STEM Links

(Using key vocabulary to explain)

We hear noises because of sound energy. Sound travels in invisible waves.

What is a vibration?

Vibrations that cause sounds are often invisible but if you touch a sound source you will be able to feel it move.

What is a sound wave?

A sound is caused by a vibration which makes the air in and around it vibrate. The air particles bump into each other, like falling dominoes, and so the vibration or sound wave travels through the air.

What is volume?

The volume is how loud or quiet the sound is, and the unit of measurement is a decibel.

What is pitch?

Pitch is a how high or low a sound is.

Development Milestones:

2. Plays co-operatively, shares with others and takes turns.

22. Listens and discriminates sounds.

Science story:

SCN 0-20a

Xavier Ox's Xylophone Experiment Book by Barbara de Rubertis

Outdoor Science Resource

Experience: Sound

Water Xylophone

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds.
SCN 0-11a

Benchmarks:

SCN 0-11a

- Predicts, then investigates, ways to make sounds louder and quieter.
- Identifies different sources of sound.

Outdoor Science Resource

Experience: Sound

Water Xylophone

Early Level Skills

Inquiry and Investigative skills:

- Explore and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.
- Uses their senses to acquire information.
- Measures uses simple equipment and non standard units.

Interdisciplinary Learning:

- I enjoy playing with and exploring technologies to discover what they can do and how they can help us. **TCH 0-05a**
- I enjoy exploring and playing with the patterns and sounds of language and can use what I learn. **LIT 0-01a/LIT 0-11a/LIT 0-20a**
- I have the freedom to use my voice, musical instruments and music technology to discover and enjoy playing with sound and rhythm. **EXA 0-17a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions.

Links to Global Citizenships (SDGs):

- Clean water and sanitation.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Musician
- Water Board

Outdoor Science Resource

Experience: Sound

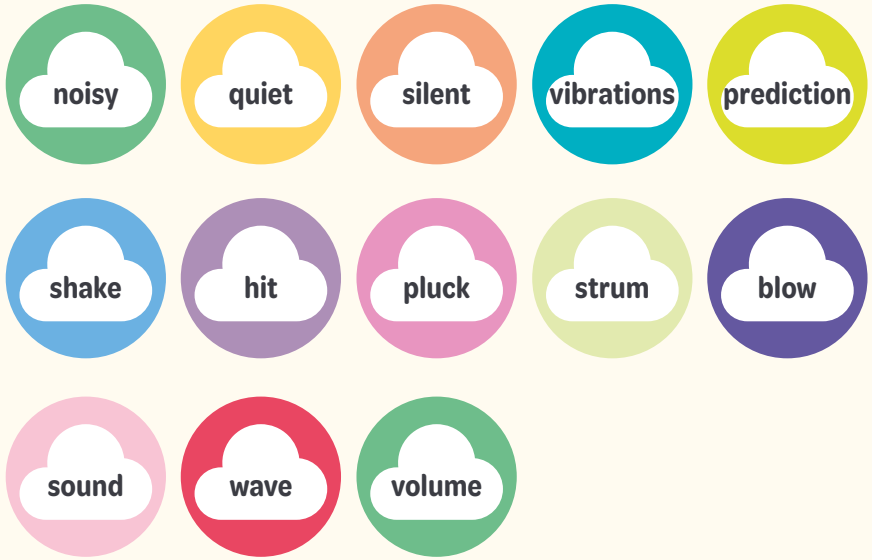
Tinker Table

Provocation Materials:

Pine cones, shells, small stones, bark, plant pots, containers, balloons, string, twine, nylon guitar strings, wool, tubes, water.

Experience Outline:

Explore a tinker table using a variety of natural objects to make sounds. Add containers to the table for the children to explore and create their own musical instruments.



Outdoor Science Resource

Experience: Sound

Tinker Table

PLOD: Possible Lines of Development

Experiences:

Use different sizes of cups.

Use a variety of small items.

Predict how to make the item sound quiet and loud.

Create an outdoor orchestra.

Questions:

How is the sound made from this item?

How can I make this item sound louder or quieter?

Which real instrument is most like the one I have made?

STEM Links

(Using key vocabulary to explain)

We hear noises because of sound energy. Sound travels in invisible waves.

What is a vibration?

Vibrations that cause sounds are often invisible but if you touch a sound source you will be able to feel it move.

What is a sound wave?

A sound is caused by a vibration which makes the air in and around it vibrate. The air particles bump into each other, similar to falling dominoes, and so the vibration or sound wave travels through the air.

What is volume?

The volume is how loud or quiet the sound is and the unit of measurement is a decibel.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

Oscar And The Bat
by Geoff Waring

Outdoor Science Resource

Experience: Sound

Tinker Table

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds.
SCN 0-11a

Benchmarks:

SCN 0-11a

- Predicts, then investigates, ways to make sounds louder and quieter.
- Identifies different sources of sound.

Outdoor Science Resource

Experience: Sound

Tinker Table

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions about what might happen.

Interdisciplinary Learning:

- I enjoy playing with and exploring technologies to discover what they can do and how they can help us. **TCH 0-05a**
- I explore ways to design and construct models. **TCH 0-09a**
- I have the freedom to use my voice, musical instruments and music technology to discover and enjoy playing with sound and rhythm. **EXA 0-17a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example through asking questions, experimenting and making predictions.
- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Industry, innovation and infrastructure.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Musician
- Music Teacher
- Sonographer

Experience: Sound

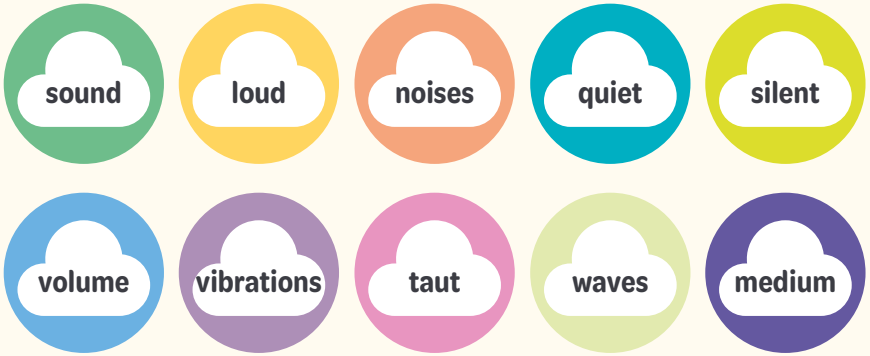
Make A Telephone

Provocation Materials:

Plastic cups/yoghurt pots, 5m lengths of string, paper clips.

Experience Outline:

Children make a telephone from plastic cups and string.



Outdoor Science Resource

Experience: Sound

Make A Telephone

PLOD: Possible Lines of Development

Experiences:

Compare different sizes of cups or lengths of string.

Speak quietly and loudly.

Hold the string taut and feel the vibration.

Use a hose pipe and funnels.

Questions:

What do you think will happen when we speak into the earphone?

What do you think will happen when we listen to the earphone?

What is happening to the cup and string?

Why did the sound travel?

STEM Links

(Using key vocabulary to explain)

We hear noises because of sound energy. Sound travels in invisible waves.

What is a vibration?

Vibrations that cause sounds are often invisible but if you touch a sound source like the string you will be able to feel it move.

What is a sound wave?

A sound is caused by a vibration which makes the air in and around it vibrate. The air particles bump into each other, like falling dominoes, and so the vibration or sound wave travels through the air.

When objects vibrate the sound waves travel to the ear which sends messages to the brain and tells you what the sound is.

A high sound is made when things vibrate faster. It is easier to feel low sounds as they vibrate slower.

What is volume?

The volume is how loud or quiet the sound is and the unit of measurement is a decibel.

Development Milestones:

5. Uses role play to recreate or invent situations.

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

The Best Ears In The World
by Claire Llewellyn

Outdoor Science Resource

Experience: Sound

Make A Telephone

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds.
SCN 0-11a

Benchmarks:

SCN 0-11a

- Predicts, then investigates, ways to make sounds louder and quieter.
- Identifies different sources of sound.

Outdoor Science Resource

Experience: Sound

Make A Telephone

Early Level Skills

Inquiry and Investigative skills:

- Explore and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.

Interdisciplinary Learning:

I have explored how people lived in the past and have used imaginative play to show how their lives were different from my own and people around me. **SOC 0-04a**

I enjoy playing with and exploring technologies to discover what they can do and how they can help us. **TCH 0-05a**

I enjoy exploring and playing with the patterns and sounds of language and can use what I learn. **LIT 0-01a/LIT 0-11a/LIT 0-20a**

I have the freedom to use my voice, musical instruments and music technology to discover and enjoy playing with sound and rhythm. **EXA 0-17a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Demonstrates reasoning skills by explaining decisions and choices.

Links to Global Citizenships (SDGs):

- Industry, innovation and infrastructure.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Alexander Graham Bell
- Telecommunications Industry

Outdoor Science Resource

Experience: Sound

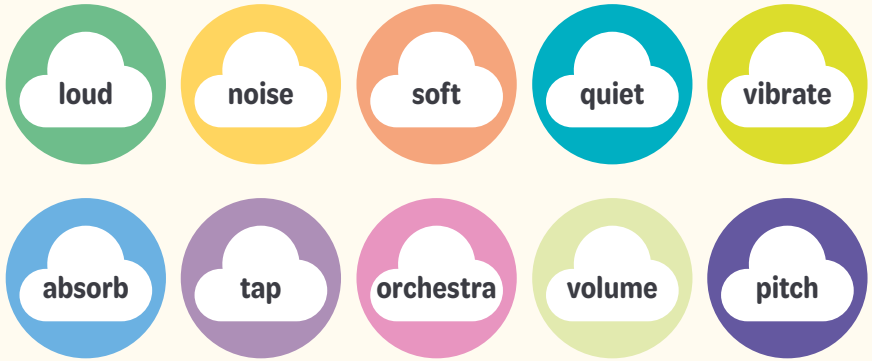
Super Stick Sounds

Provocation Materials:

Sticks, wooden spoons, spatula, outdoor objects
e.g. wood, metal, stone, plastic, grass.

Experience Outline:

Set off on an outdoor hunt to find some outdoor sounds using 2 sticks. Let the children lead the hunt and experiment with the sound sticks on walls, bricks, fences, trees, stones etc.



Outdoor Science Resource

Experience: Sound

Super Stick Sounds

PLOD: Possible Lines of Development

Experiences:

Create an outdoor orchestra using loose parts, pots, stones, plastic, wooden and metal containers, logs and bags of leaves.

Use spatulas and wooden spoons as drumsticks.

Encourage free play and music making using the materials provided. Create a marching band or a sistrum instrument from a branch.

Questions:

What will happen when you tap different objects?

How does the sound change?

What outdoor object makes the loudest sound?

What outdoor object makes the quietest sound?

Describe the sounds you make with simple adjectives e.g. crash!

STEM Links

(Using key vocabulary to explain)

What is a sound?

A sound is caused by a vibration which makes the air in and around it vibrate. The air particles bump into each other, similar to falling dominoes, and so the vibration or sound wave travels through the air.

What is vibration?

Vibrations are often invisible but if you touch a sound source you will be able to feel it move.

What is volume?

The volume is how loud or quiet the sound is and the unit of measurement is a decibel.

What is pitch?

It is the high or low sound. A high sound has a high pitch and a low sound has a low pitch.

Development Milestones:

15. Recites a variety of rhymes, songs and poems from start to finish.

22. Listens and discriminates sounds.

Science story:

SCN 0-20a

Meet The Orchestra
by Ann Hayes

What The Ladybird Heard
by Julia Donaldson

Outdoor Science Resource

Experience: Sound

Super Stick Sounds

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds.
SCN 0-11a

Benchmarks:

SCN 0-11a

- Predicts, then investigates, ways to make sounds louder and quieter.
- Identifies different sources of sound.

Outdoor Science Resource

Experience: Sound

Super Stick Sounds

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Discusses obvious risks and takes appropriate steps to protect themselves and others.

Interdisciplinary Learning:

- Uses pipes, tins, foam pads to create other instruments and sounds. **TCH 0-05a**
- Use your voice to create a sound and sing songs outdoors e.g. Old Mac Donald. **EXA 0-17a**
- Ask the children to shut their eyes and listen to the sounds. Can they guess what was making that sound? Can they copy sounds? **LIT 0-02a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Responsible consumption.

Skills and attributes of scientifically literate citizens:

- Demonstrates an awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.

My World of Work:

- Musician
- Audiologist

Sound:
Worm Charming

What to do:

Find a grassed area. Start to jump up and down on the same spot. You can stomp or dance, hop or skip or even hit the ground with your hands.

If you handle a worm be careful not to hurt them or stomp on them.

Remember to return the worms to the grass and watch as they burrow back under the ground.

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds. **SCN 0-11a**

I Wonder...
What will happen when I jump up and down on the grass?

I See...
That the worms begin to appear.

I Know...
That the vibrations created by my actions mimic rainfall and that makes the worms appear.

Safety
Don't harm the worms.
Wash your hands.

Equipment
Grassed area.

Support Card

Sound: B6.1

Variation of Experience...

Bang a drum. Put on leaves and other objects. Watch the objects jump.

Feel vibrations by the sounds you make with your voice. Hum, shout, sing. Put your hand against your throat to feel the vibrations when you make different sounds.

Create a rain stick.

Questions:

What happens when you do different actions? Do the worms appear more quickly or not at all?

Is it better to do worm charming in the rain? After it has rained? Or when it is dry?

Skills:

- Explore and observes through play.
- Asks questions and makes simple predictions.
- Identifies and discusses new knowledge and understanding.
- Demonstrates natural curiosity.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Musician
- Singer
- Audiologist

Story Link

SCN 0-20a
Good Vibrations by Mike Love
Decibella And Her 6 Inch Voice by Julia Cook

sound
vibrations
waves
action
vocal
chords
volume

Sound:
Acoustics

What to do:

Get an empty container and add rubber bands. Go outdoors and add in different materials, one at a time. What happens to the sound when you pluck the rubber bands?

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds. **SCN 0-11a**

I Wonder...
What will happen when I add a material into the container and then pluck the bands?

I See...
That the more objects I add to the container the less echo-y it sounds.

I Know...
Sounds are made when an object vibrates.

Safety
Adult makes sure children don't put small items in their mouth.

Equipment
Soil leaves, stones, sand, grass, container, rubber bands.

Support Card

Sound: B6.2

Variation of Experience...

Put a smooth object into the container (stone).

Put soft objects like grass, leaves in.

Vary the amounts of material in the container.

Questions:

How does the sound change depending on the thickness/size of the rubber band and how much you stretch it?

How does the sound change when a hard object is in the container?

How does the sound compare when a soft object like a leaf is in the container?

What is the sound like when the container is fuller compared to when it is empty?

Is the sound louder or quieter?

Skills:

- Explore and observes through play.
- Asks questions and makes simple predictions.
- Uses their senses to acquire information.
- Relates findings to everyday experiences.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Musician
- Sound Engineer

Story Link

SCN 0-20a
A Very Special Guitar – Short Kid Stories
Catching A Wave by Baby Professor

sound
vibrations
taut
waves
volume
absorb
resonance
acoustics
reflect

Sound:
Water Xylophone

What to do:

Demonstrate what empty jars of the same size sound like when tapped with a spoon or stick.

Create a water xylophone using 5 or 6 jars of the same size and shape filled with different amounts of water. The water can be coloured with different colouring for visual impact.

Ask children to predict what the jars will sound like when struck by the spoon. Discuss whether they will be the same or different and why.

Allow children to hit the jars with the spoon and discuss what they notice.

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds. **SCN 0-11a**

I Wonder...
What happens when I tap the jar of water with the spoon?

I See...
Different sounds created by tapping jars with different levels of water.

I Know...
Sound waves are vibrations that are detected by our eardrums.

Safety
Adult ensures safety of children around glass jars.

Equipment
Glass jars, water, natural, colouring, spoon.

Support Card

Sound: B6.3

Variation of Experience...

Compare the pitch of sounds created.

Predict the pitch of sound created by each jar (higher and lower).

Can children recognise a familiar tune played on the water xylophone. (three blind mice, twinkle twinkle).

Questions:

What will happen if I hit jars of water with the spoon?

Why do jars with different levels of water make a different sound?

Is the sound produced a high or low pitch?

Can I create a tune or pattern by striking different jars?

Skills:

- Explore and observes through play.
- Asks questions and makes simple predictions.
- Measures uses simple equipment and non-standard units.
- Uses their sense to acquire information.
- Demonstrates natural curiosity.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Musician
- Audio Engineer

Story Link

SCN 0-20a
Xavier Ox's Xylophone Experiment Book
by Barbara de Rubertis

Sound:
The Tinker Table

What to do:

Create a play area outdoors with a tinker table including objects to make sounds. For example, pinecones, shells, small stones, bark, plant pots, containers, balloons, string, twine, nylon guitar strings, wool, tubes, water.

These can be made into shakers, "drums" and stringed or wind instruments. Try not to be prescriptive but allow the children to experiment and create their own instruments.

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds. **SCN 0-11a**

I Wonder...
What will happen when I shake, strum, blow or tap the items on the table?

I See...
Each item I select making a sound. Some items will sound different to others.

I Know...
Different items make different sounds.

Safety
Adult makes sure children don't put small items in their mouth.

Equipment
Pinecones, shells, small stones, bark, plant pots, containers, balloons, string, twine, nylon guitar strings, wool, tubes, water.

Support Card

Sound: B6.4

Variation of Experience...

Use different sizes of cups.

Use a variety of small items.

Predict how to make the item sound quiet and loud.

Questions:

How is the sound made from this item?

How can I make this item sound louder or quieter?

Which real instrument is most like the one I have made?

Skills:

- Explores and observes through play.
- Asks questions and makes simple predictions.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Musician
- Music Teacher
- Sonographer

Story Link

SCN 0-20a
Oscar And The Bat by Geoff Waring

loud noisy quiet silent

vibrations prediction shake hit

pluck strum blow medium

sound wave volume

Sound:

Vibrations: Make A Telephone

What to do:

Make telephone as follows:

Poke a small hole carefully in the bottom of the pot/cup. Thread one end of the string through the hole of one of the pots from the bottom up. Tie the end of the string to a paper clip to prevent the string slipping through the hole. Do the same with another pot/cup.

Ask the children to hold onto their cup and walk away from each other until the string is taut.

Take it in turns to speak quietly into the cup and listen with the pot/cup held against the ear.

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds. **SCN 0-11a**

I Wonder...

What will happen when I talk into a the cup with the string held taut and someone listening at the other end?

I See...

Sound travels better when the string is tight.

I Know...

Sounds are travelling as vibrations through the string.

Safety

Adult pokes small hole in bottom of cups.

Equipment

Plastic cups/pots, 5m lengths of string, paper clips.

Support Card

Sound: B6.5

Variation of Experience...

Compare different sizes of cups or lengths of string.

Speak quietly and loudly.

Hold the string taut and feel the vibration.

Use a hose pipe and funnels.

Questions:

What do you think will happen when we speak into the telephone?

What do you think will happen when we listen to the telephone?

What is happening to the cup and string?

Why did the sound travel?

Skills:

- Explore and observes through play.
- Asks questions and makes simple predictions.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Alexander Graham Bell
- Telecommunications Industry

Story Link

SCN 0-20a
The Best Ears In The World by Claire Llewellyn

sound loud noises quiet silent volume vibrations taut waves medium

Sound:
Super Stick Sounds

What to do:

Set off on a hunt with 2 sticks or wooden spoons to help track down some outdoors sounds.

Let the children lead the hunt & experiment with the sound sticks on walls, bricks, fences, trees, toys and even my wellies!

Experiences and Outcomes:

Through play, I have explored a variety of ways of making sounds. **SCN 0-11a**

I Wonder...
What objects make a loud sound? A quiet sound?

I See...
That metal objects make the loudest sound.

I Know...
Soft objects produce quieter sounds than hard objects.

Safety
Watch where and what you are hitting with the sticks.

Equipment
2 wooden sticks, outdoor objects – natural and manmade.

Support Card

Sound: B6.6

Variation of Experience...

What objects make a loud sound?
A quiet sound?

What material makes the loudest/quietest sound when you tap it with a stick?

Create a marching band.

Create a sistrum instrument from a branch.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Questions:

What objects make a loud sound? A quiet sound?

What material makes the loudest/quietest sound when you tap it with a stick?

Create a marching band.

Create a sistrum instrument from a branch.

Skills:

- Explores and observes through play.
- Asks questions and makes simple predictions.
- Makes suggestions about what to do to answer the selected question.
- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Respects living things and the environment.

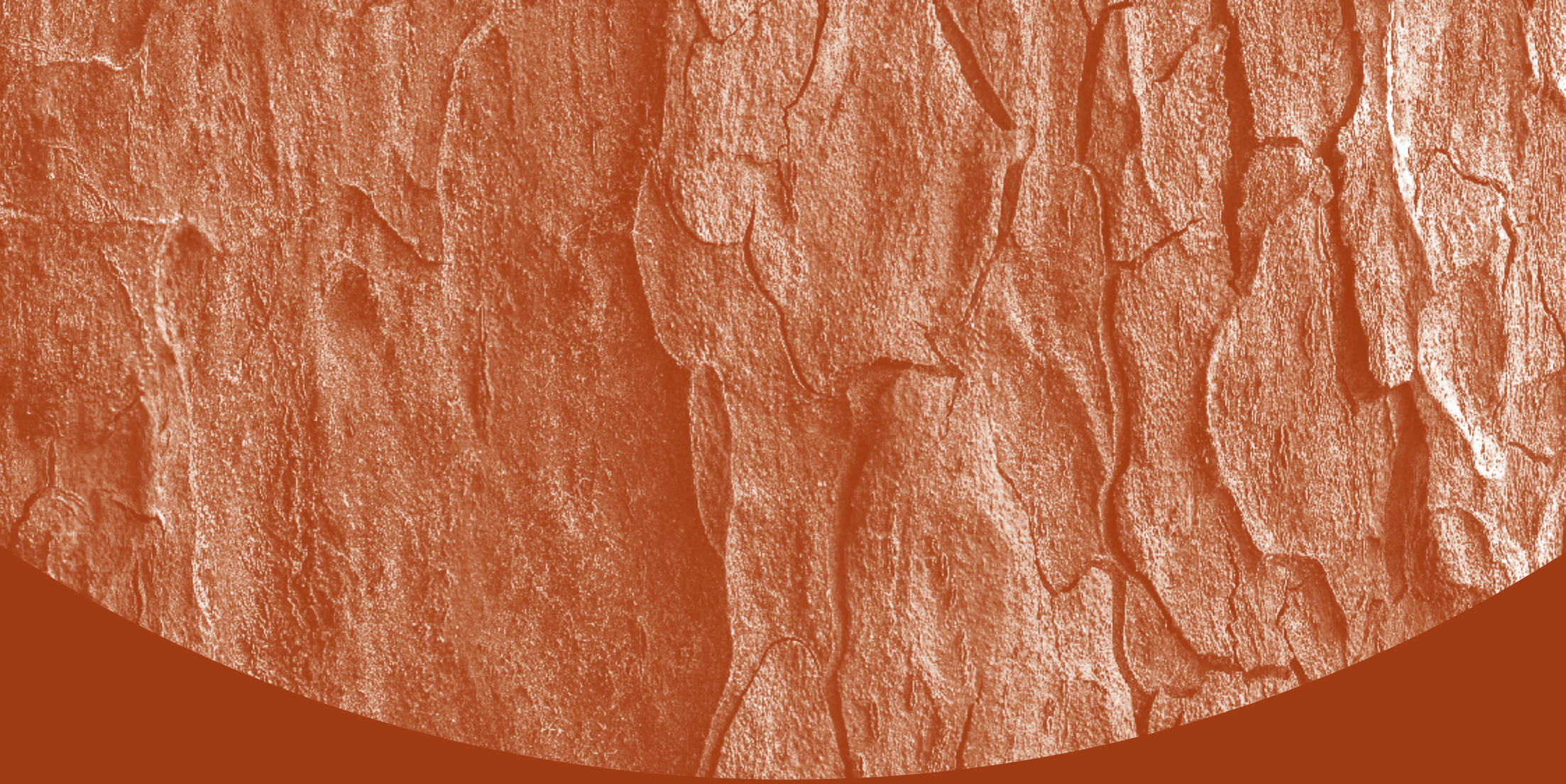
My world of work

- Musician
- Audiologist

loud soft quiet vibrate absorb tap

Story Link

SCN 0-20a
Meet The Orchestra by Ann Hayes
What The Ladybird Heard by Julia Donaldson



Bundle 7:
Senses

Experience: Senses

The 5 Senses-Nature and wellbeing walk

Provocation Materials:

Outside space.

Experience Outline:

Talk about the senses and what part of the body each one is linked to. Go outside and encourage children to use all their senses in nature, to be still and calm.

Encourage children to think of 5 things they can see and then 4 things they can feel.

Encourage children to be calm and breathe deeply as the activity progresses. They could close their eyes to increase awareness of their senses.

Outdoor Science Resource

Experience: Senses

The 5 Senses-Nature and wellbeing walk

PLOD: Possible Lines of Development

Experiences:

Explore other mindfulness strategies using senses.

Focus on using one sense.

Use the sense of touch to find out about a tree.

Questions:

How do you feel when you stop and use all your senses to know what is around you?

Can you sense things you don't usually notice?

Can you sense more when you close your eyes?

Do you feel more aware of nature around you?

Does this make you feel happy and calm?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the senses?

Touch – sensations are transported to the brain through receptors in the skin.

Sight –light passes through the lens onto the retina. Nerve cells on the retina send information as an electrical impulse through the optic nerve to the brain.

Hearing – Sound is funnelled through the ear into the external auditory canal. Sound waves hit the ear drum and travel through the inner ear where they are made into electrical impulses and sent to the brain.

Smell – Nerve endings in the roof of the nasal cavity transmit smells to the brain.

Taste – Taste is sensed on the taste buds Most taste buds are on the tongue but some are at the back of the throat and in the nasal cavity. Five tastes are salty, sweet, sour, bitter and savoury.

Development Milestones:

7. Identifies core feelings (happy, sad, angry or scared).

12. Concentrates on activities with sustained interest.

Science story:

SCN 0-20a

The Five Senses
by Herve Tullet

Outdoor Science Resource

Experience: Senses

The 5 Senses-Nature and wellbeing walk

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-12a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Bundle 7 B7.1a

Outdoor Science Resource

Experience: Senses

The 5 Senses-Nature and wellbeing walk

Early Level Skills

Inquiry and Investigative skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Relates findings to everyday experiences. Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Counting the things you can sense. **MNU 0-02a**
- Describing and talking about how you feel. **LIT 0-10a**
- Strategies to support wellbeing. **HWB 0-02a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Good health and well-being.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Psychologist

Outdoor Science Resource

Experience: Senses

Sensory Nature Game

Provocation Materials:

Egg boxes, paper, a pen.

Experience Outline:

Using an egg box collect a variety of different natural objects to represent: hard, soft, prickly, fluffy, rough, smooth.

Outdoor Science Resource

Experience: Senses

Sensory Nature Game

PLOD: Possible Lines of Development

Experiences:

Make a scavenger hunt for the other senses.

Find alternative words to describe textures.

Make textural pictures using natural materials.

Questions:

Can you find natural materials outdoors that feel hard, soft, prickly, fluffy, rough and smooth?

What items have you found?

Can you describe what they feel like?

Can you close your eyes and name each one by touching them?

Which sense are you using?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the sense of touch?

Touch consists of several distinct sensations communicated to the brain through specialized neurons in the skin.

Pressure, temperature, light touch, vibration, pain and other sensations are all part of the touch sense and are all attributed to different receptors in the skin.

Development Milestones:

12. Concentrates on activities with sustained interest.

17. Listens and responds appropriately within a group, can take turns, and use appropriate body language e.g. eye contact.

36. Matches and sorts using 1 criterion and can explain what they are doing.

Science story:

SCN 0-20a

The Bear Hunt
by Michael Rosen and Helen Oxenbury

Outdoor Science Resource

Experience: Senses

Sensory Nature Game

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-012a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Outdoor Science Resource

Experience: Senses

Sensory Nature Game

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Sorting material into different textures. **MNU 0-20a**
- Describing how textures feel. **LIT 0-10a**
- Make pictures using the natural materials gathered. **EXA 0-02a**
- Identify the natural materials gathered. **SCN 0-01a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions.

Links to Global Citizenships (SDGs):

- Good health and well-being.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Materials Technician

Outdoor Science Resource

Experience: Senses

Touch-Bark Rubbing

Provocation Materials:

A tree, paper, pencils, crayons or charcoal.

Experience Outline:

Children find a tree with an interesting bark. Feel and describe the pattern and texture of the bark. Press the paper against the bark and hold it in place. Rub the crayon, pencil or charcoal against the bark to make a rubbing.

tree | bark | senses | skin | receptors

brain | touch | feel | texture | rough

smooth | pressure | temperature | light | touch

vibration | pain

Outdoor Science Resource

Experience: Senses

Touch-Bark Rubbing

PLOD: Possible Lines of Development

Experiences:

Find another tree with a different bark.

Explore leaf textures and make a leaf rubbing.

Find other textures outside and describe them.

Identify the trees you have found.

Questions:

What does the bark feel like and how can you describe it?

What sense can you use to feel the bark?

What part of the body do we use to feel objects?

How would you describe the bark you are touching?

How can you make a picture showing how the bark feels?

Can you find any other interesting textures?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the sense of touch?

Touch consists of several distinct sensations communicated to the brain through specialized nerves in the skin.

Receptor cells in the skin are able to detect pressure and temperature.

Development Milestones:

12. Concentrates on activities with sustained interest.

18. Listens and responds to who, what and where.

Science story:

SCN 0-20a

Tap The Magic Tree
by Christie Matheson

Outdoor Science Resource

Experience: Senses

Touch-Bark Rubbing

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-012a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Outdoor Science Resource

Experience: Senses

Touch-Bark Rubbing

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Describe how the bark felt to touch. **LIT 0-10a**
- Sort the leaves you can find by size, shape or colour. **MNU 0-20b**
- Look at the leaves and shape on your tree. Identify the tree you have found. **SCN 0-01a**
- Draw a picture of your tree. Use your bark rubbing to make the trunk. **EXA 0-02a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Good health and well-being.
- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Forest Worker
- Tree Surgeon

Outdoor Science Resource

Experience: Senses

Sight – The Seasons journey stick

Provocation Materials:

Pictures to represent nature in the season
Stick, string, natural objects.

Experience Outline:

Talk about the senses and what part of the body each one is linked to. Find a stick and go for a walk and encourage children to use their senses to spot and discuss the signs of the season. Collect natural objects along the walk and tie them onto the stick. These might be leaves, feathers or flowers.

Outdoor Science Resource

Experience: Senses

Sight – The Seasons journey stick

PLOD: Possible Lines of Development

Experiences:

Spot signs of a different season.

Focus on using only one sense.

Identify the plants and animals you see or hear.

Questions:

How can you use your senses to spot signs of the seasons in nature?

Can you see any flowers or animals?

Do the trees have leaves? What colour are they?

Can you hear any bird song or bumble bees?

Can you smell flowers or cut grass?

Can you notice anything that has changed outside?

Are there any pinecones or fruits?

Can you sense heat from the sun or cold air on your face? Are your hands cold?

Do the leaves have a different texture when you touch them?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the senses?

Touch – sensations are transported to the brain through receptors in the skin.

Sight – light passes through the lens onto the retina. Nerve cells on the retina send information as an electrical impulse through the optic nerve to the brain.

Hearing – Sound is funnelled through the ear into the external auditory canal. Sound waves hit the ear drum and travel through the inner ear where they are made into electrical impulses and sent to the brain.

Smell – Nerve endings in the roof of the nasal cavity transmit smells to the brain.

Taste – Taste is sensed on the taste buds Most taste buds are on the tongue but some are at the back of the throat and in the nasal cavity. Five tastes are salty, sweet, sour, bitter and savoury.

Development Milestones:

12. Concentrates on activities with sustained interest.

18. Listens and responds to who, what and where.

22. Listens and discriminates sounds.

Science story:

SCN 0-20a

Stanley's Stick
by John Hegley

Stickman
By Julia Donaldson

Outdoor Science Resource

Experience: Senses

Sight – The Seasons journey stick

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-12a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Outdoor Science Resource

Experience: Senses

Sight – The Seasons journey stick

Early Level Skills

Inquiry and Investigative skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Relates findings to everyday experiences. Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts. – Responds to questions about their investigation.

Interdisciplinary Learning:

- Count how many different signs did you notice. **MNU 0-02a**
- Describe what you could see, hear, smell and touch. **LIT 0-09a**
- Identify animals and plants. **SCN 0-01a**
- Make sensory season pictures. **EXA 0-04a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.

Links to Global Citizenships (SDGs):

- Good health and well-being.
- Life on land.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Countryside Ranger
- Ecologist

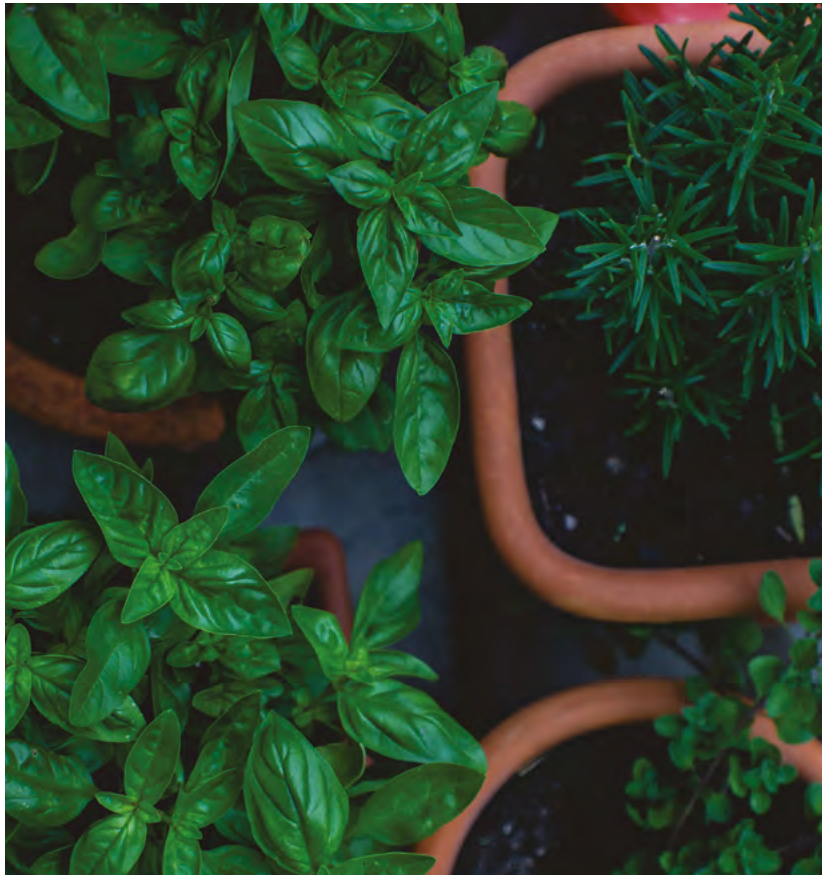
Outdoor Science Resource

Experience: Senses

Tasting Session

Provocation Materials:

Herbs, fruit or vegetables.



Experience Outline:

Children taste some of the herbs, fruit or vegetables grown in the garden to compare tastes.

Outdoor Science Resource

Experience: Senses

Tasting Session

PLOD: Possible Lines of Development

Experiences:

Children could close their eyes and guess what they are tasting.

Talk about favourite foods and tastes.

Talk about children's least favourite foods.

Make a simple recipe using an ingredient grown in the garden.

Questions:

What food are you tasting – can you name it?

Can you describe how it tastes?

Do you know if it is salty, sweet, sour, bitter or savoury?

Which food tasted do you like best?

Which food tasted do you like least?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the sense of taste?

Taste is sensed on the taste buds. Most taste buds are on the tongue but some are at the back of the throat and in the nasal cavity. Five tastes are salty, sweet, sour, bitter and savoury.

Development Milestones:

13. Uses sentences of 4-6 words and uses language for a variety of reasons.

18. Listens and responds to who, what and where.

Science story:

SCN 0-20a

Gregory The Terrible Eater
by Mitchell Sharmatt

The Very Hungry Caterpillar
by Eric Carle

Outdoor Science Resource

Experience: Senses

Tasting Session

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-12a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Outdoor Science Resource

Experience: Senses

Tasting Session

Early Level Skills

Inquiry and Investigative skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Uses their senses to acquire information.
- Relates findings to everyday experiences.
- Identifies and discusses new knowledge and understanding
- Responds to questions about their investigation.

Interdisciplinary Learning:

- Describe what food tastes like and whether children like it or not. **LIT 0-09a**
- Sort food into different groups and catagories. **MNU 0-20b**
- Grow and harvest herbs, fruit or vegetables. **SCN 0-03a**
- Observe how the weather affects food growth. **SOC 0-12a**
- Grow produce and use it in a recipe. **TCH 0-04a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions.

Links to Global Citizenships (SDGs):

- Good health and well-being.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Food Scientist
- Food Technician

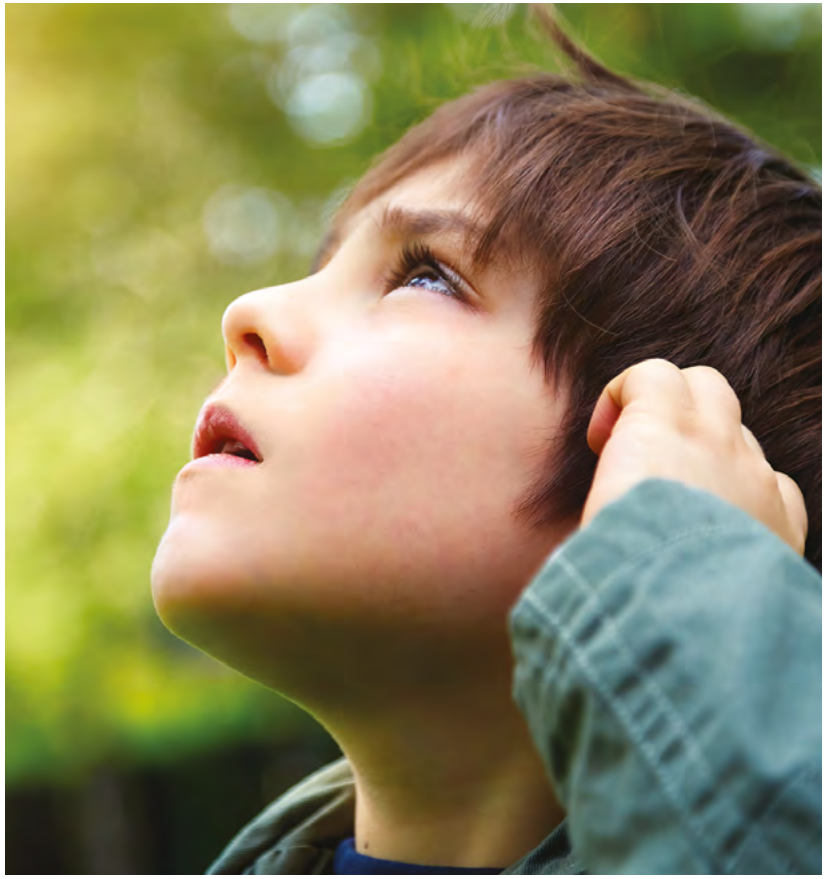
Outdoor Science Resource

Experience: Senses

Sensory Sound Map

Provocation Materials:

Paper, pencil, clip board or book to lean on.



Experience Outline:

Find a quiet place outside and sit down. Pupils draw a cross in the centre to show themselves. Pupils can use a mark or symbol to represent sounds showing their direction from the pupil on the map. The same mark or symbol can be used when they hear the sound repeated.

The children can also use a stick to point to the direction of the sound.

Outdoor Science Resource

Experience: Senses

Sensory Sound Map

PLOD: Possible Lines of Development

Experiences:

Think about sounds in nature that are affected by the weather such as trees rustling.

Listen to different types of bird song on CD.

Recreate sounds using instruments.

Questions:

What sounds can you hear?

Where are the sounds coming from?

What might be making the sound?

How can you record the different sounds?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the sense of hearing?

Sound is funnelled through the ear into the external auditory canal. Sound waves hit the ear drum and travel through the inner ear where they are made into electrical impulses and sent to the brain.

Development Milestones:

12. Concentrates on activities with sustained interest.

18. Listens and responds to who, what and where.

22. Listens and discriminates sounds.

Science story:

SCN 0-20a

The Listening Walk
by Paul Showers.

Mr Brown Can Moo? Can You?
By Dr Suess

Outdoor Science Resource

Experience: Senses

Sensory Sound Map

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-012a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Outdoor Science Resource

Experience: Senses

Sensory Sound Map

Early Level Skills

Inquiry and Investigative skills:

- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings
- Recognises similarities, patterns and differences in the findings and links these to the original question.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.

Interdisciplinary Learning:

- Describe the sounds heard and shown in the sound maps. **LIT 0-09a**
- Count the number of different sounds heard. **MNU 0-02a**
- Identify and name some of the sounds heard in nature. **SCN 0-01a**
- Enjoy the health benefits of being aware of nature around you. **HWB 0-02a**
- Record sounds heard in different weather conditions. **SOC 0-12a**
- Recreate the sounds heard using musical instruments. **EXA 0-18a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions.

Links to Global Citizenships (SDGs):

- Good health and well-being.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Sound Engineer

Outdoor Science Resource

Experience: Senses

Smell – Potions

Provocation Materials:

Containers: Water, Flowers, Leaves, herbs.

Experience Outline:

Just like mixing up mud pies in an outdoor kitchen, this is a great way to play with cooking and an endless supply of natural ingredients.
Get a container and go collecting flowers, leaves.
Add water, mix with a stick and smell.

senses | smell | nose | sweet | pongy

scent | strong

Outdoor Science Resource

Experience: Senses

Smell – Potions

PLOD: Possible Lines of Development

Experiences:

Mixing and mashing

There are many things to do with your ingredients. You can chop them with scissors, mash them up in a bowl, strain them through a sieve, pour one mix into another container to combine them and do a lot of mixing. Perhaps you can make up a spell to say while you are doing it?

Smell memory games.

Questions:

Are there things you can forage (hawthorn leaves, mint etc)?

Or things that have different textures? Big leaves and small leaves.

Can children remember the names of any of the plants?

STEM Links

(Using key vocabulary to explain)

What are the senses?

Humans have five basic senses: touch, sight, hearing, smell and taste. Organs for each sense send information to the brain to help us understand the world around us.

What is the science behind the sense of smell?

Nerve endings in the roof of the nasal cavity transmit smells to the brain.
Humans have 400 smelling receptors and may be able to smell over 1 trillion scents.
Our sense of smell also helps us to taste food.

Development Milestones:

3. Shows self – control and copes with change (different situations).

17. Listens and responds appropriately within a group, can take turns and use appropriate body language e.g. eye contact.

Science story:

SCN 0-20a

Follow Your Nose
by Auzou

The Super Smelly Alien
by Kate Leake

Outdoor Science Resource

Experience: Senses

Smell – Potions

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

Benchmarks:

SCN 0-12a

- Identifies specific parts of the body related to each of the senses.
- Uses their senses to describe the world around them, giving examples of things they see, hear, smell, taste and feel.

Outdoor Science Resource

Experience: Senses

Smell – Potions

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Talk about the ingredients in your potion and explain how you made it. **LIT 0-09a**
- Identify the plants and leaves you have used. **SCN 0-01a**
- Count the number of ingredients you have used. **MNU 0-02a**
- Record the items used by drawing them. **EXA 0-04a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Good health and well-being.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Perfumer
- Laboratory Technician
- Food Scientist

Senses:
Nature And Wellbeing

What to do:

Talk about the senses and what part of the body each one is linked to. Go outside and encourage pupils to use all their senses in nature to be still and calm. Encourage children to think of 5 things they can see and then 4 things they can feel.

Encourage children to be calm and breathe deeply as the activity progresses. They could close their eyes to increase awareness of their senses.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...
If I can use all my senses to be aware of nature around me and look after my wellbeing?

I See...
The positive effect that nature can have on my happiness and wellbeing.

I Know...
My senses tell me about my environment and help me notice things in nature that help me to feel calm and happy.

Safety
Pupils should not put anything in their mouths unless provided by teacher.

Equipment
An outside area to walk.

Support Card

Senses: B7.1a

Variation of experience...

Explore other mindfulness strategies using senses.

Focus on using only one sense.

Use the sense of touch to find out about a tree.

3 GOOD HEALTH AND WELL-BEING

Questions:

How do you feel when you stop and use all your senses to know what is around you?

Can you sense things you don't usually notice?

Can you sense more when you close your eyes?

Do you feel more aware of nature around you?

Does this make you feel happy and calm?

Skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Relates findings to everyday experiences.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Psychologist

Story Link

SCN 0-20a
Tap The Magic Tree by Christie Matheson

Senses:
Sensory Nature Game

What to do:

Using an egg box, collect a variety of different natural objects to represent hard, soft, prickly, fluffy, rough, smooth.

Pupils find objects using their sense of touch to fill each space. Pupils can swap boxes with another group and guess which object matches which description.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...	I See...	I Know...
How many different textures can I feel outdoors?	There are lots of outdoor materials that feel very different from one another.	I use my sense of touch to feel and explore textures in the world around me.

Safety
Check there are no harmful plants. Wash hands after activity.

Equipment
Egg boxes, paper, a pen.

Support Card

Senses: B7.1b

Variation of experience...

Can you find natural materials outdoors that feel hard, soft, prickly, fluffy, rough and smooth?

What items have you found?

Can you describe what they feel like?

Can you close your eyes and name each one

3 GOOD HEALTH AND WELL-BEING

Questions:

Can you find natural materials outdoors that feel hard, soft, prickly, fluffy, rough and smooth?

What items have you found?

Can you describe what they feel like?

Can you close your eyes and name each one by touching them?

Which sense are you using?

Skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity
- Respects living things and the environment
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Materials Technician

Story Link

SCN 0-20a
The Bear Hunt by Michael Rosen and Helen Oxenbury

Senses:
Bark Rubbing

What to do:

Find a tree with an interesting bark. Feel and describe the texture of the bark and describe it. Press the paper against the bark and hold it in place. Rub the crayon, pencil or charcoal against the bark to make a rubbing.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...	I See...	I Know...
What does bark feel like and how can I describe it?	There are lots of textures around me that I can explore through my sense of touch.	The skin on my fingers sends messages to my brain telling me how the bark feels.

Safety
Be careful with smaller objects and ensure they are clean.

Equipment
A tree, paper, pencils, crayons or charcoal.

Support Card

Senses: B7.2

Variation of experience...

Find another tree with a different bark.

Explore leaf textures and make a leaf rubbing.

Find other textures outside and describe them.

Identify the trees you have found.

3 GOOD HEALTH AND WELL-BEING

Questions:

What part of the body do we use to feel objects?

Can you find any other interesting textures?

What sense are you using?

What does the bark feel like?

What words can you use to describe how the bark feels?

How can you make a picture showing how bark feels?

Skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Forest worker and tree surgeon – plant, prune, and fell trees.

Story Link

SCN 0-20a
The 5 Senses by Herve Tullet

Senses:
Sight – Journey Stick

What to do:

Talk about the senses and what part of the body each one is linked to. Discuss the seasons and signs of each in nature. Find a stick and go for a walk and encourage children to use their senses to spot the signs of the season and tie the natural objects they find to the stick.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...	I See...	I Know...
What signs of nature can I find to tell me what season it is?	That plants and animals change in appearance and behavior through the seasons.	That I can use my senses to identify changes in the seasons.

Safety
Take care to avoid tripping hazards.

Equipment
Pictures to represent nature in the season.

Support Card

Senses: B7.3

Variation of experience...

Spot signs of a different season.

Focus on using only one sense.

Identify the plants and animals you see or hear.

3 GOOD HEALTH AND WELL-BEING

Questions:

How can you use your senses to spot signs of the seasons in nature?

Can you see any flowers or animals?

Do the trees have leaves? What colour are they?

Can you hear any bird song or bumble bees?

Can you smell flowers or cut grass?

Can you notice anything that has changed outside?

Are there any pinecones or fruits?

Can you sense heat from the sun or cold air on your face? Are your hands cold?

Do the leaves have a different texture when you touch them?

Skills:

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Relates findings to everyday experiences.
- Identifies and discusses new knowledge and understanding.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts. – Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Respects living things and the environment
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Countryside Ranger
- Ecologist

Story Link

SCN 0-20a
Stickman by Julia Donaldson
Stanley's Stick by John Hegley

seasons spring summer autumn winter senses see hear smell touch taste

Senses:
Tasting Session

What to do:

Children taste some of the herbs, fruit or vegetables grown in the garden to compare tastes.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...
What food will I like to taste?

I See...
There are lots of different foods we can grow that tastes good.

I Know...
My taste buds are on my tongue and tell me what food tastes like.

Safety
Only food provided by the teacher should be tasted.

Equipment
Variety of herbs, fruit or vegetables grown in the garden.

Support Card

Senses: B7.4

Variation of experience...

Children could close their eyes and guess what they are tasting.

Talk about favourite foods and tastes.

Talk about childrens' least favourite foods.

Make a simple recipe using an ingredient grown in the garden.

3 GOOD HEALTH AND WELL-BEING

Questions:

What food are you tasting – can you name it?

Can you describe how it tastes?

Do you know if it is salty, sweet, sour, bitter or savoury?

Which taste did you like best?

Which taste did you like least?

Skills:

- Uses their senses to acquire information.
- Demonstrates natural curiosity.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Food Scientist
- Food Technician

Story Link

SCN 0-20a
The Very Hungry Caterpillar by Eric Carle
Gregory The Terrible Eater by Mitchell Sharmatt

senses taste tongue buds salty sweet sour bitter savoury

Senses:
Listening – Sound Map

What to do:

Find a quiet place outside and sit down. Pupils draw a cross in the centre of the paper to show themselves. Pupils can use a mark or symbol to represent sounds showing their direction from the pupil on the map. The same mark or symbol can be used when they hear the sound repeated. They can use a stick to point to the direction of the sound.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...	I See...	I Know...
How many different sounds can I hear outdoors?	There are different sounds made by plants and animals in nature.	Sounds travel to the ear in waves and then to the brain.

Safety
Be careful of faces and eyes when pointing with a stick.

Equipment
Paper, pencils, clip boards.

Support Card

Senses: B7.5

Variation of experience...

Think about sounds in nature that are affected by the weather such as trees rustling.

Listen to different types of bird song on CD.

Recreate sounds using instruments.

3 GOOD HEALTH AND WELL-BEING

Questions:

What sounds can you hear?

Where are the sounds coming from?

What might be making the sound?

How can you record the different sounds?

Skills:

- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Recognises similarities, patterns and differences in the findings and links these to the original question.
- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Demonstrates natural curiosity.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Sound Engineer

Story Link

SCN 0-20a
The Listening Walk by Paul Showers
Mr Brown Can Moo? Can You? by DR Suess

senses

sound

hearing

ear

waves

Senses:
Smell – Potions

What to do:

Just like mixing up mud pies in an outdoor kitchen, this is a great way to play with cooking and an endless supply of natural ingredients. Get a container and go collecting flowers, leaves. Add water, mix with a stick and smell.

Experiences and Outcomes:

I can identify my senses and use them to explore the world around me. **SCN 0-12a**

I Wonder...
What it will smell like if I add more than one item to the potion?

I See...
That flowers and herbs are used in perfumes, household goods, to make them smell nice.

I Know...
That we use our nose to smell. Hairs in our nose detect smell and send a message to our brain to tell you what you are smelling.

Safety
Be careful with smaller objects and ensure they are clean.

Equipment
Container, water, flowers, leaves, herbs.

Support Card

Senses: B7.6

Variation of experience...

Mixing and mashing

There are many things to do with your ingredients. You can chop them with scissors, mash them up in a bowl, strain them through a sieve, pour one mix into another container to combine them and do a lot of mixing. Perhaps you can make up a spell to say while you are doing it?

Smell memory games.

Questions:

Are there things you can forage (hawthorn leaves, mint etc)? Or things that have different textures? Big leaves and small leaves.

Can children remember the names of any of the plants?

Skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Perfumer
- Laboratory Technician
- Food Scientist

Story Link

SCN 0-20a
Follow Your Nose by Auzou
The Super Smelly Alien by Kate Leake

Bundle 8:
Materials

Outdoor Science Resource

Experience: Materials

Den Building

Provocation Materials:

Branches, sticks, twigs and leaves.

Experience Outline:

Use natural materials to build a small den or shelter for your favourite teddies or dolls.

sticks	branches	leaves	twigs	build
size	height	width	support	cover
shelter	properties	hard	strong	soft
smooth	materials	wood	insulating	flexible

Outdoor Science Resource

Experience: Materials

Den Building

PLOD: Possible Lines of Development

Experiences:

Make a den big enough for you and your friends.

Make a tepee or tent style den.

Questions:

What materials do you need to build your den?

What are the properties of branches, twigs and leaves and why are they good for den building?

How will your den be supported?

What will it look like?

How big does your den need to be?

Where will your den be?

STEM Links

(Using key vocabulary to explain)

What are materials?

Materials are the substance that objects are made from. We use a wide range of materials daily for different purposes. Materials have different properties that make them useful for different jobs.

What is the science behind material use?

A property is a quality of something like strength, stretchiness or absorbency. Materials have properties that help them serve specific purposes. For example, a chair is made of metal or wood because it is strong. Wood is a natural material that is strong, flexible and long lasting. Metal is strong, hard and can be hammered into different shapes. Fabric can be stretchy, insulated and can be used to make clothes.

Development Milestones:

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

Everything You Need For A Treehouse Poem
by Carter Higgins and Emily Hughes

The Three Little Pigs

Iggy Peck Architect
by Andrea Beaty

Outdoor Science Resource

Experience: Materials

Den Building

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes .
SCN 0-15a

Benchmarks:

SCN 0-15a

- Explores and sorts materials into different groups depending on their properties, for example, whether they are strong, smooth, rough and if they float or sink.
- Justifies the selection of appropriate materials for different uses based on their physical properties.

Outdoor Science Resource

Experience: Materials

Den Building

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities. Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Discusses obvious risks and takes appropriate steps to protect themselves and others.

Interdisciplinary Learning:

- How many sticks or branches did you need? **MNU 0-02a**
- Literacy – listening and talking. Sharing ideas, explaining choices. **LIT 0-09a**
- Expressive arts – role play – 3 Little Pigs. **EXA 0-02a/0-06a**
- Technology – design and construct a den. **TCH 0-09a/0-10a/0-12a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Responsible consumption and production.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of respecting living things and the environment.

My World of Work:

- Architect
- Bricklayer
- Building Surveyor

Experience: Materials

Make A Hog House

Provocation Materials:

Logs, sticks, leaves, dry straw or grass.

Experience Outline:

Make a simple hedgehog house using logs, sticks and leaves.

hedgehog | house | shelter | tall | wide

protect | safe | materials | straw | grass

twigs | leaves | properties | strong | flexible

warm | wood | branches | hard | smooth

soft | insulating

Outdoor Science Resource

Experience: Materials

Make A Hog House

PLOD: Possible Lines of Development

Experiences:

Make shelters for other animals and mini-beasts.

Find out more about hedgehogs.

Questions:

What materials can we use to make a hog house?

Why would we choose these materials?

Which materials will keep the hedgehog dry and warm?

Which materials will make the house strong to protect the hedgehog?

Are there any other materials we could use?

STEM Links

(Using key vocabulary to explain)

What are materials that hedgehogs like to use to make their hog houses?

Materials are the substances that objects are made from. Materials have different properties that make them useful for different jobs.

Hedgehogs need a safe place to hide, so logs and leaves are all good materials that hedgehogs will use to sleep in. The logs provide shelter and the leaves provide warmth.

Why do hedgehogs hibernate?

Hedgehogs hibernate (sleep in the winter) to save their energy, as there is less food for them to eat.

What is the science behind material use?

A property is a quality of something like strength, stretchiness or insulation. Materials have properties that help them serve specific purposes. For example, a chair is made of metal or wood because it is strong. Wood is a natural material that is strong, flexible and long lasting. Metal is strong, hard and can be hammered into different shapes. Fabric can be stretchy, insulated and can be used to make clothes.

Development Milestones:

19. Listens and responds to when, why and how questions.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

Hedgehog's Balloon
by Nick Butterworth

Outdoor Science Resource

Experience: Materials

Make A Hog House

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.
SCN 0-15a

Benchmarks:

SCN 0-15a

- Explores and sorts materials into different groups depending on their properties, for example, whether they are strong, smooth, rough and if they float or sink.
- Justifies the selection of appropriate materials for different uses based on their physical properties.

Outdoor Science Resource

Experience: Materials

Make A Hog House

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Makes suggestions about what to do to answer selected questions.

Interdisciplinary Learning:

- Talk about decisions made and materials used. **LIT 0-09a**
- Create a story about a hedgehog. **LIT 0-09b**
- Design and construct models using everyday materials. **TCH 0-10a**
- Observe living things in the environment. Find out about hedgehogs. **SCN 0-01a**
- Make a hedgehog picture. **EXA 0-04a**

Scientific analytical thinking skills:

- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Responsible consumption and production.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Structural Engineer
- Materials Engineer

Outdoor Science Resource

Experience: Materials

Mud Creatures

Provocation Materials:

Mud, water, leaves, sticks, cones, stones.

Experience Outline:

Children use mud and other natural materials to create mud creatures. They explore the use of natural materials throughout the activity and find ways to describe their uses.

Outdoor Science Resource

Experience: Materials

Mud Creatures

PLOD: Possible Lines of Development

Experiences:

Make mud pies.

Use natural materials to make pictures of different animals.

Explore properties of materials in model making.

Group materials according to their properties or uses.

Explore the properties of everyday materials e.g. woollen jumpers.

Group materials according to their properties or uses.

Questions:

What materials are you using?

Why did you choose these materials?

Can you talk about how these properties of the materials can be used?

Can you describe the materials?

What else can you make using mud?

What are the properties of mud that make it good for moulding into animals?

What do you need to make mud?

How do you get the right consistency?

STEM Links

(Using key vocabulary to explain)

What are materials?

Materials are the substance that objects are made from. We use a wide range of materials daily for different purposes. Materials have different properties that make them useful for different jobs.

What are the properties of materials ?

A property is a quality of something like strength, stretchiness or insulation. Materials have properties that help them serve specific purposes. For example, a chair is made of metal or wood because it is strong. Wood is a natural material that is strong, flexible and long lasting. Metal is strong, hard and can be hammered into different shapes. Fabric can be stretchy, insulated and can be used to make clothes. Using natural materials is helpful to the environment because they are biodegradable and break down over time.

Development Milestones:

13. Uses sentences of 4-6 words and uses language for a variety of reasons.

19. Listens and responds to when, why and how questions.

Science story:

SCN 0-20a

Stuck In The Mud
by Jane Clarke

Dirt + Water And Mud
by Katherine Flannigan

Outdoor Science Resource

Experience: Materials

Mud Creatures

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.
SCN 0-15a

Benchmarks:

SCN 0-15a

- Explores and sorts materials into different groups depending on their properties, for example, whether they are strong, smooth, rough and if they float or sink.
- Justifies the selection of appropriate materials for different uses based on their physical properties.

Outdoor Science Resource

Experience: Materials

Mud Creatures

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Create images and objects using a variety of materials. **EXA 0-02a**
- Discover new words and phrases to help me express my ideas, thoughts and feelings. **LIT 0-10a**
- Experiment with imaginative ways such as modelling to represent the world around me. **SOC 0-09a**
- SOC 0-09a Explore ways to design and construct models. **TCH 0-09a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.
- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.

Links to Global Citizenships (SDGs):

- Responsible consumption and production.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Materials Engineer
- Sculptor

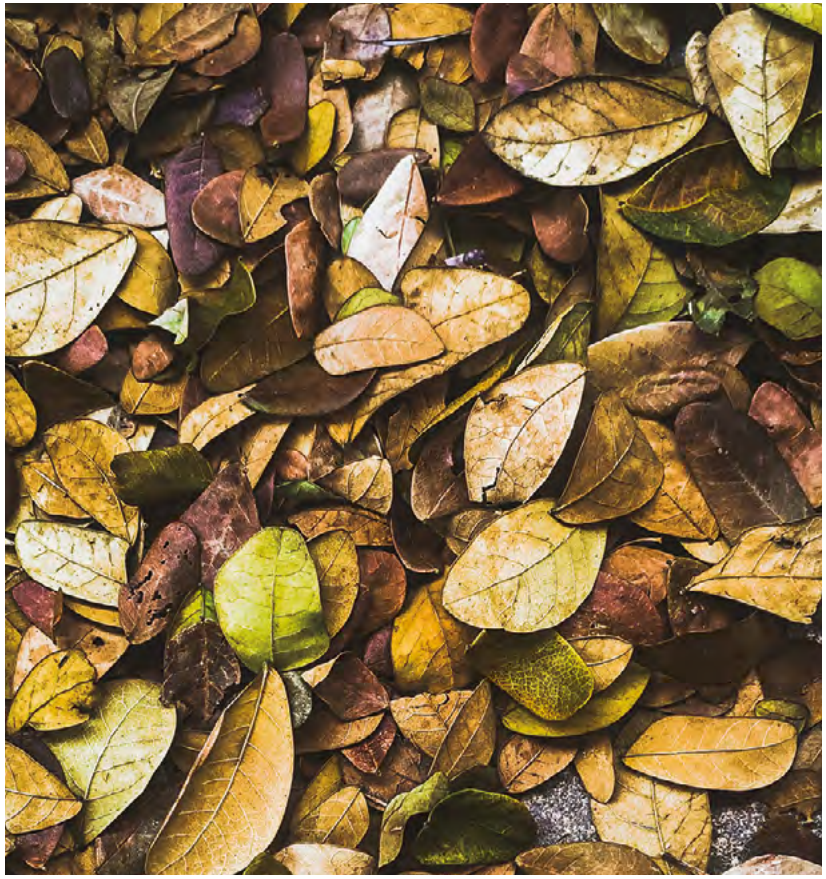
Outdoor Science Resource

Experience: Materials

Leaf Art

Provocation Materials:

Leaves, googly eyes, sticks, stones.



Experience Outline:

Use leaves of different shapes, sizes, colours and textures and other natural materials to make leaf animal art.

leaves | shapes | size | big | small

colour | picture | body | head | eyes

nose | mouth

Outdoor Science Resource

Experience: Materials

Leaf Art

PLOD: Possible Lines of Development

Experiences:

Sort leaves according to shape, size and colour.

Identify common types of leaves.

Can you make pictures of other woodland animals?

Use other natural materials such as twigs and stones to make pictures.

Watch out for wildlife in the leaves, especially hedgehogs that might be sleeping under them in the Winter.

Questions:

Can you make a picture of an animal using leaves?

How many different leaves can you find?

Can you sort these into big and small leaves or into piles of different shapes or colours?

Which leaves will you use to make the body and head– big or small? Which shape? Which colour?

How will you make the body and head?

STEM Links

(Using key vocabulary to explain)

What are materials?

Materials are the substances that objects are made from. We use a wide range of materials daily for different purposes. Materials have different properties that make them useful for different jobs. Natural materials include wood, leaves, sticks and stones.

What is the science behind material use?

A property is a quality of something like strength, stretchiness or insulation. Materials have properties that help them serve specific purposes. For example, a chair is made of metal or wood because it is strong. Wood is a natural material that is strong, flexible and long lasting. Metal is strong, hard and can be hammered into different shapes. Fabric can be stretchy, insulated and can be used to make clothes. Leaves come is different shapes, sizes and colours.

Why do leaves change colour?

Green leaves use sunlight to produce food for the plant. In Autumn, the days get shorter and the temperature drops, this means the leaves can produce less food. To save energy, the trees become dormant and they stop producing the green pigment needed to produce food. Without this green pigment, the colours of other chemicals in the leaves show through.

Development Milestones:

12. Concentrates on activities with sustained interest.

21. Ask who, what, where, when, what and how questions.

40. Is number confident to 5.

Science story:

SCN 0-20a

We're Going On A Leaf Hunt
by Steve Metzger

Outdoor Science Resource

Experience: Materials

Leaf Art

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.
SCN 0-15a

Benchmarks:

SCN 0-15a

- Explores and sorts materials into different groups depending on their properties, for example, whether they are strong, smooth, rough and if they float or sink.
- Justifies the selection of appropriate materials for different uses based on their physical properties.

Outdoor Science Resource

Experience: Materials

Leaf Art

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.

Interdisciplinary Learning:

- Talk about leaf shapes, colour and sizes. **LIT 0-09a**
- Talk about leaves selected and how they were used to make a picture. **LIT 0-09a**
- Investigate, sort, describe and be creative with shapes. **MNU 0-20b**
- Create images using a variety of leaves. **EXA 0-02a**
- Which animals live in woodland? **SCN 0-01a**
- Experiment with imaginative ways to represent the world around us. **SOC 0-09a**
- Explore everyday material to make pictures and models. **TCH 0-10a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Responsible consumption and production.

Skills and attributes of scientifically literate citizens:

- Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly.
- Demonstrates a developing understanding of science in the world around them.

My World of Work:

- Graphic Designer
- Artist

Experience: Materials

Waterproof Roof

Provocation Materials:

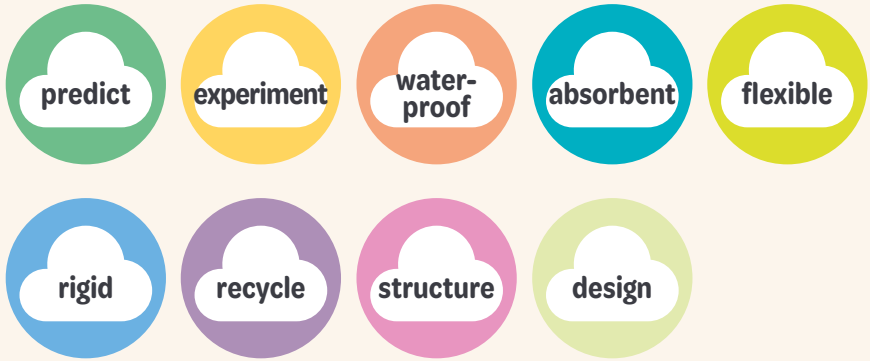
A spray bottle for water or preferably a rainy day! Natural materials such as sticks, leaves, moss, grass, paper towel or tissue.

Children should be encouraged to explore and select their own materials.

Experience Outline:

To create a waterproof roof for a house made from loose parts, sticks, leaves, moss, grass and other natural objects.

Once the roof has been made, put in a tissue or paper towel inside the house, spray the roof with water and see if any gets onto the paper towel.



Outdoor Science Resource

Experience: Materials

Waterproof Roof

PLOD: Possible Lines of Development

Questions:

What are the differences between the materials? Can you see or feel any difference?

What do you think will happen to each of the materials when we spray water on them or hold them over our heads when we stand out in the rain?

Will the water be absorbed or not? Will the house get wet or stay dry?

Can you think of any other improvements?

Can you group materials together according to their type or using your own criteria?

STEM Links

(Using key vocabulary to explain)

What are materials?

Materials are the substance that objects are made from. We use a wide range of materials daily for different purposes. Materials have different properties that make them useful for different jobs.

What is the science behind material use?

A property is a quality of something like strength, stretchiness or absorbency. Materials have properties that help them serve specific purposes. For example, a chair is made of metal or wood because it is strong. Wood is a natural material that is strong, flexible and long lasting. Metal is strong, hard and can be hammered into different shapes. Fabric can be stretchy, insulated or waterproof and can be used to make clothes. Using natural materials is helpful to the environment because they are biodegradable and break.

Development Milestones:

2. Plays co-operatively, shares with others and takes turns.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

If I Built A House
by Chris Van Dusen

Iggy Peck Architect
by Andrea Beatty

Outdoor Science Resource

Experience: Materials

Waterproof Roof

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.
SCN 0-15a

Benchmarks:

SCN 0-15a

- Explores and sorts materials into different groups depending on their properties, for example, whether they are strong, smooth, rough and if they float or sink.
- Justifies the selection of appropriate materials for different uses based on their physical properties.

Outdoor Science Resource

Experience: Materials

Waterproof Roof

Early Level Skills

Inquiry and Investigative skills:

- Asks questions arising from play activities.
- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Provides oral descriptions of what was done and what happened.
- Relates findings to everyday experiences.
- Identifies and discusses new knowledge and understanding.
- Responds to questions about their investigation.

Interdisciplinary Learning:

- I can match objects and sort using my own and others' criteria, sharing my ideas with others. **NUM 0-20b**
- Communicating ideas within a small group, asking questions, understanding information, describing properties of materials. **LIT 0-02a, 0-09a, 0-10a**
- Playing collaboratively, sharing resources. **HWB 0-23a**
- I have the freedom to discover and choose ways to create images and objects using a variety of materials. **EXA 0-02a**
- Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.
- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Demonstrates reasoning skills by explaining choices and decisions.

Links to Global Citizenships (SDGs):

- Responsible consumption and production.

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My World of Work:

- Engineer
- Design and Manufacturing
- Fashion Designer
- Textiles industry

Experience: Materials

The Billy Goats Gruff Bridge

Provocation Materials:

Deep puddle or container to hold water.
Use loose parts to create a bridge for the goats to cross.

Experience Outline:

The Troll has destroyed the bridge! Can you provide an alternative way for the three Billy Goats Gruff to cross the river?

materials

predict

experiment

strong

weak

foundation

Outdoor Science Resource

Experience: Materials

The Billy Goats Gruff Bridge

PLOD: Possible Lines of Development

Experiences:

- Use large log circles, planks and other large natural objects to create a way across the river.
- Look at different types of bridges.

Questions:

What material do you think would be best to use to make a bridge for getting the goats safely across the river.

- What are the differences between the materials?
- Can you see or feel any difference?
- What would happen if we put a stone on the bridge?
- How many stones can it hold before it collapses?
- Are materials weakened by water?

STEM Links

(Using key vocabulary to explain)

What are the properties of materials?

Materials are the substance that objects are made from. We use a wide range of materials daily for different purposes. Materials have different properties that make them useful for different jobs.

What are the different properties of materials and how can they be used?

A property is a quality of something like strength, stretchiness or absorbency. Materials have properties that help them serve specific purposes. For example, a chair is made of metal or wood because it is strong. Wood is a natural material that is strong, flexible and long lasting. Metal is strong, hard and can be hammered into different shapes. Fabric can be stretchy, insulated and can be used to make clothes. Using natural materials is helpful to the environment because they are biodegradable and break down over time. Some materials, like wood, are buoyant and float.

Development Milestones:

2. Plays co-operatively, shares with others and takes turns.

43. Seeks multiple solutions to a question, task or problem.

Science story:

SCN 0-20a

The Three Billy Goats Gruff

Rosie Revere, Engineer
by Andrea Beatty

Outdoor Science Resource

Experience: Materials

The Billy Goats Gruff Bridge

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.
SCN 0-15a

Benchmarks:

SCN 0-15a

- Explores and sorts materials into different groups depending on their properties, for example, whether they are strong, smooth, rough and if they float or sink.
- Justifies the selection of appropriate materials for different uses based on their physical properties.

Outdoor Science Resource

Experience: Materials

The Billy Goats Gruff Bridge

Early Level Skills

Inquiry and Investigative skills:

- Explores and observes through play.
- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Identifies and discusses new knowledge and understanding.

Scientific analytical thinking skills:

- Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting and making predictions.
- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Demonstrates reasoning skills by explaining choices and decisions.

Interdisciplinary Learning:

- Throughout my learning, I share my thoughts with others to help further develop ideas and solve problems. **TCH 0-11a**
- Through discovery, natural curiosity and imagination, I explore ways to construct models or solve problems. **TCH 0-14a**
- I have explored numbers **NUM 0-02a**
- I can match objects and sort using my own and others' criteria, sharing my ideas with others. **NUM 0-20b**
- Communicating ideas within a small group, asking questions, understanding information, describing properties of materials. **LIT 0-02a, 0-09a, 0-10a**
- Playing collaboratively, sharing resources. **HWB 0-23a**
- Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

Skills and attributes of scientifically literate citizens:

- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

Links to Global Citizenships (SDGs):

- Responsible consumption and production.

My World of Work:

- Structural Engineer
- Civil Engineer

Materials:
Den Building

What to do:

With support, the children should select from the natural materials around them to build a den for a favourite teddy or toy. Talk about the best materials to use , what the den should look like, where to build it and design features.

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. **SCN 0-15a**

I Wonder...
What properties do branches, twigs and leaves have that are good for den building?

I See...
Branches are strong and can be used to make the structure and sides of my den. Leaves are soft and can make my den comfortable.

I Know...
Some materials are strong and flexible and others are soft and insulating. These can be used together to build a den.

Safety
Take care when moving branches. Avoid tripping hazards. Ensure den is secure.

Equipment
Branches, sticks, twigs, leaves.

Support Card

Materials: B8.1

Variation of Experience...

Make a small den using twigs.

Make a bigger den for you and your friends?

Make a tepee or tent style den?

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Questions:

What materials do you need to build your den?
What are the properties of branches, twigs and leaves and why are they good for den building?
How will your den be supported?
What will it look like?
How big does your den need to be?
Where will your den be?

Skills:

- Explores and observes through play.
- Asks questions and makes simple predictions.
- Makes suggestions about what to do to answer the selected question.
- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Respects living things and the environment.

My world of work

- Architect
- Bricklayer
- Building Surveyor

Story Link

SCN 0-20a
Everything You Need For A Treehouse
Poem by Carter Higgins and Emily Hughes
Iggy Peck Architect
by Andrea Beatty
The Three Little Pigs
Traditional

materials wood branches twigs
leaves properties hard strong
smooth soft flexible insulating
sticks build size tight
width support cover shelter

Materials:
Make A Hog House

What to do:

Choose materials with appropriate properties to make a hedgehog house. Identify materials that are strong smooth, hard, rough, soft ,waterproof and insulating. Talk about how they can be used.

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. **SCN 0-15a**

I can talk about science stories to develop my understanding of science and the world round me. **SCN 0-20a**

I Wonder...
Which material will make the hog house strong and safe to protect the hedgehog?

I See...
Each material has different properties that makes them useful in different ways.

I Know...
Wood is strong enough to give the house shape. Moss or large leaves help keep the hog house waterproof. Newspaper, straw and grass are soft and make the hog house warm and comfortable.

Safety
Take care when moving branches. Avoid tripping hazards. Ensure den is secure.

Equipment
Logs, sticks, leaves, dry straw or grass.

Support Card

Materials: B8.2

Variation of Experience...

Make a small den using twigs.

Make a bigger den for you and your friends?

Make a tepee or tent style den?

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Questions:

What materials can we use to make a hog house?

Why would we choose these materials?

Which materials will keep the hedgehog dry and warm?

Which materials will make the house strong to protect the hedgehog?

Are there any other materials we could use?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Makes suggestions about what to do to answer selected questions.
- Demonstrates creative thinking and reasoning skills.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Structural Engineer
- Materials Engineer

Story Link

SCN 0-20a
Hedgehog's Balloon
by Nick Butterworth

materials
wood
branches
twigs
leaves
properties
hard
strong
smooth
soft
flexible
insulating
hedgehog
house shelter
tall
wide
protect
safe
straw
grass
warm

Materials:
Mud Creatures

What to do:

Children make mud using soil, water and a stick to stir it together. Use the mud and other natural materials to create mud creatures. They explore the use of natural materials throughout the activity and find ways to describe their uses.

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. **SCN 0-15a**

I Wonder...
What materials can I use to make a model?

I See...
Mud is a soft and flexible natural material that I can shape and mold.

I Know...
Materials have different properties such as: hard, soft, flexible, rigid, waterproof.

Safety
Wash hands thoroughly after this activity.

Equipment
Mud, twigs, water stones, leaves.

Support Card

Materials: B8.3

Variation of Experience...

Make mud pies.

Use natural materials to make pictures of different animals.

Explore properties of materials in model making.

Explore properties of materials used to make everyday objects.

Group materials according to their properties or uses.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Questions:

What do you need to make mud? How do you get the right consistency?

What materials are you using?

Why did you choose these materials?

Can you talk about how these materials can be used?

Can you describe the properties of the materials?

What else can you make using mud?

What are the properties of mud that make it good for moulding?

Skills:

- Explores and observes through play.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity.
- Demonstrates creative thinking by offering suggestions and solutions to everyday problems.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Materials Engineer
- Sculptor

Story Link

SCN 0-20a
Stuck In The Mud by Jane Clarke
Dirt + Water And Mud by Katherine Flannigan

materials mud twigs stones leaves water shape strong smooth rough

Materials:
Leaf Art

What to do:

Collect leaves of different shapes, sizes and colour and sort according to their properties. Use the leaves to make a simple picture of an animal.

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. **SCN 0-15a**

I Wonder...
How many leaf shapes and colours can be used in your picture?

I See...
Leaves are all different shapes, colours and sizes and can be used to make a picture.

I Know...
Leaves are smooth or dry and crisp and have different shapes, sizes and colours.

Some leaves change colour in the Autumn.

Safety
Look out for branches and stones that could cause a tripping hazard.

Equipment
Variety of leaves, twigs, stones, googly eyes.

Support Card

Materials: B8.4

Variation of Experience...

Sort leaves according to shape, size and colour.

Identify type of common leaves.

Use other natural materials such as twigs and stones to make pictures.

Make a picture of other woodland animals.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Questions:

How many different leaves can you find?

Can you sort these into big and small leaves or into piles of different shapes or colours?

Can you make a picture of an animal with leaves? How will you make the body and head?

Which leaves will you use to make the body and head – big or small? Which shape? Which colour?

Skills:

- Explores and observes through play.
- Asks questions arising from play activities.
- Uses their senses to acquire information.
- Provides oral descriptions of what was done and what happened.
- Demonstrates natural curiosity.
- Demonstrates reasoning skills by explaining choices and decisions.
- Respects living things and the environment.
- Demonstrates a developing understanding of science in the world around them.

My world of work

- Graphic Designer
- Artist

Story Link

SCN 0-20a
We're Going On A Leaf Hunt
by Steve Metzger

Materials:
Waterproof Roof

What to do:

To create a waterproof roof for a house made from loose parts, using sticks, leaves, moss, grass and other natural objects. Once the roof has been made, put in a tissue or paper towel inside the house, spray the roof with water and see if any gets onto the paper towel.

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. **SCN 0-15a**

I can talk about science stories to develop my understanding of science and the world round me. **SCN 0-20a**

I Wonder...
What will happen when water falls onto the material?

I See...
Different types of material react differently to water.

I Know...
Materials are all different. Some are water-proof and some are absorbent.

Safety
Do not put objects in mouth.

Equipment
Spray bottle, sticks, leaves, moss, grass, paper towel or tissue.

Support Card

Materials: B8.5

Variation of Experience...

Go on a rainy day walk. Talk about what clothes are the most suitable? Why?

Waterproof an umbrella/boot picture by sticking on a variety of materials and then spray some water on them to see which material is the most waterproof.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Questions:

What are the differences between the materials?
Can you see or feel any difference?
What do you think will happen to each of the materials when we spray water on them or hold them over our heads when we stand out in the rain?
Will the water be absorbed or not?
Will the house get wet or stay dry?
Can you think of any other improvements?
Can you group materials together according to their type or using your own criteria.

Skills:

- Asks questions and makes simple predictions.
- Makes suggestions about what to do to answer the selected question.
- Makes suggestions about what to do to answer the selected question.
- Provides oral descriptions of what was done and what happened.
- Relates findings to everyday experiences.
- Identifies and discusses new knowledge and understanding.
- Responds to questions about their investigation.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Engineer
- Design and Manufacturing
- Fashion Designer
- Textiles industry

Story Link

SCN 0-20a
If I Built A House by Chris Van Dunsen
Iggy Peck Architect by Andrea Beatty

predict
experiment
water -proof
absorbent
flexible
rigid
recycle
structure
design

Materials:
The Billy Goats Gruff Bridge

What to do:

The Troll has destroyed the bridge! Can you provide an alternative way for the three Billy Goats Gruff to cross the river so that they can get to the other side without getting wet?

Experiences and Outcomes:

Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes. **SCN 0-15a**

I Wonder...	I See...	I Know...
Which materials are strong and can be used to make a bridge?	Wood is a natural material that it is strong.	That the materials bridges are made from need to be strong to carry a load.

Safety
Be careful with smaller objects and ensure they are clean.

Equipment
Puddle or container to hold water, loose parts.

Support Card

Materials: B8.6

Variation of Experience...

Use large log circles, planks and other large natural objects to create a way across the river.

Look at different types of bridges.

Questions:

What are the differences between the materials?

Can you see or feel any difference?

What would happen if we put stones on the bridge?

How many stones can it hold before it collapses?

Are any materials weakened by water?

Skills:

- Explores and observes through play.
- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.
- Identifies and discusses new knowledge and understanding.
- Demonstrates natural curiosity.
- Demonstrates creative thinking and reasoning skills.
- Demonstrates a developing understanding of science in the world around them.
- Explores the ways in which people use science and science skills as part of their job.

My world of work

- Structural Engineer
- Civil Engineer

Story Link

SCN 0-20a
The Three Billy Goats Gruff
Rosie Revere, Engineer by Andrea Beatty

References

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Building your Curriculum: Outside and In (2011)

Building your Curriculum: Outside and In – Self reflection.

Curriculum for Excellence through Outdoor Learning (2020)

Improving Gender Balance Self- Evaluation Framework (Sept 2021)

Realising the Ambition (2020)

CfE Sciences, Experiences and Outcomes

CfE Sciences, Benchmarks

Reports And Guidance Documents

Putting Learners At The Centre. Ken Muir 2022

Successful Approaches To Learning Outdoors (FEB 2022) HMIE

With thanks to:

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Highland Science Framework

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info.ucandraw2@gmail.com

Useful Websites:

www.happyhooligans.com

www.sciencesparks.com

www.un.org/sustainabledevelopment/sustainable-development-goals/

Learning Through Landscapes

NAC STEM Outdoor Learning blog

Education Scotland Outdoor Learning Wakelet

Education Scotland Outdoor Activities For Families Wakelet

General (SWEIC Outdoor Learning) | Microsoft Teams
Use code gxyg9xu

SWEIC OL Materials (SWEIC Outdoor Learning) | Microsoft Teams
Use code gxyg9xu

Outdoor Science Resource

Skills

Inquiry and Investigative skills:

Plans and designs scientific investigations and enquiries

- Explores and observes through play.
- Asks questions arising from play activities.
- Makes simple predictions of what might happen.
- Makes suggestions about what to do to answer the selected question.

Carries out practical activities within a variety of learning environments

- Discusses obvious risks and takes appropriate steps to protect themselves and others.
- Uses their senses to acquire information.
- Measures using simple equipment and non-standard units.

Analyses, interprets and evaluates scientific findings

- Presents and sorts data/information, for example, using displays, photographs, simple charts and drawings.
- Provides oral descriptions of what was done and what happened.
- Recognises similarities, patterns and differences in the findings and links these to the original question.
- Discusses, with support, how the experiment might be improved.
- Relates findings to everyday experiences.
- Identifies and discusses new knowledge and understanding.

Presents scientific findings

- Communicates findings to others verbally and through drawings, photographs, displays and simple charts.
- Responds to questions about their investigation.

Outdoor Science Resource

Skills

Scientific analytical thinking skills:	• Demonstrates natural curiosity and shows development of basic skills of analysis in simple and familiar contexts, for example, through asking questions, experimenting, and making predictions. • Demonstrates creative thinking by offering suggestions and solutions to everyday problems. • Demonstrates reasoning skills by explaining choices and decisions..
Skills and attributes of scientifically literate citizens	• Talks about science, showing developing understanding of risks and benefits, and listens to the views of others. • Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly. • Demonstrates a developing understanding of science in the world around them. • Explores the ways in which people use science and science skills as part of their job.

Outdoor Science Resource

North Ayrshire Council – Early Years Milestones

Child's Forename and Surname		**Gender**	**M**	**F**
Establishment		**Child's SEEMIS Short (Admission) Code**		

Case excluded as child is following individual milestones ☐

	Aspect	Yes	Some-Times	Not Yet	Guidance Prompts
	1. Health And Wellbeing				
1.	Is happy, settled and engages in learning.				Happily settles to a range of nursery experiences and joins in with a variety of activities.
2.	Plays co-operatively, shares with others and takes turns.				Plays cooperatively with others, taking turns in games and in outdoor settings, sharing toys or snack without support.
3.	Shows self-control and copes with change (different situations).				Adapts to new situations, changes in daily routines, going out on visits. Works out conflict situations and can show skills in compromising and negotiating in play situations.
4.	Follows rules and routines within a variety of contexts.				Shows awareness of rules in tidying up, in different group contexts, when adapting to the routine of the day; will respond positively to established rules in the playroom.
5.	Uses role play to recreate or invent situations.				Plays imaginatively in role play situations, e.g. shop, home corner, using small world materials. Takes on roles and creates own 'stories' or invents own characters.
6.	Follows through toileting routines.				Goes to toilet and follows the routines without support e.g. washing their hands
7.	Identifies core feelings (happy, sad, angry or scared.)				Responds to different situations; real, play based or in reaction to stories, expressing moods and feelings through facial expression and verbal communication.
8.	Aware of others and able to show empathy.				Shows an awareness of the needs, concerns and feelings of others.

Outdoor Science Resource

North Ayrshire Council – Early Years Milestones

	Aspect	Yes	Some-Times	Not Yet	Guidance Prompts
	1. Health And Wellbeing				
9.	Able to jump, hop, skip, climb and balance.				Demonstrates skills in different movements in games, outdoor play, soft play, using large climbing apparatus.
10.	Able to throw and catch a ball with both hands.				Shows skill during games, outdoor play, playing with others or throwing and catching a ball him/herself.
11.	Manages fastenings independently e.g. coats, shoes.				Readily manages fastenings at different times of the day, e.g. on entry, going outside, going home, putting on an apron for painting and will persevere to problem solve in this situation e.g. zips, buttons and Velcro.
12.	Concentrates on activities with sustained interest.				Shows engagement with an activity which is meaningful to the child, has captured interest and is for an extended period of time.
	2. Listening, Talking, Reading And Writing				
13.	Uses sentences of 4-6 words and uses language for a variety of reasons.				Uses sentences such as "I want to play with the car" and uses language to request, to ask questions, to ask for help.
14.	Speaks clearly and fluently pronouncing most words and sounds				Can be understood by most adults , though might still have difficulty with the sounds r, j, th, ch and sh
15.	Recites a variety of rhymes, songs and poems from start to finish.				Joins in, can choose and follow a rhyme or song. Can independently recite a favourite rhyme, song or poem.
16.	Listens in a small group.				In everyday situations e.g. story, discussing the day's events, in problem solving activities, in locating information or resources or in planning, children are moving on from listening attentively 1:1.
17.	Listens and responds appropriately within a group, can take turns and use appropriate body language e.g. eye contact.				Is adaptable to different groupings and can focus and follow through conversations or instructions.

Outdoor Science Resource

North Ayrshire Council – Early Years Milestones

	Aspect	Yes	Some-Times	Not Yet	Guidance Prompts
	2. Listening, Talking, Reading And Writing				
18.	Listens and responds to who, what and where.				Listens and responds appropriately to open ended questions in everyday situations e.g. story, discussing the day's events, in locating information or resources.
19.	Listens and responds to when, why and how questions.				Listens and responds appropriately to open ended questions e.g. in problem solving activities, planning or talking about their own learning.
20.	Follows more complex instructions.				Follow 2/3 part instructions e.g. collect your jumper, put it on and stand by the door.
21.	Asks who, what, where, when, why and how questions.				Uses open ended questions in everyday situations.
22.	Listens and discriminates sounds.				Hears and can talk about sounds in the environment.
23.	Identifies some single sounds made by letters such as initial sound in name.				Can talk about the beginning sound and other sounds in child's name and names of other children. Joins in with "I Spy games and activities".
24.	Listens and recalls information.				In a range of contexts, e.g. story times, recalling a past event, children's profiles or a talking and thinking book.
25.	Talks about the sequence of events in a story or text using the language of order: after, next, last, first, what's missing, then.				Talking about and predicting storylines, in sequencing a picture or pattern. Using the language in everyday situations e.g. who is first, next, etc. in getting ready for activities, in taking turns, in outdoor play etc.
26.	Knows difference between letters and numbers.				Recognises that letters make words and numbers are for counting.
27.	Recognises familiar signs, logos and labels in their environment.				Talks about signs etc. in books, play contexts, around the playroom, in the outside environment, and what they mean e.g. a big book of environmental print, labels in different areas of the room, shop signs etc. Uses labelling to return resources.

Outdoor Science Resource

North Ayrshire Council – Early Years Milestones

	Aspect	Yes	Some-Times	Not Yet	Guidance Prompts
	2. Listening, Talking, Reading And Writing				
28.	Recognises their name.				Identifies their name in a variety of contexts e.g. coat peg, snack card, name label.
29.	Familiar with book words (title, page, cover, author and illustrator).				Uses in a variety of contexts e.g. making their own books, writing their own stories, story time.
30.	Retells a familiar story.				Is able to recite a story using pictures as a guide. Retelling includes a start, middle and end.
31.	Uses small tools effectively and with control, e.g. scissors, tweezers & paintbrushes, computer controls.				Cuts out for different reasons, moving paper or scissors to control the cutting. Transfers small objects with tweezers from one container to another. Use different sized paintbrushes to create lines, make a pattern or create a picture. Presses individual keys on computer and uses different functions to play a game.
32.	Draws a detailed person with head, trunk (body), arms, legs and features.				In different drawing activities and using a range of materials, e.g. paint, pencils, pens.
33.	Copies shapes and letters.				Through mark marking in their play children show that they can copy some of the letters or simple shapes around them e.g. line, circle, cross, square. They are most likely to want to attempt to copy the letters of their name or letters that are on display
34.	Copies/writes some letters in random order.				In play situations or when attempting to write his/her name, the child shows the ability to write/mark-make starting from left to right.
	3. Numeracy And Mathematics				
35.	Names red, blue, green and yellow.				Through everyday play, in creating pictures, in matching activities, in comparing colours of clothes etc. children name red, blue, green, yellow and associate objects with these colours. Children may also be naming other colours.
36.	Matches and sorts using 1 criterion and is able to explain what they are doing.				In everyday situations they notice similarities and differences to help them match and sort in a variety of ways (by colour, shape, size and category). They can explain what goes where and why.

	Aspect	Yes	Some-Times	Not Yet	Guidance Prompts
	3. Numeracy And Mathematics				
37.	Copies a simple pattern.				Matching and copying a simple pattern e.g. red, blue, red, blue and making this with objects, painting, drawing tools, beads, pegs etc. (not expected to continue the pattern)
38.	Estimates in contexts of number and measurement using the appropriate language.				Uses estimating words bigger than, smaller than, higher, lower, nearly, more, less, heavier, lighter and about in context.
39.	Describes some features and properties of shapes e.g. straight, curved, corner and edge during play.				Through everyday play as children identify some 2D shapes and 3D objects they can talk about their features.
40.	Is number confident to 5 ; forwards and backwards.				Counting forwards and backwards in games, rhymes and songs.
41.	Able to touch and count a set of objects using 1:1 correspondence to 5.				Everyday counting with matching each count to an object e.g. snack time, handing out pens, setting the table, putting objects away one at a time, putting beads on a string or pegs in a board.
42.	Identifies and uses numerals to 10 during play experiences.				Recognises numbers around them in the environment, on numbers tracks on the floor, in different areas of the room.
43.	Seeks multiple solutions to a question, task or problem.				Recognises, understands, and analyses a problem making suggestions to generate ideas and try different approaches to solve a problem. Is able to ask questions and identify by ways to find answers. Can build on past knowledge and transfer skills from one activity to another. Makes decisions and solve problems with others.

Outdoor Science Resource

North Ayrshire Council – Early Years Milestones

The aim of the checklist is to:

- collect data on children's developmental milestones across North Ayrshire Council with a common format for recording
- to inform wider gathering of information within the Early Years Collaborative in order to report findings
- help identify gaps in children's development and learning experiences
- identify particular needs of individual children and plan next steps for their development
- provide information useful in transition arrangements to Primary One

Implementation of the checklist should take place in May 2021 using information gathered from ongoing and existing assessments and observations of children's learning in everyday contexts.

The guidance prompts may be helpful in identifying some of these contexts where children may demonstrate the evidence for recording your findings.

Use the Word document to make notes and refer to the guidance prompts, but do not send completed paper forms to the authority. This data collection is entirely electronic/online.

Reference Materials, which were used:

Mary Sheridan

The Leuven scale for wellbeing

Renfrewshire assessment document

Health ASQ 54 month assessment

I Can progress check

Completion Instructions

Complete the SmartSurvey form for each pre-school child (stage N5) as per the tally sheet attached.
https://www.smartsurvey.co.uk/s/EYMilestones2021/

1. Click on the hyperlink in the email you have received or copy and paste the link in the address line of your internet browser
2. If you wish to evaluate a child that has been missed from the tally sheet please call the Data Team and we will provide you with the pupil short (admission) code from SEEMIS.
3. You should tick one box (either "Yes", "Sometimes", or "Not Yet"), and ensure all points are covered. Fill in one "survey" entry per child (including deferred entry children).
4. If the child is following individual milestones (for example, due to significant additional support needs) tick "Yes" in appropriate question and you will be taken directly to the end of the evaluation page. Any additional comments are optional.
5. To enter the evaluation for the next pupil you will have to go back to the original link and click it again or copy-paste the link in the address line of your Internet browser. Alternatively, save the link in your Favourites (bookmarks) and you can go back to the link for every new entry you make.

Before submitting each form please check that you have completed correctly the following:

Child's SEEMIS short code ☐

Establishment ☐

Gender ☐

Deferred/not deferred status ☐

Marked responses for all statements ☐

For any queries please contact:
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01294 324498, 01294 324453 or 01294 324434