Holmesdale
Yearly Knowledge and Skills Progression
Subject: Science We follow the KAPOW Curriculum for Science
Year group: 2

We have identified 3 BIG IDEAS that run through our science curriculum. These are evident threads that run through the year groups – 1. Cause and effect. 2. Change. 3. Structure and functions. These are highlighted throughout the maps.

Materials: Everyday Materials	Animals incl. Humans: Lifecycles and Health	Living Things: Habitats	Living Things: Microhabitats	Plants: Plant Growth	Making Connections: Plant Based Materials
					
Comparing the suitability of materials by carrying out tests and recording data.	Identifying the stages of animal life cycles and carrying out tests to record growth.	Discovering plants and animals in a range of habitats.	Asking questions about minibeasts and using scientific enquiry methods to find answers.	Investigating seeds, bulbs and plants and recognising the conditions required for germination and healthy plant growth.	Consolidating knowledge of materials and plant growth through enquiry.

Autumn Term 1 – Everyday Materials

Knowledge:

To recognise that objects are made from materials that suit their uses.
To recognise that objects are made from materials that suit their uses.
To recognise that the shape of some solid objects can be changed.
To compare the suitability of materials for particular uses.
To recognise that the strength of some materials can be changed.
To compare the suitability of materials for particular uses.

Skills:

To recognise that objects can be grouped.
To record data in a table.
To gather data and use it to answer a question.
To record data in a block graph.
To recognise that some materials are harmful to the environment.

Key Vocabulary:

fabric	stretch
glass	squash
material	twist
metal	compare
object	data
plastic	stretchy
property	block graph
rock	non-standard unit
suitable	record
wood	strong
bend	environment
elastic	pollution
flexible	recycle
pull	reduce
push	reuse

End points:

By the end of the unit, year 2 children to know:

- Objects are made from materials that suit their uses.
- One material can be used for a range of purposes.
- Different materials can be used for the same purpose.
- A push or pull must be applied to change the shape of a solid object.
- Solid objects can be stretched, twisted, bent or stretched.
- Different solid objects may take different amounts of force to change shape.

By the end of the unit, year 2 children to have skills in:

- Posing questions: Recognising there are different types of enquiry (ways to answer a question).

- Measuring (quantitative): Using non-standard units to measure and compare.
- Recording (tables): Using a prepared table to record results, including numbers.
- Grouping and classifying: Grouping based on visible characteristics.
- Graphing: Representing data using pictograms and block graphs.
- Analysing and drawing conclusions: Using their results to answer simple questions.

How can we enrich this at Holmesdale?
Outdoor learning
Woodland
Investigations

Autumn Term 2 – Animals incl. Humans

Knowledge:
To identify different stages of the human life cycle.
To know which offspring come from which parent animal.
To observe and measure growth in humans.
To identify and list the basic needs for survival for humans and animals.
To recognise the importance of exercise and personal hygiene.
To identify how to have a balanced diet.

Skills:
To use simple measuring equipment.
To use secondary sources to research.
To make observations over time.
To interpret collected results.

Key Vocabulary:

adult	growth
baby	height
child	measure
growth	air

offspring stage teenager toddler butterfly caterpillar egg frog froglet lamb life cycle live young pupa sheep spawn tadpole	basic needs essential food survive water exercise fitness germs health hygiene carbohydrates dairy fruit oils proteins spreads vegetables

End points:

By the end of the unit, year 2 children to know:

- Baby, toddler, child, teenager and adult are human life cycle stages.
- There are differences in the life cycles of different animals.
- Humans grow as they age.
- The basic survival needs of animals are air, water and food.
- Personal hygiene prevents the spread of germs.
- Washing our hands and changing our clothes are ways to keep clean.
- Exercise can improve performance and well-being.
- The five food groups are carbohydrates, fruits and vegetables, dairy and alternatives, protein and oils and spreads.
- Humans require a balanced diet to stay healthy.

By the end of the unit, year 2 children to have skills in:

- Posing questions: Recognising there are different types of enquiry (ways to answer a question).
- Measuring (quantitative data): Beginning to use standard units and read simple scales to measure and compare: Beginning to use simple measuring equipment to make approximate measurements.
- Researching: Gathering specific information from one simplified, specified source.

- Recording (tables): Using a prepared table to record results, including numbers.
- Analysing and drawing conclusions: Using their results to answer simple questions.

How can we enrich this at Holmesdale?
Outdoor learning
Woodland

Spring Term 1 – Living Things: Habitats

Knowledge:
To identify some of the characteristics of living things.
To recognise the difference between things that are alive, were once alive or have never been alive.
To identify plants and animals in different habitats.
To identify how a habitat provides animals and plants with what they need to survive.
To recognise how animals and plants depend on each other.
To recall how animals get their food from plants and other animals.

Skills:
To classify objects into groups.
To carry out research to find answers to questions.

Key Vocabulary:

life processes	mammal
alive	omnivore
analyse	predator
classify	shelter
dead	camouflage
coastal	depend
habitat	nutrition
ocean	prey
predator	producer

rainforest woodland carnivore diet herbivore	shelter energy food chain producer shelter

End points:

By the end of the unit, year 2 children to know:

- Some of the life processes, including movement, reproduction, sensitivity, growth.
- The difference between things that are living, dead, and things that have never been alive, using some of the life processes.
- A variety of plants and animals and describe some differences.
- A variety of habitats, including woodland, ocean, rainforest and coastal.
- A habitat is the environment where an animal or plant lives/grows because it provides what living things depend upon each other (e.g. for food, shelter).
- A food chain can be used to show how animals obtain food from eating either plants and/or other animals.
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By the end of the unit year 2 children to have skills in:

- Posing questions: Exploring the world around them and raising their own simple questions: Recognising there are different types of enquiry (ways to answer a question).
- Researching: Gathering specific information from one simplified, specified source: Recording (tables); Using a prepared table to record results, including simple observations.

Grouping and classifying: Grouping based on visible characteristics.

How can we enrich this at Holmesdale?

Outdoor learning
Woodland

Spring Term 2 – Living Things: Microhabitats

Knowledge:

To recognise that living things live in habitats to which they are suited.
To identify a variety of flowering plants.

Skills:
To classify a variety of minibeasts.
To recognise how scientists answer questions.
To gather and record data to answer a question.
To ask questions and plan how to carry out an experiment.
To carry out an experiment and record data in a table.

Key Vocabulary:

characteristics	condition
classification key	data
classify	food chain
criteria	method
identify	test
invertebrate	comparative/fair test
microhabitat	conclusion
minibeast	condition
criteria	method
microhabitat	results
research	tally
survey	botanist
	species

End points:
By the end of the unit, year 2 children to know:

- A variety of plants and animals and describe some differences.
- A habitat is the environment where an animal or plant lives/grows because it provides what they need to survive.
- A microhabitat is a very small habitat (e.g. under stones, logs and leaf litter).
- That living things depend upon each other (e.g. for food or shelter).

By the end of the unit, year 2 children to have skills in:

- Posing questions: Exploring the world around them and raising their own simple questions. Recognising that there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions.
- Planning: With support, deciding if suggested observations are suitable. Ordering a simple method.

- Predicting: Suggesting what might happen, often justifying with personal experience.
- Observing (qualitative data): Using their senses to describe, in simple terms, what they notice or what has changed
- Researching: Gathering specific information from one simplified, specified source: Recording (tables): Recording results using simple observations and tally frequency.
- Classification keys: Organising questions to create a simple classification key.
- Analysing and drawing conclusion: Using results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.

How can we enrich this at Holmesdale?
Outdoor learning
Woodland
Science Week

Summer Term 1 – Plants: Plant Growth

Knowledge:
To recognise that seeds need certain conditions for growth.
To recognise that seeds and bulbs contain what they need to grow into a plant.
To describe what seeds need to germinate.
To identify stages of a plant's life cycle.
To recognise what plants need for healthy growth.
To recognise that humans have a responsibility to care for plants.

Skills:
To plan comparative tests.
To measure with a ruler.
To record data in a table.
To draw and label diagrams.

Key Vocabulary:

comparative test	nutrient
conclusion	plant
condition	seed
growth	seed coat

measure	shoot
observe	stem
seed	germinate
shoot	wilt
bulb	diagram
energy	flower
growth	life cycle
leaf	roots
observe	seedling

End points:

By the end of the unit, year 2 children to know:

- Seeds and bulbs grow into seedlings by producing roots and shoots.
- Seedlings grow into mature plants by developing parts such as roots, stems, leaves and flowers.
- Seeds need water and warmth to germinate.
- Plants need water, light and a suitable temperature for growth and health.

By the end of the unit, year 2 children to have skills in:

- Posing questions: Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions.
- Planning: Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable.
- Predicting: Suggesting what might happen, often justifying it with personal experience.
- Observing: Using their senses to describe, in simple terms, what they notice or what has changed.
- Measuring (quantitative data): Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements.
- Recording (diagrams): Drawing and labelling simple diagrams: Recording (tables): Using a prepared table to record results including: numbers; simple observations.
- Analysing and drawing conclusions: Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.

How can we enrich this at Holmesdale?

Outdoor learning
Woodland
Gardening (Mrs Hill)

Summer Term 2 – Making Connections

Knowledge:

To describe how materials can be reused.
To identify human-made and natural materials.
To identify suitable materials based on their properties.
To identify a material to help plant growth.
To choose materials to create a suitable plant pot.

Skills:

To understand how the 3 'r's contribute to sustainable products.
To group based on characteristics.
To perform a test and gather data.
To use observations to answer a simple question.
To identify and classify living things.

Key Vocabulary:

flexible	test
material	tin foil
plastic	germinate
property	growth
recycle	result
reduce	seed
reuse	soil
strong	sunlight
waterproof	test
difference	warmth
fabric	water
human-made	alive
invention	dead
Kevlar	excretion
natural	growth

paper wood bubble wrap eco-friendly result suitable	life process movement nutrition reproduction sensitivity

End points:

By the end of the unit, year 2 children to know:

- Plants:
- Seeds and bulbs grow into seedlings by producing roots and shoots. Seeds need water and warmth to germinate. Plants need water, light and a suitable temperature for growth and health.
- Living things and their habitats:
- Some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition. The difference between things that are living, dead and things that have never been alive, using some of the life processes.
- Materials:
  Why objects are made from particular materials and to give examples of their suitability. One material can be used for a range of purposes (and to give examples.) Different materials can be used for the same purpose (and to give examples.) Why certain materials are unsuitable for particular objects. Solid objects can be squashed, bent, twisted or stretched.
- Science in action:
- About famous scientists throughout history. About the work of modern-day scientists.

- By the end of year 2, children to have skills in:
- Posing questions: Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions.
- Planning: Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable.
- Predicting: Suggesting what might happen, often justifying it with personal experience.
- Observing (qualitative data): Using their senses to describe, in simple terms, what they notice or what has changed.
- Researching: Gathering specific information from one simplified, specified source.
- Recording (tables): Using a prepared table to record results including:
- numbers; simple observations.
- Grouping and classifying: Grouping based on visible characteristics.

- Analysing and drawing conclusions: Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.

How can we enrich this at Holmesdale?
Outdoor learning
Woodland
Gardening (Mrs Hill)
Trip to Wakehurst Place

Assessment

YEAR 2

1. Knowledge: Children complete Kapow quizzes after every unit/half termly. Please note that these should be low stakes and can be peer- marked. Record these scores on an excel spreadsheet
2. Scientific Enquiry: Teachers RAG-rate every child after every unit/half termly (GD, M, B) – being particualrly mindful about the enquiry foci for the unit - on the same excel spreadsheet.

Overall Summative Judgement to be recorded on Arbor at the end of the year: GD (greater depth), M (meeting), or B below meeting).

Diversity and Cultural Capital

Climate change, reuse, reduce, recycle.
Comparing different cultures and habitats around the world.
Science Week.

Barriers & Scaffolds

Possible barriers:
Limited prior exposure to scientific vocabulary.

Difficulty understanding abstract terms (e.g. living vs non-living, habitat, suitable material).
EAL learners may not have home language equivalents for scientific words.
Confusion between everyday vs scientific meanings (e.g., volume, property, force).
Difficulty linking new knowledge with prior learning.
Overwhelm when too many steps are introduced at once.
Challenges with multi-stage tasks (e.g., planning a fair test).
Difficulty using rulers, syringes, measuring spoons, pipettes.
Labelling diagrams with accuracy.
Writing speed impeding independent recording.
Losing track of multi-step inquiry tasks.
Forgetting instructions for observation over time.
Struggling with transitions during hands-on learning.
Struggling to generate or understand questions.
Finding it hard to predict using prior knowledge.
Difficulty measuring accurately or reading scales.
Challenges interpreting and comparing results.
Difficulty retaining names, features, or comparisons.
Forgetting steps in germination or lifecycles.
Confusion between similar scientific terms (absorbent/ waterproof).
Sensory overload during investigations (noise, movement).
Difficulty with unexpected outcomes.
Accessing outdoor environments (mobility, sensory sensitivity).

Possible scaffolds:
Pre-teach key vocabulary using real objects, images, and actions.
Use Now/Next and dual-coded picture cards.
Provide sentence stems, e.g.: "I observe that…" "This material is suitable because…" "The plant needs ___ to grow."
Use word banks on tables during investigations.
Repeat vocabulary through songs, stories, drama, actions and chants.
Use small-step modelling ("I do → we do → you do").
Revisit year 1 learning explicitly before year 1 learning (e.g. living vs non-living → habitats).
Provide worked examples: simple diagrams of food chains, labelled plant diagrams.
Reduce cognitive load by providing structured templates: e.g. scaffolded planning sheet for comparative tests.
Provide alternatives to writing: stampers, sorting mats, photos with verbal commentary, 'cutting & sticking'.
Use digital tools (tablets to take photos and annotate).

Give pre-drawn diagrams for children to label.
Use thick pencils, chunky tweezers, child-safe droppers.
Encourage paired roles: one child measures, the other records.
Provide visual task sequences (1: Observe → 2: Test → 3: Record → 4: Conclude).
Use timers, sand timers, or traffic-light systems during investigations.
Give clear and repeated modelling of each stage.
Assign roles: Scientist, Recorder, Equipment Manager, Reporter.
Offer chunked tasks, stopping between each stage to review outcomes.
Provide question prompts: "What will happen if we…?" "How could we test…?"
Give prediction sentence frames with picture cues.
Offer guided measuring: colour-coded rulers, standard units strips.
Use structured comparison tables (Sorting into "changed / didn't change", etc.).
Use guided analysis questions, e.g.: "What do you notice?" "Did anything surprise you?" "How do your results compare with your prediction?"
Use retrieval routines: 2-minute quizzes, picture recalls, pair-share.
Create Knowledge Organisers with key facts and vocabulary.
Use cumulative comparisons (e.g., "What's the same / What's different?").
Offer low-stimulus versions of activities (quiet zone table, headphones).
Provide predictable routines, visual cues for each stage.
Offer adapted outdoor tasks (e.g., tray-based microhabitats).
Use tactile and multi-sensory resources (natural objects, textured materials).