Our Science Curriculum

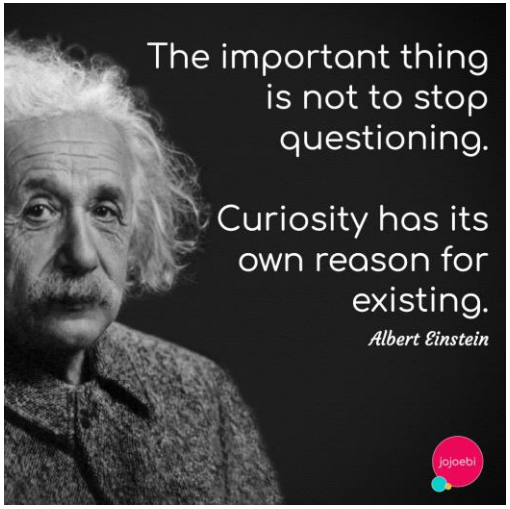
Intent of the Science Curriculum

Through our high quality CLICK curriculum we intend to develop children's understanding of the world around them whilst also acquiring and developing specific skills and knowledge. This will enable children to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science, today and for the future. Learning in science is taught through systematic investigations of the physical, chemical and biological aspects of their lives. Through investigative science we intend for pupils at Netherhall Infant School to continue to deepen their respect for the natural world around them and all its phenomena while also increasing their care and appreciation of it. We aim to foster and develop our pupils' curiosity in the subject and ensure our curriculum provides children with the key skills to reach their potential in learning.

All children are encouraged to develop and use a range of skills including making observations, planning and investigating, while also being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged.

Our milestone document is carefully thought out to include the statutory components of the national curriculum to ensure all children are progressing in their own learning journey throughout our schools.

Implementation of the Science Curriculum



Subject: Science Nursery

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	**Nursery Rhymes**	**Brilliant Birds**	**Pets**	**Splash**	**Transport**	**Mini beast Madness**
Focus/ Content	Wild Area : Collect natural materials Find out if an egg can really sit on a wall! Knowing what makes them unique, similarities/differences with friends	Looking outdoors for birds, exploring where they live, eat. Sorting swim/fly animals Observing puffin movement and behaviour Knowing some facts about owls eg behaviour and eye colour. Sorting daytime and night-time animals. Bird life cycle	Talk about pets tell everyone their name what they are and what they like to do/eat Understanding of a pet being an animal that can live in our homes. What does a pet need to be healthy/happy? Matching Animal Cards: animals and their babies Talking about how wild animals can't be pets. Animal's characteristics, eyes, mouth, nose, ears etc. H/a why do they have...?	NF book about how water is important for all living things and comes from the sky as rain. Simple explanation of the water cycle using big book 'The drop goes Plop' Watching clips and looking at photographs of the sea creatures Billy saw in his bucket. Floating and sinking focus - testing objects and making predictions, link to the story Correct names for parts of a boat. Link back to floating and sinking - why does a boat float? Moving the boats we have made by wind power! Observing how water makes a plant grow (cress seeds)	Naughty Bus freezing toys Look at where different transport can be seen Reflection- what can we see	Talking about which animals can hatch out of eggs. Find out more about the insects we saw (power point about what they eat/ where they like to live) Make observations about the bugs from the visit. Look at the life cycle of a butterfly. Observe different patterns and marking on butterflies. Wild Area visit to look for spider webs and bugs Extra Science: Grow a sunflower
Skills **EYFS - Three and Four-Year-Olds**	I can talk about what I see, using a wide vocabulary. I can begin to understand the need to respect and care for the natural environment and all living things. I can talk about why an egg can or cannot sit on the wall	I can talk about what I see, using a wide vocabulary. I can explore how things work. I can understand the key features of the life cycle of a bird I can sort things that happen in the day/night I can name some facts about owls/birds	I can talk pet and animals using a wide range of vocabulary I can plant seeds and care for growing plants. I can understand the key features of the life cycle of a pet I can begin to understand the need to respect and care for animals	I can use all my senses in hands-on exploration of natural materials. I can explore collections of materials with similar and/or different properties. I can talk about what I see, using a wide vocabulary. I can explore how things work. I can understand the key features of the life cycle of a plant. I can talk about the differences between materials and changes they notice.	I can use all my senses in hands-on exploration of natural materials. I can explore collections of materials with similar and/or different properties- reflective I can talk about what I see, using a wide vocabulary. I can explore how things work. I can talk about the differences between materials and changes they notice.	I can use all my senses in hands-on exploration of natural materials. I can talk about what I see, using a wide vocabulary. I can plant seeds and care for growing plants. I can understand the key features of the life cycle of a plant and an animal. I can begin to understand the need to respect and care for the natural environment and all living things.
Knowledge	I know how to talk about the different natural materials I explore using my senses I know how to talk about different forces	I know how to talk about what they see, using a wide vocabulary I know the key features of the life cycle of an animal.	I know why we need to respect and care for the natural environment and all living things.	I know how to plant and care of seeds and growing plants I know how to name and talk about the different natural materials I explore using my senses I know how to talk about different forces they can feel throughout exploration	I know about the differences between materials and changes they notice I know how to talk about collection of different materials comparing similarities and differences	I know how to talk about the different natural materials I explore using my senses I know the key features of the life cycle of a butterfly

	they can feel throughout exploration I know how some things work through exploration			I know why we need to respect and care for the natural environment and all living things. I know the key features of the life cycle of an plant I know about the differences between materials and changes they notice	I know how to talk about the different natural materials I explore using my senses	
Vocabulary ***Ambitious vocabulary*** ***previous vocabulary***	Spider, web, garden, Head, body, arm, leg, eyes, ears, nose, mouth, hands, feet, same, different,	birds, tree, nest, beak, wings, feathers, fly, seeds, worms, puffin, owl, blackbird, robin, seagull, animal, dig, swim, fly, fish, food, egg,	pets, day time, tea time, night time, dog, cat, rabbit, hamster, guinea pig, tortoise, kennel, hutch,	boat, mast, sail, float, sink,		insects, slug, snail, woodlouse, worm, butterfly, dragonfly, mini beast, shell, antennae, sunflower, plant

Subject: Science Reception

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Friends and feelings	People who help us	What's is like far away	Growing	Traditional tales	Down on the farm
Focus/ Content	**Autumn Day- seasonal** Comparing the wild area changes Tree collage Mix media Autumn collage Feeling naming	Healthy teeth- how to look after teeth and healthy foods x-ray and naming different body parts/bones looking after bodies	Identify animals. Comparing animal habitats. Winter seasonal day. Melting/freezing ice Melting chocolate and chocolate kebabs	Seasonal changes in wild area Observational drawings of a daffodil. Naming British flowers/plants (Daisy, Daffodil, Bluebells, Snowdrop) Make a seed packet Labelling basic parts of a plant and what they need to grow. Fairy Cress gardens Planting (garden glove) Lifecycle- frog/sunflower	Life cycles of humans Making healthy porridge Traditional tale experiments- waterproof capes and gummy bears	Identify farm animals. What animals live on the farm? Animals and their young. Where does our food come from? Summer seasonal day Bread tasting and making Life cycles- hen and ladybird
Skills	I can describe what they see, hear and feel whilst outside. I can explain the effect of changing seasons on the natural world around me	I can talk about and manage my own basic hygiene and personal need I can talk about why I need to brush my teeth and how I can label different parts of the body and name them on a x-ray	I can explore the natural world around me and make observation of animals. I can describe what they see, hear and feel whilst outside. I can talk about some changes in states of matter (melting, freezing) I can compare Antarctica/Africa and talk about how they are the same/different to UK I can make observational drawing of penguins and name the different features	I can explore the natural world around me and make observation of plants. I can describe what they see, hear and feel whilst outside. I can make observational drawing of daffodil and name the different parts I can order and lifecycle and name/compare the different stages	I can talk about some changes in states of matter during an experiment I can predict what will happen in an experiment I can talk about what contributes to my health and wellbeing and talk about healthy eating I can order and lifecycle and name/compare the different stages	I can explain the effect of changing seasons on the natural world around me I can recognise and talk about how some environments that are different to the one in which I live I can order and lifecycle and name/compare the different stages
Knowledge	I know the season is Autumn and can talk about what I might see I know the names of the different parts of my face	I know different parts of my body and can what I use them for I know that fingerprints are all different I know what contributes to my health and wellbeing and can talk about good sleep habits, healthy eating, tooth brushing, physical exercise	I know the season is winter and can talk about what I might see, feel and hear I know the difference between melting and freezing (ice, chocolate) I know facts about how a penguin habit, movement, diet and appearance I know the animals that live in the savannah and what a savannah is I know some environments that are different to the one in which they live.	I know the season is Spring and can talk about what I might see, feel and hear I know the 4 main parts of plants I know what a plant needs to survive I know what is needed in a healthy diet I know exercise helps to keep my body healthy I know the names of British flowers- Daisy, Daffodil, Bluebells, Snowdrop I know the lifecycle of frog and sunflower	I know the name of different materials and can describe why I would/wouldn't build a house with them I know the life cycle of a human I know about healthy choices when making healthy porridge I know what happens when I add water to a gummy bear and can talk about the changes I know what waterproof means and can name some waterproof materials	I know the season is summer and can talk about what I might see, feel, hear I know the names of animals that live on a farm I know which food produce come from animals I know the steps to make bread I know the name of farm animals and their young
Vocabulary ***Ambitious vocabulary*** ***previous vocabulary***	Autumn, leaf, red, brown, yellow, orange, season, changes, face- mouth, eye, nose, ears, eyebrow, mad, happy, sad, worried, excited	Teeth, mouth, brushing, healthy, toothpaste, x-ray, bones, arm, leg, head, spine, ribs, chest, fingerprints,	hot, cold, weather, animals, (range of polar animals) (range of jungle animals) savannah, artic, melting, freezing, penguins- flippers, beak	plants, leaf, stem, flower, roots, Daisy, Daffodil, Bluebells, snowdrop, spring, grow, frog/frogspawn/lifecycle/tadpole, water, sun, air	human, baby, adult, experiment, predict, healthy, eating, diet, waterproof	growing, farm, range of farm animals and the names of their young, barn, stable, coop

Subject: Science Year 1

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Getting to know me and my world.	A Toy's Story	Our Animal Adventures	To infinity and Beyond	Bright lights, Big city.	Ready, Steady, Grow
Focus/ Content	- CREST award- Rainbow collectors. - Body parts, labelling parts of the body. - Skeletons and bones (linked to Literacy text Funny Bones) - Five senses and related body parts. - Seasonal changes.	- CREST award- Music maker - CREST award- Speedy scooters - Everyday materials, testing different materials for the roof of a Lego house. - Describing/identifying the properties of materials. - Seasonal changes	- CREST award- Animal adventure. - Identifying and classifying animals. - Comparing animal groups. - Looking at the structures of different animals. - Seasonal changes. - Light sources - CREST award- Sneaky shadows - **Inspiration day- Visit from the animal man**	- CREST award- Be seen be safe. - Rocket experiment as an investigative experiment/skills. - Seasonal changes - **Inspiration day- Visit from ~~Wonderdome~~**	- CREST award- Tea bag trouble. - Making a parachute - Seasonal changes.	- Labelling parts of a plant. (Leaf, roots, stem/stalk, flower, petals, bud, pollen, seed. Class Diary - Observational drawing of a Pansy, planting in the wild area. - CREST award- Discovery bag (Trees). - Evergreen/deciduous trees. - Exploring how roots work by changing the colour of the water. - Save the Bees project, seed packet and instructions. - Seasonal changes. - **Inspiration day- Visit to Beaumont Park??**
Skills	I can use the skills of working scientifically to explore Animals including humans the body and 5 senses.	I can use the skills of working scientifically to explore different Materials	I can use the skills of working scientifically to explore and classify Animals incl. Humans.	I can use the skills of working scientifically to explore fair tests.	I can use the skills of working scientifically to explore Materials and their properties and uses.	I can use the skills of working scientifically to explore Plants.
Ongoing each term	***Working Scientifically*** *I can ask simple questions and recognise that they can be answered in different ways.* *I can observe closely using simple equipment.* *I can perform simple tests.* *I can identify and classify.* *I can use my own observations and ideas to suggest answers to questions.* *I can gather and record data to answer questions.*		**Seasonal Changes** I can observe changes across the 4 seasons I can observe and describe weather associated with the seasons and how day length varies.			
Knowledge	**Animals including Humans** I know the names of and can identify, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**Everyday Materials** I know how to distinguish between an object and the material from which it is made. I know the names of and can identify a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I know the simple physical properties of a variety of everyday materials and can describe them. I know how to compare and group together a variety of everyday materials on the basis of their simple physical properties.	**Animals including Humans** I know the names of and can identify a variety of common animals including fish, amphibians, reptiles, birds and mammals. I know the names of and can identify a variety of common animals that are carnivores, herbivores and omnivores. I know how to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).		**Everyday Materials** I know how to distinguish between an object and the material from which it is made. I know the names of and can identify a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I know the simple physical properties of a variety of everyday materials and can describe them. I know how to compare and group together a variety of everyday materials on the basis of their simple physical properties.	**Plants** I know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I know how to identify and describe the basic structure of a variety of common flowering plants, including trees. **Seasonal Changes** I know the changes across the four seasons. I know the seasons and weather associated with the seasons and how day length varies.
Vocabulary	Head, neck, body, eyes, ears, mouth, teeth, leg, arm, knees, ankles, foot, toes, shoulder, elbow,	Object, material, plastic, wood, glass, metal, water, rock, brick, paper, fabric,	Head, body, eyes, ears, mouth, teeth, leg, tail, wing,	Investigate, investigative skills,	Object, material, plastic, wood, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card,	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of

Ambitious vocabulary ***previous vocabulary***	bones, skeleton, senses, touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue, record, investigate, weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length	elastic, foil, card, cardboard, rubber, wool, clay Properties: hard, stretchy, soft, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through, question, answer, predict, observe, identify, classify, compare, test pattern, gather, experiment, data Scientists. Weather: continue	claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate, invertebrate group, diet, classify, label, compare, gather, record, investigate Weather: continue	experiments, tests, record data Weather: continue	cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through, question, data, answer, predict, test, observe, identify, classify, compare, pattern, gather, experiment, weather: seasonal change in the environment	trees in the local area, names of specific plants: Rose, Tulip, Buttercup, Pansy, evergreen and deciduous plants/trees, similarities, differences, Weather: continue

Subject: Science Year 2

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Wonders of the World If you had a magic carpet where would you go?	African Adventure What is it like to live in Africa?	Ahoy there! What is it like to be a pirate	London's Burning! What was it like in London in 1666?	Glorious gardens! Where and how do plants grow?	Transport Travelling, trains and the Titanic!
Focus/ Content	Materials Suitability of materials. Testing materials by squashing, twisting, bending and stretching. Investigate to test suitable materials for a silly scientist Used the explorer experiment to insulate water bottles (explorers) and used thermometers to read temperature	Animals including humans Identify living, non-living and once living. Identify a range of habitats and explain why they are suitable for animals. Perform an insect habitat experiment. Identify food chains and diets of different animals. Crest star award – starting sounds. Crest star award – slippery shoes.	Living things in their habitat Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise. Describe the importance for humans of eating the right amounts of different types of food. Describe the importance for humans of eating the right amounts of hygiene. - Crest star award - Be safe be seen.	Working scientifically How does a fire work? CREST star award Muddy mess - Develop working scientifically skills through investigation.	Plants Walk round school and name and identify plants. Life cycle of a plant. (possible visit to garden centre to buy a plant) Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Experiment over time (using cress) Experiment relating to the needs of a plant. Identify plant habitats. Plant diary ongoing - bean	Working scientifically How is steam produced? What makes a vehicle start and stop? How do boats float? - How do aeroplanes stay in the air?
Skills	I can use the skills of working scientifically to explore materials.	I can use the sills of working scientifically to explore animals including humans. I can Use the sills of working scientifically to explore seasonal changes and weather patterns.	I can use the sills of working scientifically to explore living things and their habitats.	I can perform simple tests. I can use the sills of working scientifically to explore seasonal changes and weather patterns.	I can use the sills of working scientifically to explore Plants.	I can use the sills of working scientifically to explore and forces and states of matter. I can perform simple tests. I can use the sills of working scientifically to explore seasonal changes and weather patterns.
Ongoing each term	**The skills of Working Scientifically** I can **ask simple questions** and recognise that they can be answered in different ways. I can **observe** closely using simple equipment. I can **perform** simple tests. I can **identify and classify**. I can use my **own observations and ideas to suggest answers** to questions. I can **gather and record data to answer questions.**					
Knowledge	**Uses of Everyday Materials** I know and can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I know the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	**Animals including Humans** I know that animals, including humans, have offspring which grow into adults. I know the basic needs of animals, including humans, for survival (water, food and air). I know the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Seasonal Changes** I know of the changes across the 4 seasons. I know the weather associated with the seasons and how day length varies.	**Living things and their Habitats** I know how to compare the differences between things that are living, dead, and things that have never been alive. I know how to identify that most living things live in habitats to which they are suited I know how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. I know the names of a variety of plants and animals in their habitats, including microhabitats. I know how animals obtain their food from plants and other animals, using the idea of a simple food chain, and	**Seasonal Changes** I know of the changes across the 4 seasons. I know the weather associated with the seasons and how day length varies.	**Plants** I know how seeds and bulbs grow into mature plants. I know through investigation, how plants need water, light and a suitable temperature to grow and stay healthy.	**Seasonal Changes** I know of the changes across the 4 seasons. I know the weather associated with the seasons and how day length varies.

			identify and name different sources of food.			
Vocabulary ***Ambitious vocabulary*** ***previous vocabulary***	Names of materials – *increased range from year 1, properties of materials - as for year 1 plus* opaque, transparent and translucent, reflective, non-reflective, flexible, rigid, Shape, push/pushing, pull/puling, twist/twisting, squash/squashing. Bend/bending, stretch/stretching, question, answer, predict, test, observe, identify, classify, compare, pattern, data, gather, record Seasonal weather patterns in the UK: expand on vocab from year 1.	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed names of local habitats e.g. pond, woodland etc., names of micro-habitats e.g. under logs, in bushes etc.	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), basic needs to survive (water, food, air) exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta) Suitable materials, fair test, question, answer, predict, test, observe, identify, classify, compare, pattern, data, gather, record, Names of materials – *increased range from year 1, properties of materials - as for year 1 plus* opaque, transparent and translucent, reflective, non-reflective, flexible, rigid,	Question, answer, predict, test, observe, identify, classify, compare, pattern, data, gather, record, scientists	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, life cycle of plants, names of trees in the local area, names of garden and wild flowering plants in the local area, plant needs, shade, sun, warm, cool, water, grow, healthy Names of local habitats e.g. pond, woodland etc., names of micro-habitats e.g. under logs, in bushes etc.	Gravity, friction, vapour, steam, pressure, heat source, energy, surface, area, volume, sink, float

Local links/Inspiration /Enrichment activities

Nursery – owl visit, pets at home visit, meet a creature visit- bugs and beatles, ugly bug ball
Reception – Visit to the farm, seasonal days, Penguin day- to launch blue penguin -ice experiments, tiger day,visit to cliffe house, growing day,
Year 1- Animal visit
Year 2-Walk to Tolson gardens

Key Stage 1 Statements taken from National Curriculum –(Statutory Requirements)

Pupils should be taught about:

Working Scientifically KS1

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

Year 1

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees
- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
- distinguish between an object and the material from which it is made
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties.
- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.

Year 2

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including microhabitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
- observe and describe how seeds and bulbs grow into mature plants
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Statements taken from National Curriculum – Spoken Language (Literacy) (Statutory Requirements)

Pupils should be taught to:

- *Listen and respond appropriately to adults and their peers*
- *Ask relevant questions to extend their understanding and knowledge*

- *Use relevant strategies to build their vocabulary*
- *Articulate and justify answers, arguments and opinions*
- *Give well-structured descriptions, explanations and narratives for different purposes, including for expressing feelings*
- *Maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments*
- *Participate in discussions, presentations, performances, role play, improvisations and*
- *debates*
- *Consider and evaluate different viewpoints, attending to and building on the contributions of others*

Impact of the Science Curriculum

Through working through our Science curriculum pupils will have a developed understanding of the world around them and be able to comment on scientific aspects such as how the world works. Children will build on the scientific foundations set in nursery throughout their time at Netherhall Infant School. By the end of Year 2 they will become increasingly independent in science, selecting their own tools and materials, completing pupil lead investigations and choosing their own strategies for recording. Children will make good progress in Science after following our high quality curriculum which has clear steps showing progression.

Pupils will have gained a wide range of scientific vocabulary and be able to use this while giving scientific explanations. Pupils will also have develop their questioning and enquiry skills and use these when exploring the wider world. Our Science curriculum will enable children to develop a love for learning Science and continue their scientific journey throughout their lives.

In addition, we will measure the impact of our curriculum through the following methods:
- Regularly assessed pieces of work, using the milestones documents.
- Opportunities for the children to look back at their own learning within their CLICK books to show their understanding.
- Pupil voice discussions with senior leadership to allow children to express their learning and experiences.
-Termly tracking on internal target tracker system.