



NEVILL ROAD JUNIOR SCHOOL CURRICULUM OVERVIEW - SCIENCE





OUR CURRICULUM AT NEVILL ROAD JUNIORS

- We **Aim High** by challenging ourselves in all aspects of school life.
- We are **Successful** learners by using our growth mind set to achieve.
- We **Persevere** by being resilient and trying our best in everything we do.
- We use our **Imagination** to produce creative work that we can be proud of.
- We show **Respect** by including everyone and making sure we all matter.
- We show **Enthusiasm** by approaching all learning with a positive attitude.



OUR CURRICULUM INTENT

- At Nevill Road Junior School learning is fun and all of our children are supported and challenged to enjoy learning and reach their potential. Learning in the outside environments, practical and real-life situations and special activities all help to make learning accessible and help to motivate our pupils to achieve well and become lifelong learners. We have a very positive approach to learning at our school and children are encouraged and rewarded when they do their best, work hard and make good progress.
- The wellbeing of our children and their Mental Health are a priority as we believe that children learn best when they feel happy, safe and cared about. Our Restorative Approach to learning underpins our curriculum, which also celebrates equality and diversity.
Our curriculum is based on the statutory National Curriculum; it is skills based in design and intended to provide learning and teaching motivation for both children and teachers.
We aim to be as creative as possible with our approach to the curriculum, teaching and learning. All curriculum areas have been planned to deliver a well sequenced and progressive series of lessons to ensure children gain 'sticky knowledge', which they can articulate with confidence.
Every year group includes high quality book and text studies within their termly topic plans, making sure children are given a text-immersive experience.
All of our topics are supported through high quality resources, trips, visitors and experiences that provide ample opportunity for real depth of study.

Pedagogy of Learning

Explanation, Modelling and Scaffolding

In lessons you will see:

- Clear and precise explanations given by teachers, with complex ideas broken down.
- Time given to practise and consolidate children's knowledge and understanding in new ways that stretches their thinking and allows them to consolidate key skills.
- Metacognition strategies used to help scaffold learning and develop independence.
- Use of sentence stems to help structure children's talk and thinking.
- Children know what is expected of them and how this can be achieved. This is done in a variety of ways including the use of a clear success criteria and examples eg a WAGOLL (What a good one looks like)
- Children evaluating their own work and improving their learning.



Pedagogy of Learning

Questioning, Recall and Retrieval of Knowledge to make learning 'sticky'

In lessons you will see:

- A mastery approach to learning.
- Every lesson starts with a 'Can you still..?' to recall previous knowledge
- Questions asked to children that encourage them to know more and think more.
- Teachers use carefully planned questions to probe children's responses, to reshape tasks and deepen understanding.
- Children are given 'thinking time' to allow for sufficient time for pupils to review what they are learning and to develop further.
- Children are given regular opportunities within lessons to recall previous knowledge. Questions are asked to reveal their understanding and recall how well they have remembered the content.
- Lollipop sticks used to select children to answer questions to encourage participation from all.
- Tasks from the 'Nevill Road Bare Necessities to Sticky learning' used to retrieve knowledge



Pedagogy of Learning

In order for our children to learn more and remember more, we promote 'sticky' learning through....

Song

Teaching facts through songs. Not just number facts but GPS too in Y6. Commits learning to memory more easily and heightens enjoyment.

Hooks

Educational experiences through trips and visitors
Books for hooks
Hands on learning experiences
Artifacts

Questioning

Asking a question of each child before they leave the classroom. eg quick number recall, spelling of a tricky word, geographical fact, historical date.

Photo Reel

Reel of photographs on whiteboard of previous learning activities. Use photos to prompt discussion about what has been learnt, drawing on key vocab.

Video

Making videos of learning eg science explanations. Turn down sound and explain what is happening.

Performances

Video music performances and assemblies. Pupils to use music vocabulary to explain what they can hear and to evaluate performances.

Quizzing

Create quiz questions on a topic. Could be multiple choice eg
What is a metaphor?
a) A comparison using 'like, as, then.'
b) A comparison where one thing is another
c) A comparison with a human attribute

Sentence Stems

Sentence stems
Scaffolding language
Talk, talk and more talk
Developing reasoning in mathematics
Highlighting key vocabulary

Building on Prior Knowledge

Activating prior knowledge
Creating shared experiences

Double Page Spread

Complete double page spread at end of term. Can go back and add information from book. Summarise learning.

Active Learning

Collecting information from other tables and relay back to partner - one walker, one talker. Good for mixed ability pairings.

Post-learns

Children evaluate their learning at the end of a unit.
Children reflect on their learning.

Can you still?

....last week
....last month
....last term
....last year

Display board in class; use as starter question to recap.

Brain Dump

Write, draw a picture, create a mind-map on everything you know about a topic. Give a time limit eg 3 minutes. Then look back at books to add a few things you forgot.

Flashcards

Create own flashcards: question on one side, answer on the other. Can you make links between the cards? Pick out harder ones to practise.

DEAL

- Developing Characters
- Adopting roles
- Exploring thoughts
- Sharing and Reporting
- Thinking & Reflecting

Pedagogy of Learning

Check understanding throughout the lesson and provide feedback.



In lessons you will see:

- We use a variety of mechanisms to assess children's understanding throughout lessons and ensure that misconceptions are picked up quickly.
- Verbal feedback given to children throughout the lesson in order to build on pupils' strengths.
- Our marking system ensures that feedback is purposeful and children's responses enable them to practise, consolidate or stretch their learning.
- Metacognition strategies are used to motivate children to improve their learning.
- Children respond to feedback and this is captured through the use of purple pen in their books.
- In the moment marking gives immediate feedback.
- Use of mini plenaries to address any misconceptions.

CURRICULUM LEADER - SHARON BAIRD (LEADER FROM 2022- - CURRENT)

INTENT

- Science teaching at Nevill Road Junior School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically.
- Our aim is to help children understand the implications of Science in the real world, today and for the future.
- Concepts taught should be reinforced by focusing on the five key features of scientific enquiry.
- All children are encouraged to develop and use a range of 'working scientifically' skills, including observations, planning and investigations, as well as being encouraged to question the world around them and explore possible answers for their scientific- based questions.
- Specialist vocabulary is taught and built up throughout Key Stage 2.



Nevill Road Junior School Science Policy 2020-2021

POLICY

Intent

Why do we teach this? Why do we teach this is the way we do?

- Science teaching at Nevill Road Junior School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically.
- Our aim is to help children understand the implications of Science in the real world, today and for the future.
- Concepts taught should be reinforced by focusing on the five key features of scientific enquiry.
- All children are encouraged to develop and use a range of 'working scientifically' skills, including observations, planning and investigations, as well as being encouraged to question the world around them and explore possible answers for their scientific- based questions.
- Specialist vocabulary is taught and built up throughout Key Stage 2.

Implementation

What do we teach? What does it look like?

We follow the National Curriculum, using our progression grids to ensure full coverage throughout the Key Stage. At the start of each unit we assess the children's knowledge using a pre-learn assessment. Children's understanding is then assessed at the end of the unit using a post-learn assessment. Within the science lesson, they all begin with a quick recall of the previous lessons vocabulary and end with a reflection time focusing on vocabulary and key learning using the purple sheet stuck in the front of the books.

When planning for objective coverage, teachers are expected to:

- Assess prior knowledge using a pre-learn
- Cover any gaps in knowledge
- Include a section for the inclusion of key vocabulary in the 'knowledge organiser'
- In every lesson ensure that both knowledge and 'working scientifically' skills are taught
- At least one investigation per term
- Ensure children are aware of and use the Five Levels of Enquiry
- Complete a post-learn at the end of a unit

Impact

What will it look like by the time children leave school and at the end of each academic year?

The exploration of science should be interactive and engaging, with content made relevant to children's real-world experiences and contextualised thus to support consolidation and retainment of knowledge and skills.

Children should approach scientific concepts with confidence and enthusiasm, and take on tasks and challenges that call for application of varied knowledge across units of work. They should select from a variety of skills with self-assurance and a willingness to collaborate.

Children should be encouraged to follow their own lines of enquiry whilst being able to use and apply the vocabulary introduced by their teacher as part of each unit.

To find out more about our
Science policy click the link below:

http://www.nevillroad-jun.stockport.sch.uk/serve_file/3002915

SEQUENCE OF LEARNING - WHOLE SCHOOL PLAN

Unit of science	t y p e	Year group					
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Biology	Name common plant – know basic structure.	Seeds and bulb growth, what plants need to stay healthy	Functions of plants, requirements for growth, water transports, life cycle of flowering plants.			
Animals including humans	Biology	Name, identify and describe common animals. Basic parts of human body	Growth of an animal, basic needs, important of healthy lifestyle	Animals & Humans – nutrition and food, skeletons, muscles for support, movement and protection.	Describe basic human digestive system, teeth, construct food chains – producer, predators, prey.	Changes to human development – baby – old age.	Identify/ name parts of circulatory system
Everyday materials	Chemistry	Identify, name, group, describe and compare range of materials	Identify and compare variety of materials. Solid object shapes can be changed				
Seasonal changes	Physics	Observe changes, describe weather and day length					
Living things and their Habitats	Biology		Habitats, basic needs, dead or alive, describe simple food chain.		Variety of grouping, classification keys, environmental change – dangers?	Describe life cycles – mammal, amphibian, insect & bird, reproduction in some plants and animals.	Classifying broad groups on common characteristics/ similarities/ differences, give reasons for classification of plants and animals
Rocks and soil	Chemistry			Compare & group rocks, fossil formation, soil come from rocks & organic matter			
Light	Physics			Define absence of light, reflects, suns dangerous, shadows & light blocked, size of shadows			Light travel in straight lines – reflect light into our eyes, light sources to objects to eyes, shadows same shape as object.
Forces and Magnets	Physics			Compare surfaces and movement, some forces need contact, compare and group magnetic not magnetic, predict repel not repel and describe poles.		Gravity and falling objects, air resistance, water resistance, friction and moving surfaces, pulleys,	
States of Matter	Chemistry				Compare, group materials – solid, liquids and gases, observe materials changing state and temperatures, evaporation & condensation.	levers and gears mechanisms.	
Sound	Physics				Sounds made – vibrations, travel to ear, patterns – pitch, volume and distance		
Electricity	Physics				Identify electrical appliances, construct simple circuit, will lamp light? switches = open/ close circuits, identify common conductors, insulations = metal a good.		Amount of light /noise /buzzer = no. of voltage, compare and give reasons for these variations, use recognized symbols when drawing circuits.
Properties and changes of materials	Chemistry			Builds on from Year 4		Compare, group materials on properties, materials can dissolve, separating mixtures – solid, liquid and gas, fair test everyday materials, reversible changes, formation of new materials.	
Earth and Space	Physics			Builds on year 5		Describe planets movements relative to moon and sun, spherical bodies, earth's rotation = day/night.	
Evolution and inheritance	Biology			Builds on from Year 3 rocks year 3 plants			Recognise changes over time and fossils past information, living things produce offspring – non identical, plants and animals adapted to environment.

WHOLE SCHOOL OVERVIEW OF SCIENCE IN THE ACADEMIC YEAR

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Rocks Fossils and Soils	Light		Forces and magnets	Plants	Animals including humans
Year 4	Sound	States of matter	Electricity		Animals including humans	Living things and their habitats
Year 5	Space	Forces and magnets	Properties and changes of materials		Animals including humans	Living things and their habitats
Year 6	Animals and their habitats	Evolution and inheritance	Animals including humans	Light		Electricity

SEQUENCE OF LEARNING - CURRICULUM PROGRESSION PLANS

To see more about how we sequence the units of science and how the knowledge, skills, concepts and vocabulary are progressed throughout the school, follow the link below:

<http://www.nevillroad-jun.stockport.sch.uk/page/science/63933>



Science Progression of Knowledge and Skills – Year 3

Working Scientifically	Knowledge	Vocabulary
Plants Pupils might work scientifically by: • comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser • discovering how seeds are formed by observing the different stages of plant life cycles over a period of time • Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. • They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	Plants • Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Plants Roots, stem / trunk, leaves and flowers, air, light, water, nutrients, Transported, lifecycle, pollination, seed formation, seed dispersal, nutrition, structure, functions, evaporation
Animals including humans Pupils might work scientifically by: • Identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. • They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. • They might research different food groups and how they keep us healthy and design meals based on what they find out.	Animals including humans • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support and protection, and movement.	Animals including humans Skeletons, muscles, protection, functions, nutrition, humans, carbohydrates, dairy, proteins, fruit, vegetables, diet, healthy, balanced, energy, vertebrate, invertebrate, joints, tendons, bones
Rocks Pupils might work scientifically by: • Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. • Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.	Rocks • Compare and group together different kinds of rocks based on their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have died are trapped within a rock. • Recognise that soils are made from rocks and organic matter.	Rocks Fossils, metamorphic, igneous, sedimentary, trapped, organic, topsoil, subsoil, magma, lava, sediment, permeable, impermeable, absorbent, non-absorbent, natural, manmade, fossilisation, erosion, sediment, minerals, weathering.

Science Progression of Knowledge and Skills – Year 4

Working Scientifically	Knowledge	Vocabulary
Living things and their habitats Pupils might work scientifically by: • using and making simple guides or keys to explore and identify local plants and animals. • taking a guide to local living things. • asking and answering questions based on their observations of animals, and what they have found out about other animals that they have researched.	Living things and their habitats • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things.	Living things and their habitats human in population development reserves, animals, plants, no plants, h amphibians, birds, and invertebrate
Animals including humans Pupils might work scientifically by: • comparing the teeth of carnivores and herbivores and suggesting reasons for differences. • finding out what damages teeth and how to look after them. • They might draw and discuss their ideas about the digestive system and compare them with models or images.	Animals including humans • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey.	Animals including humans Classified digestion acid, oesophagus, intestine, tongue, acid, incisor, molar, premolar, canine, Food chain, producer, prey, predator
States of matter Pupils might work scientifically by: • grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party).	States of matter • Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius.	States of matter Solids, liquids, gases, state, matter, evaporation, condensation, precipitation, everyday



Science Progression of Knowledge and Skills – Year 5

Working Scientifically	Knowledge	Vocabulary
Living things and their habitats Pupils might work scientifically by: • observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. • They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. • They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. • They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.	Living things and their habitats • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals. • Observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment.	Living things and their habitats Biology Life cycle, amphibian, reptile, reproduction, seeds, stem and root cuttings, tubers, bulbs, reproduce, grow, sexual, asexual, mammal, insect, bird
Properties and changes of materials Pupils might work scientifically by: • Carrying out tests to answer questions, for example, "Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?" • They might compare materials in order to make a switch in a circuit. • They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. • They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.	Properties and changes of materials • Compare and give basis of their properties, thermal, and res • Know that some materials dissolve in a solution, and do so from a solution. • Use knowledge of how mixtures mix filtering, sieving a	Properties and changes of materials Art



Science Progression of Knowledge and Skills – Year 6

Working Scientifically	Knowledge	Vocabulary
Living things and their habitats Pupils might work scientifically by: • using classification systems and keys to identify some animals and plants in the immediate environment. • They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system. • Research the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.	Living things and their habitats • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics.	Living things and their habitats Biology Common characteristics, micro-organisms, plants, animals, invertebrates, specific characteristics
Animals including humans Pupils might work scientifically by: • exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.	Animals including humans • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans.	Animals including humans Biology Circulatory system, blood vessels, capillaries, aorta, veins, nutrients, transport, diet, exercise, lifestyle, drugs
Evolution and inheritance Pupils might work scientifically by: • observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. • They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.	Evolution and inheritance • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Evolution and inheritance Biology Variation, offspring, inheritance, characteristics, adaptation, habitat, environment evolution, natural selection, fossils, adaptive traits, inherited traits, living things, evolve, evolved

Year 5



SEQUENCE OF LEARNING-UNIT AND LESSON PLANS

- Each unit of work is planned through a series of enquiry questions.
- The medium terms plans are carefully planned in a sequence of steps to all for deeper understanding and retention of knowledge. They build on previous years knowledge and show links with previous units. The vocabulary and concepts are outlined across each unit.
- Each child has a science exercise book. The unit will begin with a front cover outlining the knowledge and skills to be achieved by the end of the unit.
- There will be a pre-learn at the beginning of the unit and a post learn at the end.

Working Scientifically	Knowledge	Vocabulary
<p>Plants</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser discovering how seeds are formed by observing the different stages of plant life cycles over a period of time Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers. 	<p>Plants</p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. 	<p>Biology</p> <p>Roots, stem / trunk, leaves and flowers, air, light, water, nutrients, Transported, lifecycle, pollination, seed formation, seed dispersal, nutrition, structure, functions, evaporation</p>
<p>Animals including humans</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Identifying and grouping animals with and without skeletons and observing and comparing their movement: exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out. 	<p>Animals including humans</p> <ul style="list-style-type: none"> Identify that animal, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support and protection, and movement. 	<p>Biology</p> <p>Skeletons, muscles, protection, functions, nutrition, humans, carbohydrates, dairy, proteins, fruit, vegetables, diet, healthy, balanced, energy.</p>
<p>Rocks</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when 	<p>Rocks</p> <ul style="list-style-type: none"> Compare and group together different rocks on their appearance and simple tests Describe in simple terms how fossils things that have lived are trapped Recognise that soils are made from matter. 	



Light

Key words

Reflected	Translucent	Change
Surfaces	Opaque	Clocked
Absence	Measure	Dark
Transparent	Darkness	
Straight lines	Formed	
Light source	Shadow	

Science knowledge

- ◆ Recognise that they need light in order to see things and that dark is the absence of light.
- ◆ Notice that light is reflected from surfaces.
- ◆ Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- ◆ Recognise that shadows are formed when the light from a light source is blocked by an opaque object.
- ◆ Find patterns in the way that the size of shadows change.

Working scientifically skills

- ◆ I can begin to raise their own questions about the world around them.
- ◆ I can help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.
- ◆ I can begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
- ◆ I am beginning to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Self-reflection (what are the key facts that you have discovered?)

SCIENCE LESSONS AT NEVILL ROAD

In lessons you will see:

- Teacher talk is kept to a minimum ensuring children work hard and focus upon their learning.
- Lessons are carefully planned to engage learning.
- A range of learning opportunities are provided to allow children to learn in a variety of ways e.g., DEAL, active learning, practical work with artefacts and group work.
- Lessons begin with a recap of previous learning and with 'Can you still.... Questions.
- Lessons will finish on a recap of the vocab and key knowledge addressed within the lesson.

November 2022
LO: I know what a reflection is

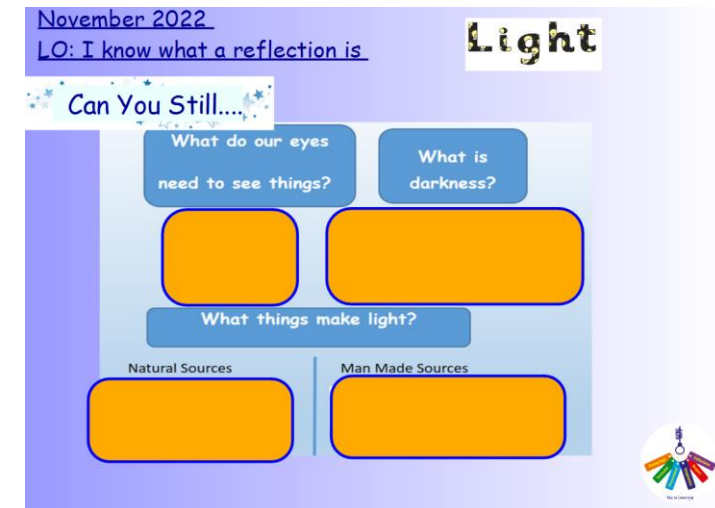
Light

Can You Still.....

What do our eyes need to see things? What is darkness?

What things make light?

Natural Sources Man Made Sources



November 2022
LO: I know what a reflection is

Design a new product to sell to a company, for children or adults to wear on a dark evening.

Steps for success

- Draw the person wearing it.
- Label your product.

best important most should believe need must amazing certain

shiny reflective light surface material
torch dark smooth flat bounces

Explain who your product is for and when it would be worn.
My product is for _____ and it would be worn _____.



VOCABULARY

At Nevill Road Junior School we develop key scientific vocabulary to the children by:

- Each lesson will have a focus on about 4 or 5 key words, these will be displayed on the flipcharts during the teaching part of the lesson and used throughout the lesson.
- The children will add these words to their cover sheet (found at the beginning of each science topic in their books)
- The words will be added to the working wall.
- During recaps at the end of the lesson and when appropriate revised during future lessons.
- The vocabulary list can be found in the progression document and in each medium term plan for the teachers to refer to during their planning.
- Vocabulary is broken down into concepts, substantive knowledge and specific words for the science topic being studied.

Curriculum	Vocabulary	Working Scientifically	Resources	Lesson Overview
<ul style="list-style-type: none"> • recognise that they need light in order to see things and that dark is the absence of light. • notice that light is reflected from surfaces. • recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • recognise that shadows are formed when the light from a light source is blocked by an opaque object. • find patterns in the way that the size of shadows change. 	light light source reflection mirror dark sun moon candle lightbulb reflective surface shiny flat smooth straight line bounces torch material protection eyes hat sunglasses pupil sun rays visible spectrum UV rays sunburn rainbow	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	<ul style="list-style-type: none"> • Let there be Light! Presentation. • Light Source task sheet. 	1. Let there be light! <ul style="list-style-type: none"> • Use the <i>Let there be Light! Presentation</i> to discuss what things are sources of light and what are not and how we need light to see things. • Sort a selection of objects into whether they are sources of light or not using <i>Light Source task sheet</i>.
			<ul style="list-style-type: none"> • Reflecting Light Presentation. • Best Reflective Material task sheet. 	2. Reflecting Light <ul style="list-style-type: none"> • Use the <i>Reflecting Light Presentation</i> to discuss what types of surfaces are good for reflecting light and why reflecting light can be useful. • Investigate which material is best at reflecting light and design an outfit for a night cyclist using <i>Best Reflective Material task sheet</i>.
			<ul style="list-style-type: none"> • Be Sun Safe Presentation. • Sun Protection Design sheet. 	3. Be Sun Safe <ul style="list-style-type: none"> • Use the <i>Be Sun Safe Presentation</i> to discuss the dangers of the light from the sun and what can be done to protect the eyes. • Design a hat and sunglasses and explain how they can protect someone from harmful sun rays using <i>Sun Protection Design sheet</i>.

November 2022

LO: I know what a reflection is

Key Vocabulary

Reflection

Absence

Source

Natural

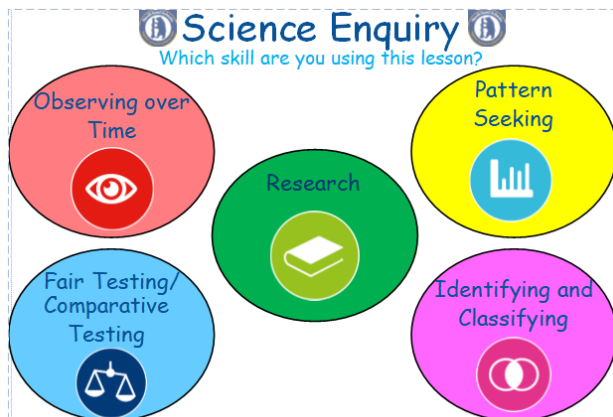
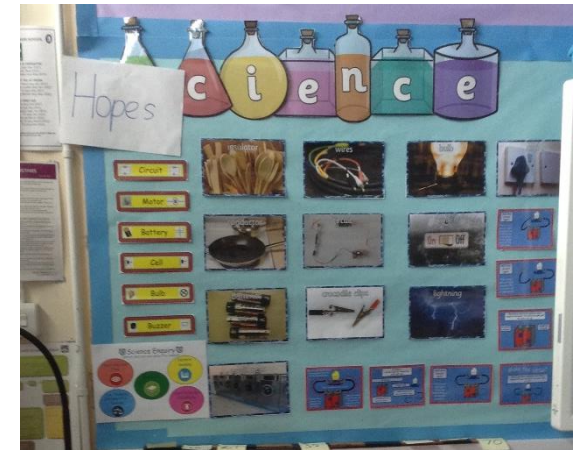
Man made

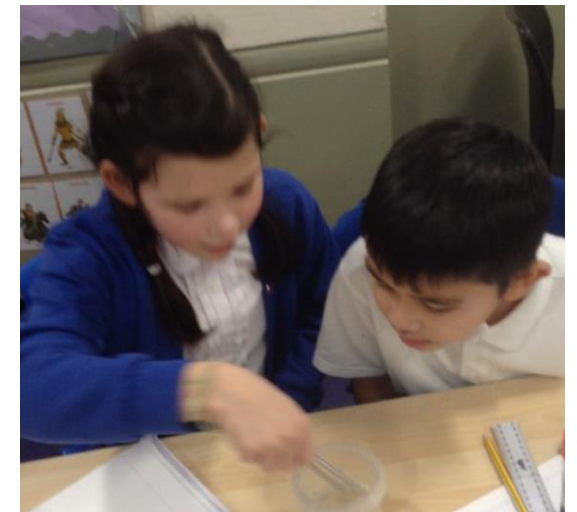
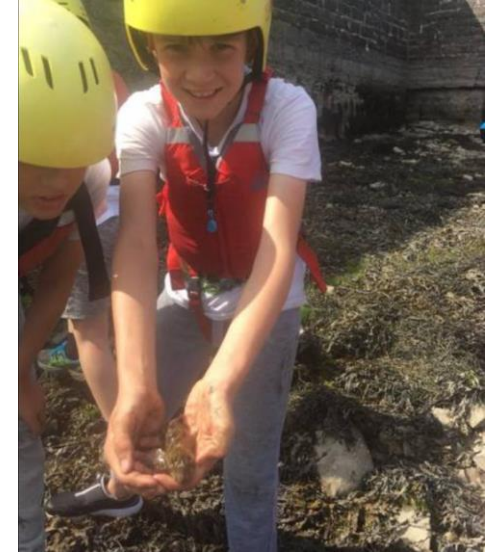
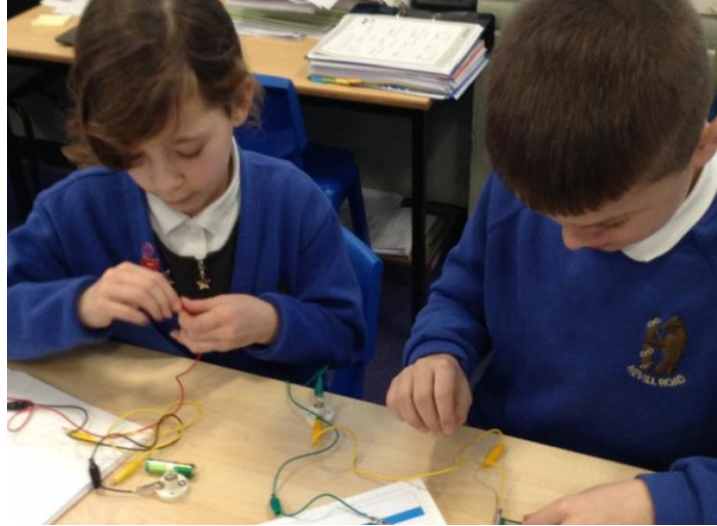
Talk to your partner, what do these words mean:



SCIENCE AROUND THE SCHOOL

- Each class has a working wall that includes the Enquiry questions and vocabulary.
- All children are encouraged to develop and use a range of 'working scientifically' skills, including observations, planning and investigations, as well as being encouraged to question the world around them and explore possible answers for their scientific-based questions
- There is a whole school Science display on a corridor, this shows an overview and children's work in the different units.





ENRICHING THE CURRICULUM

At Nevill Road we want to enhance the learning of science through practical experiments and investigations, visits, trips out of school and the use of equipment.

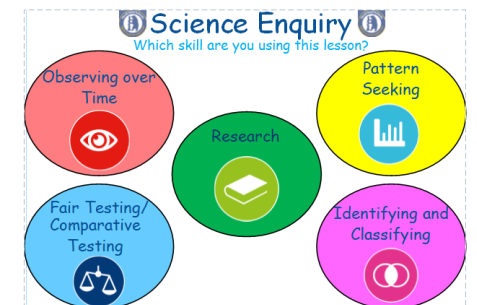
As a school we are building up the resources of equipment and books relating to the science units studied.

Each year group will either go on a trip to a museum/ place of interest relating to the science topic or invite a visitor to the school for a workshop.

These include: Day trip to the Manchester Science and Industry museum and in-house scientific experiments.

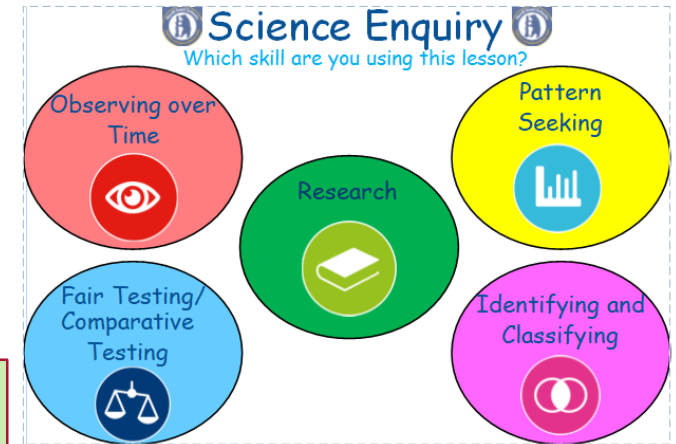
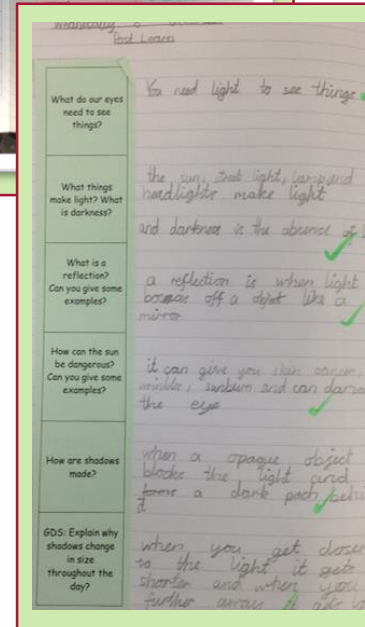
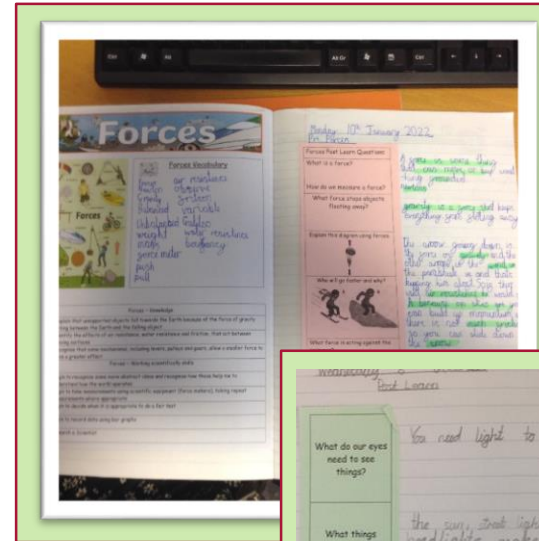
KNOWLEDGE AND CONCEPTS

- Both knowledge and working scientifically is being taught in all units. A range of activities throughout the years show this.
- Planning shows children are being opportunities to question the world around them linked to their current unit.
- Lessons show the skills and knowledge are being taught - post learnings reflect this also.
- Children's learning is being built upon from previous years through can you stills, pre & post learns. Staff have a clear understanding of what has been taught before.
- Concepts taught are reinforced by focusing on the five key features of scientific enquiry
- High expectations for all pupils



ASSESSMENT

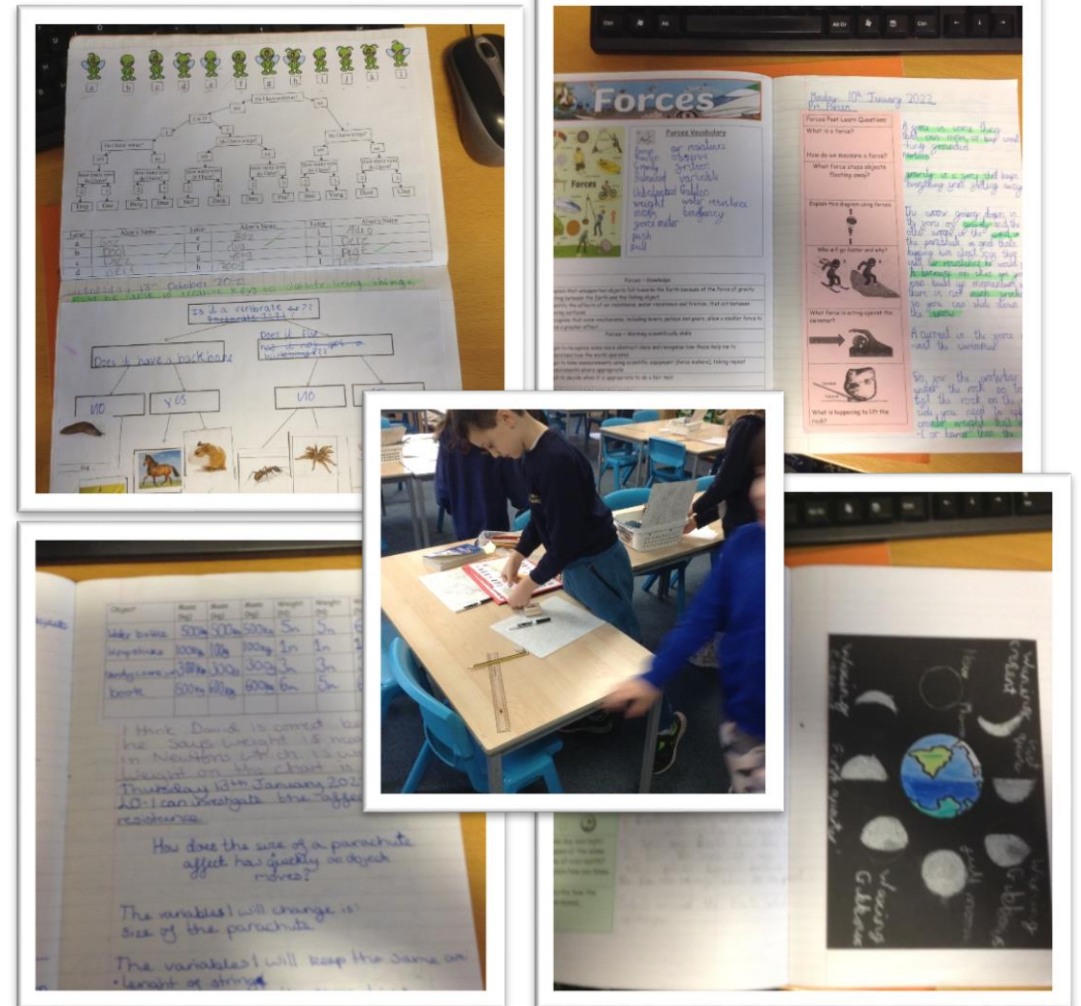
- At the beginning of each unit in science the children complete a pre learn (on pink paper) and at the end of the unit the children are given a post learn (on green paper). This assessment uses the enquiry questions which are the main body of the unit and focuses on key knowledge and understanding.
- Teachers then complete an assessment grid at the end of the unit indicating children that are working towards the expectations and those that have met the expectations. (this is related to key knowledge from the post assessment and skills observed in lessons)



	Light		Forces and magnets	Plants	Animals including humans
	S	E/D	S	E/D	S
	Sound	Electricity		Animals including humans	Living things and their habitats
	S	E/D	S	E/D	S
	Forces and magnets M-3 (SW)	Properties and changes of materials		Animals including humans	Living things and their habitats
	S	E/D	S	E/D	S
	Evolution and inheritance	Animals including humans	Light		Electricity
					E/D
					S
	E/D	S	E/D	S	E/D

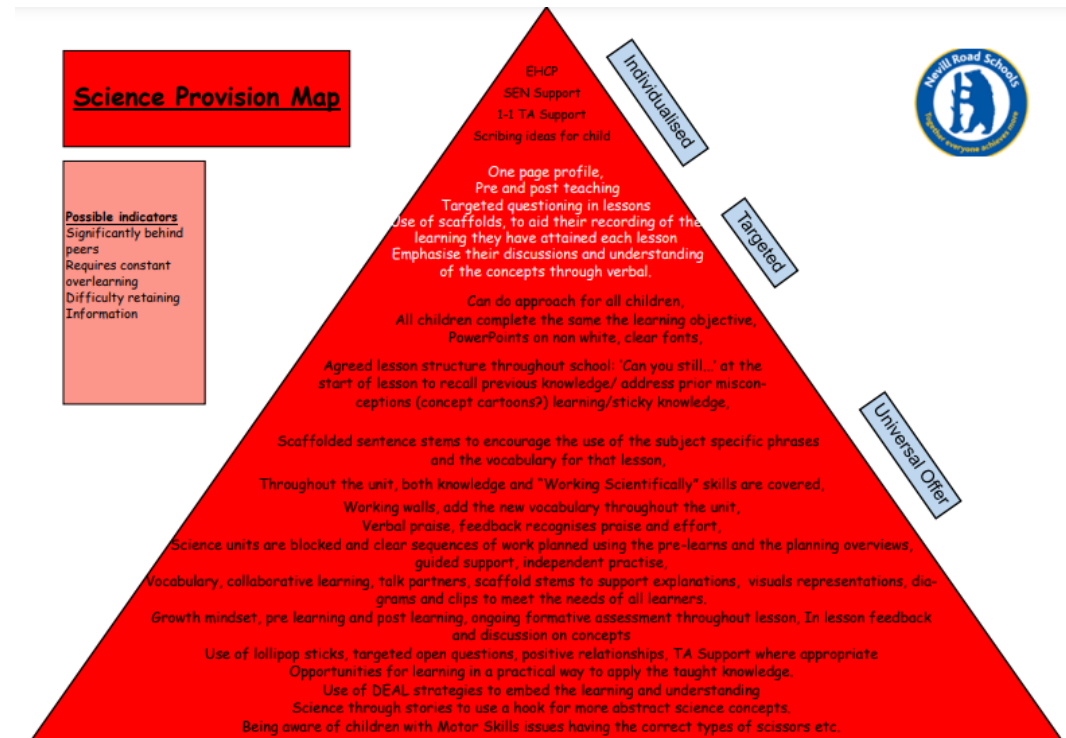
MONITORING

- The exploration of science should be interactive and engaging, with content made relevant to children's real-world experiences and contextualised thus to support consolidation and retainment of knowledge and skills.
- Children should be encouraged to follow their own lines of enquiry whilst being able to use and apply the vocabulary introduced by their teacher as part of each unit.
- Subject leaders are allocated time to have a 'Deep dive review' This can involve reviewing planning, lesson looks, book scrutiny and pupil voice.
- The evidence of how the time has been used is then recorded on a monitoring sheet, which reviews the intent, implementation and impact document. This is then fed back to staff or referred to in future staff meetings/emails or INSETS.



INCLUSION

- In all our subject areas we have created a provision map of need that shows how all children are supported in order to enable them to access the full curriculum.
- The needs of all children are considered with a lens on provision for our SEND children and teaching is adopted necessary. We believe that if we are getting it right for our children with additional needs, then we are getting it right for everyone.
- Learning is not capped by differentiation but stretched by enabling all pupils to deepen their learning through investigations and enquiry questions.
- Some tasks are open ended and allow children to present their findings in a variety of creative and individuals ways.
- Staff check in regularly to check understanding.
- Metacognition strategies are used to encourage independent learning.
- Teaching assistants are used effectively to help scaffold learning an support children to become more independent learners.
- The growing diversity of our school community means that teachers are adapting lessons to support children who have English as a second language.



EQUAL OPPORTUNITIES

To find out more about our Equality Objectives, follow the link below:

http://www.nevillroad-jun.stockport.sch.uk/serve_file/8211907

Here are examples of how the protected characteristics are promoted through the Science Curriculum:

BRITISH VALUES

To find out more about how we promote British Values through our curriculum, follow the link below:

http://www.nevillroad-jun.stockport.sch.uk/serve_file/6477805

Here are examples of how British Values are promoted through the Science Curriculum:

SMSC

To find out more about how we promote *Spiritual, Moral, Social and Cultural (SMSC)* through our curriculum, follow the link below:

<http://www.nevillroad-jun.stockport.sch.uk/page/smsc/63936>

Here are examples of how SMSC is promoted through the Science Curriculum: