Science Policy

Reviewed: December 2022

Reviewer: Emma Stoddart (Deputy Headteacher

Next Review: September 2025

Introduction

The Science curriculum aims to give children the ability and skills to work scientifically and learn about animals, humans, materials, plants, habitats, and seasonal changes. Children will have the opportunity to plan and participate in investigations, observations, testing, identification, classifying, gathering and recording their findings. Each term, children will work scientifically to challenge their current knowledge and understanding, develop their skills, and explore the world around them. The school will focus on developing a deeper knowledge of scientific concepts, which will allow children to think and act as scientists in a practical and engaging way. Children will learn how to reflect on their findings and draw comparisons which will determine their conclusions. The curriculum will inspire a passion for and a commitment to the subject.
The aim of this policy is to clarify to staff, governors, parents and pupils how Science is taught at Nevill Road Infant School.

Aims

At Nevill Road Infant School, we value science as a creative and enjoyable part of our broad and balanced school curriculum. We believe that it should be fully inclusive to every child, offering opportunities for challenge and a sense of understanding about the world that we live in. Our aim is to motivate the children to explore science as well as their own curious endeavours and natural interests. The children will be provided with many opportunities to work scientifically, invited to compare data that they collect, discover their environments and do this with open arms into questioning and exploring.

Our aims are to:

- Ensure that children become proficient in planning investigations and making observations.
- Equip children with the skills and understanding they need to carry out a fair test.
- Encourage children to evaluate and build conclusions based on their findings.
- Extend children's scientific knowledge of animals, humans, materials, plants, habitats and seasonal changes.
- Create a love of learning where children are free to explore their own curiosities and interests.
- Give children a sense of pride and achievement.
- Develop children's sense of awe and wonder.
- Encourage children to ask questions and recognise that questions may be answered in different ways.

The School's Curriculum Organisation

- 2-yr old provision, Nursery and Reception classes follow the EYFS curriculum guidance as well as 'Development Matters.' Science activities are derived predominantly from the Understanding the World area of learning.
- At Key Stage 1, the Scheme of Work has been developed from the National Curriculum Programmes of Study (PoS) for Science, from the National Curriculum. Learning objectives have been mapped and allocated to each year group. These objectives were chosen to best-suit the termly topics, and to reflect continuity and progression in children's skills, knowledge and understanding through the Key Stage. The Scheme of Work is also underpinned by the school's Curriculum Drivers of 'The Seed', 'Being Brilliant' and 'Sense of Self'.

Learning and Teaching Strategies

The teacher will aim to develop a confident, creative and curious approach to working scientifically. To this end, children will be given an active role in choosing their materials and

equipment to plan their investigations, and encouraged to critically evaluate their findings to draw conclusions and make connections. Tools and equipment should be named and explained. Teachers encourage the use of more technical vocabulary, for example, amphibians, deciduous, opaque, microhabitat etc. Demonstration should be used alongside examples to deepen investigations and spark children's curiosity. Hearing learning intentions and success criteria orally and seeing them visually will help the children to have a greater understanding of the skills needed to be a great scientist.

A) Plan

Early Years Foundation Stage:
Children choose the resources they need for their chosen activity, sometimes with support, sometimes without.

KS1:
Children ask simple questions and recognise that there may be more than one possible answer. They ask relevant questions and use different types of investigations / enquiries to answer them. Children can set up simple practical investigations, make comparisons, and know how to plan a fair test.

B) Do

Early Years Foundation Stage:
Children know about similarities and differences in relation to places, objects, materials, and living things. They make observations of animals and plants, and explore a variety of materials, tools and techniques, experimenting with texture, form and function. Children also select and use technology for particular purposes.

KS1:
Children observe closely, using simple equipment, and perform simple tests / investigations. They also identify and classify. Children can use simple equipment such as thermometers and rulers.

C) Record

Early Years Foundation Stage:
Children represent their own ideas and thoughts.

KS1:
Children gather, record, classify and present data and findings to help answer their own questions or those of other people. They can record their findings using simple scientific language, drawings, and labelled diagrams.

D) Review

Early Years Foundation Stage:
Children talk about the features of their own immediate environment and how environments might vary from one another. They also explain why some things occur and can talk about changes.

KS1:
Children use their observations and ideas to suggest answers to questions. They can report on their findings from investigations using both oral and written explanations, displays, or presentations of their results and conclusions. They use results to draw simple conclusions, make predictions, suggest improvements, and raise further questions.

Children can identify differences, similarities, and changes related to simple scientific ideas and processes, and can use simple scientific evidence to answer questions or to support their findings.

As a simple generalisation, children should proceed from 'structured play' to 'guided discovery' to increasingly independent learning. Teachers also need to be aware that rigid conditions are stifling and involve no skills for the child who will just produce a copy of the teacher's template, for example, selecting the same tools and equipment to carry out the demonstrated investigation rather than trying out their own methods and ideas.

Teachers are expected to employ a range of strategies to support different learning styles as appropriate. These will include:

- Using the interactive whiteboard to watch investigations from other scientists from other countries and cultures.
- Individual or paired work.
- Collaborative work in groups.
- Allowing time for discussion to promote high levels of creative and critical ideas, curiosity and predictions.

Responding to Children's Work

- Encouragement should be given to children on an individual basis. Comparison with another child's work will lead the child to assume their work is inferior or incorrect.
- The opposite also applies. Children will become bored and lose confidence, often repeating the same investigation over and over again instead of trying and testing new ideas. This can happen if they are provided with the same materials and equipment alongside new, but without any guidance on how to use new materials and equipment. They stick with what they already know.
- Children will be encouraged to evaluate their findings and suggest answers to their own questions or the questions of others. They will also be encouraged to draw conclusions from their findings.
- Children's work is displayed in classrooms and public areas of the school such as the hall and communal corridors.

Differentiation

Activities using Science are planned to allow different levels of achievement by pupils and to incorporate possibilities for extension work.

Appropriate challenge is provided through regular, informal teacher observation. Differentiated work is provided in support of each child's needs, establishing progress with sufficient challenge to engage and motivate through achieving success.

TA's will be used to support lessons where available.

Planning and Assessment

In the Early Years, children's skills, knowledge and understanding will be assessed against 'Development Matters' and the Early Learning Goals in Reception. Progress is recorded regularly.

At Key Stage 1, the half termly / project plans and Topic Tasters are planned to include key learning opportunities, key knowledge and skills, key vocabulary and the specific pedagogical choices being made to deliver each lesson.

Assessments are completed and logged using an internal system. These outline expectations for four levels of ability (Below, Towards, Expected, and Exceeding). The children's skills, knowledge and understanding are assessed against key end-points. Any child achieving outside of these criteria (SEND or GTMA) will also be recorded. Any children who are considered Gifted, Talented, or More Able (GTMA) in Science will be identified and added by the class teacher to the GTMA register. This assessment data is passed on to the next teacher.

Cross Curricular Opportunities

Wherever possible, advantage will be taken of opportunities to develop cross curricular links. These links are identified in our planning.

For example:
Maths – measuring, categorising, and recording of data.
DT – designing a volcano then making it explode, or a will it float or sink activity.
Art – drawing and painting different fruit, then learning about healthy eating.
Geography – learning about seasonal changes and comparing the seasons in different countries.
History – exploring changes over time, for example, to a piece of bread.
Literacy – creating a poster for Science Week, or writing a story about a scientist.
Music – exploring different sounds and pitches to the human ear.

Resources

- All classrooms contain equipment and resources to support Science work as well as a central store.
- Science planning makes reference to I.C.T. including websites which support work. Specific programs and software are also identified.
- In addition to this, each classroom and / or shared area contains its own basic supply of Science equipment. Children are expected to access their own resources and equipment wherever possible and tidy away when they have finished.

Learning, Difficulties and Disabilities (LDD)- Disability Equality Statement.

"Nevill Road Infant School is committed to promoting Disability Equality and equality of opportunity for pupils with learning difficulties. When planning and teaching Science, staff will make reasonable adjustments to promote equality of opportunity for disabled and non-disabled pupils. This could include:"

- Allocated adult support
- Provide alternative or adapted activities for pupils who are unable to manipulate tools, equipment or materials or who may be allergic to certain types of materials.
- Adjusted objectives to support individual and specific needs.
- Make use of digital cameras, computer programmes, specially adapted tools or an alternative choice of media.
- Active learning methods to support different learning styles. The class teacher is responsible for ensuring weekly plans are accessible to all pupils and that objectives are appropriate.

Gifted, Talented and More Able (GTMA)

GTMA pupils are identified and their name recorded on our register. An annual enrichment plan is created to enhance the opportunities for children who present as talented scientists. This is shared with parents and appropriate competitions and exhibitions etc. are signposted. The class

teacher is then responsible for ensuring weekly plans identify appropriate and challenging objectives for these pupils.

English as an Additional Language (EAL)

Pupils for whom English is an additional language will be similarly supported in accessing the Science curriculum. The class teacher is responsible for ensuring weekly plans are accessible to all pupils.

Pupil Liaison and Home-School Links

Information regarding the pupils' attainment is passed on to the relevant class teacher at the end of each year and to the relevant KS2 School at the end of KS1.

Display and notice boards around the school informs parents of their children's work that term. Parental involvement is requested in our newsletters. Children's work is displayed in public areas and on the school's website.

A Science e-portfolio is in development to showcase children's work.

Specific projects such as Science Week and any appropriate local opportunities can provide for greater parental involvement. Scientists may also be invited to work in our school where opportunities and / or funds permit.

Celebrating cultural diversity and promoting community cohesion:

From entry to school, all children are exposed to a wide range of Science from different times and cultures. They will get to know some scientists' names, become familiar with different types of work and are encouraged to bring objects / artefacts / investigations in from their own culture. We look at the work of scientists from a variety of countries and cultures and aim to instil knowledge, curiosity and enjoyment.
We also aim to encourage local scientists into school to work with the children. We aim to encourage links within the local community.

The key responsibilities of the Science Subject Leader are:

The role of the Subject Leader
- To develop and maintain the school's scheme of work and e-portfolio
- To monitor planning and delivery of the curriculum, carry out lesson observations and scrutinise pupils' work.
- To audit and replenish equipment and resources throughout the school and manage the curriculum budget.
- Be given opportunities to update professional expertise and share this with staff when appropriate
- Advise governors of changes to policy and of standards achieved

Appendices

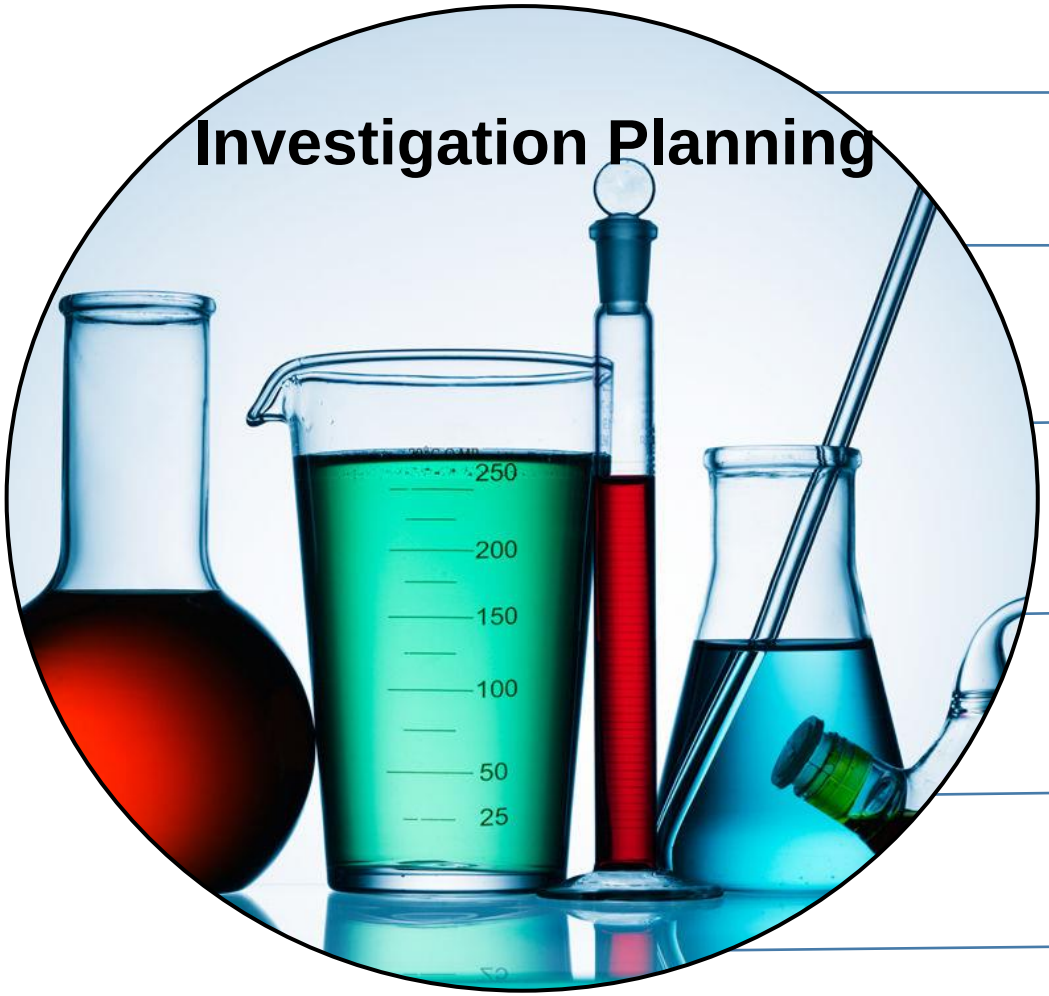
Appendix 1 – Science Vocabulary Progression
Appendix 2 – Investigation Planning questions
Appendix 3 – Investigation Planning Format - Cursive
Appendix 4 – Investigation Planning Format – Precursive

Nevill Road Infant School
Appendix 1 - Science Vocabulary Progression

	Little Brown Bears & Nursery		Reception			Year 1		Year 2	
Animals Including Humans	head eyes nose mouth ears hands fingers feet toes arm leg animal bird	fish feathers fur skin hair wash clean germs grow	herbivore carnivore omnivore human animal wild fish birds elbow leg hair knee face	back head toes ear hands eye mouth nose fingers arm bird fish insect	scales fins gills wash clean germs grow fruit vegetables	herbivore carnivore omnivore amphibian reptiles mammals invertebrates land water backbone skeleton adult baby	toddler child teenager healthy strong energy meat plants classification	classification egg larva pupa adult growth nutrition respiration hygiene offspring needs survival carbohydrate	protein fat dairy exercise pollution global warming greenhouse gases emissions life cycle reproduce
Everyday Materials	material wood glass paper hard soft		material metal wood rock plastic flour butter hard paper brick fabric glass	bendy rough shiny smooth soft recycle		magnetic rubber elastic foil solid liquid gas crumble repurpose reuse stiff stretch	object dull	dissolve soluble insoluble solid liquid gas filter evaporate condense waterproof absorbent opaque	flexible resistant rigid reflective brittle transparent

Plants	tree leaf flower stem seed twig soil	grow water sun	tree trunk fruit branch roots petals leaves	bulb flowers seed stem berry stalk soil	oxygen live sun blossom bark bud water	germination deciduous evergreen light heat weeds shoot	germination reproduction temperature suitable nutrients wild flower dead	alive healthy compost fertiliser
Living Things and Their Habitats	Hot cold sea pond jungle wood feathers garden water		arctic desert ocean forest scales stream lake brook diet	habitat environment fossils hatch	habitat meadow woodland grassland river beach cliff invertebrate mountainous	rainforest arctic litter	micro habitat log pile organism reproduce living dead food chain excretion respiration	predator species energy prey polar produce consume seashore
Seasonal Changes	leaves trees day night dark light weather rain snow sun	warm hot cold wet dry rainbow wind	Summer Spring Autumn Winter Moon Sun year season hail sunlight	cloud thunder lightning damp breezy month fog	Summer Spring Autumn Winter gust sleet tornado rainfall sunrise sunset	daylight temperature thermometer rain gauge length	degrees Celsius weather vane anemometer climate horizon equator temperature thermometer variable	day length conduct insulate thermal
Working Scientifically	question watch same different light dark guess see smell touch	answer test sort	question observe investigate predict experiment react bubble explode explore sight	result equipment identify group describe compare similar measure record feel	investigate question predict observe practical experiment answer fair test equipment identify	record diagram map compare contrast describe world Science classify	investigation scientific real life gather equipment identify fair test classify record diagram	map data chart findings contrast describe biology chemistry physics results

Appendix 2 - NRIS Investigation Planning



What are you trying to find out?

What do you predict will happen?

What equipment will you use?
What method will you use?
What will you keep the same?
What will you change?

What happened during the investigation?

What have you found out?

Was it a fair test?
What went well or not so well?
What could you investigate next?

Appendix 3 - NRIS Investigation Planning

Aim of investigation
What are you trying to find out?

Prediction
What do you predict will happen?

Method
How are you going to carry out the investigation?
What equipment will you use?
What method will you use?
What will you keep the same?
What will you change?

Results

What happened during the investigation?

Conclusion

What have you found out?

Evaluation

Was it a fair test?
What went well or not so well?
What could you investigate next?

Appendix 4 - NRIS Investigation Planning

Aim of investigation
What are you trying to find out?

Prediction
What do you predict will happen?

Method
How are you going to carry out the investigation?
What equipment will you use?
What method will you use?
What will you keep the same?
What will you change?

Results

What happened during the investigation?

Conclusion

What have you found out?

Evaluation

Was it a fair test?
What went well or not so well?
What could you investigate next?