Subject Story

Science

Intent

At Morden we ensure that all children are provided with rich learning experiences that aim to:

- Prepare our children for life in an increasingly scientific and technological world today and in the future.
- Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.
- Help develop and extend our children's scientific concept of their world.
- Build on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and developing the skills of 3 investigation – including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Develop the use of scientific language, recording and techniques.
- Develop the use of computing in investigating and recording.
- Make links between science and other subjects.

The National Curriculum for Science states:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills.

Implementation

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school.

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years Foundation Stage. Science teaching at Morden Primary School involves adapting and extending the curriculum to match all pupils' needs. Science is taught as discrete units and lessons where needed to ensure coverage. Teachers plan to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available.

Science is taught consistently, once a week for up to two hours, but is discretely taught in many different contexts throughout all areas of the curriculum. In history we make links with science drawing on mummification.

Impact

- Children acquire the appropriate age related knowledge linked to the science curriculum.
- Children have:
- A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.
- A richer vocabulary which will enable to articulate their understanding of taught concepts.
- High aspirations, which will see them through to further study, work and a successful adult life.
- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class. Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

If you were to walk into Science lessons at Morden, you would see:

- The use of key vocabulary and children taking ownership of their learning – Children are able to use vocabulary independently and present their findings from each half term in a format that allows them to be creative.
- Children working scientifically, where skills are built-on and developed throughout children's time in class so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.
- Reference back to the unit title page at the start of each lesson, focussing attention on the skills to be developed in the proceeding learning activities.
- Retrieval practice giving learners the chance to consolidate previous skills and knowledge.

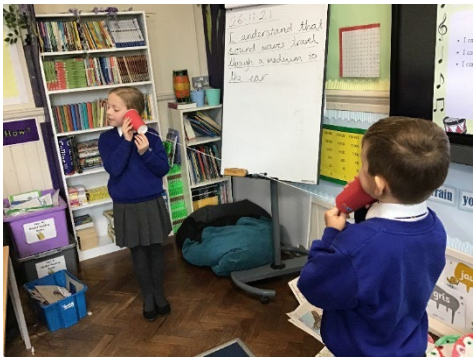
Pupil Voice

"We really enjoy Science."
"It's really fun."
"It's about making potions and things."
"It's about investigating and making things blast off."
"We can go on investigations using magnifying glasses."
"We can check out what's different I liked doing the smelling when we learned about the senses."
"We have learned about our 5 senses." – could explain what they were.
"I like the topic states of matter because we did lots of experiments."
"We can actually make our own telephones"

An example of skills and knowledge progression within our Science curriculum

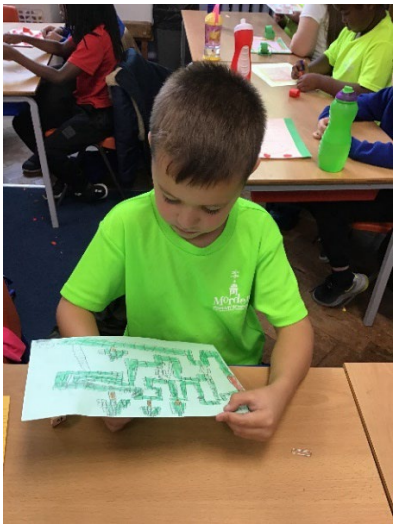
	Animals including humans		
Y1	To be able to record data in simple ways (table, Venn Diagram). To be able to observe closely, using simple equipment. To identify and classify Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety 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	Y4	To be able to record findings using labelled diagrams. To be able to use written explanations to report on findings from an enquiry. To be able to identify the correct type of enquiry to answer a question. To be able to set up a comparative test. To be able to use evidence to support findings. 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
Y2	To be able to use observations to suggest answers to questions. To be able to record data (flow diagram, table, tally chart). To be able to observe using simple equipment. To be able to perform a simple test. 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	Y5	To be able to communicate data using a scatter graph. To be able to present conclusions. To be able to use evidence to refute or support an idea. To be able to record data within tables. To be able to record data using line graphs. Describe the changes as humans develop to old age *Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.*
Y3	To be able to record using drawings. To be able to report on findings from enquiries. To be able to use evidence to answer questions. To be able to set up a comparative test. To be able to record data in a table. To be able to identify the correct type of enquiry to answer a question. 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, protection and movement	Y6	To be able to plan pattern-seeking enquiry. To be able to record results using a line graph. To be able to report causal relationships. To be able to present findings from enquiries. 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

Examples of learning

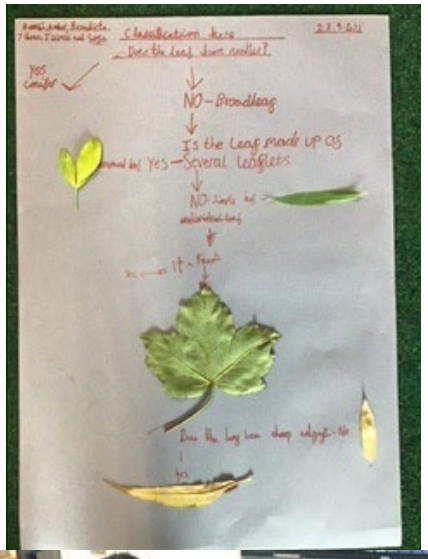


Year 4 Looking at the way sound travels.

Year 2 Testing flexibility and recording information onto a table.



Year 3 Creating magnetic games.



Whole school visit by 'Night Owls'.

Year 6 Looking at classification of a leaf.

Year 1 Growing plants.

Year 2 and 4- Trip to 'The London Wetlands'

Successes in 2021- 2022

Identify:

- Science subject story in place.
- Vision for development of Science as a subject.
- Kent scheme of work in place to guide all Science lessons.
- Organised and reviewed resources available for Science.

Develop:

- Progression of skills written, mapping skills, knowledge and vocab across year groups and unit plans link back to this (evident in MTPs).

Priorities for 2022 - 2023

Identify:

- Progression documents for each year group will be reviewed to reflect diversity.

Develop:

- Children will acquire the appropriate age-related knowledge linked to Science.
- A wide variety of skills will be taught.
- Planning will make clear which area of Science is being taught (Biology, Physics, Chemistry).
  On target posters and on displays.

- Transition Science displays to Science working walls that build week on week.
  Target achieved as seen on learning walk.
- Trips will be mapped across the units of work to promote and consolidate Science knowledge and skills.
- Years 2 and 4 went on a trip to The London Wetland Centre which continued with a mini project to complete at home where children obtained badges and certificates.
  Due to covid not all year groups have been able to organise a trip.
- A bank of resources to support diversity coverage will be sourced.

Embed:

- Monitoring will show that Science lessons match lesson plans, which match progression documents.
  Evidence during learning walks, subject release time.
- Learning objectives always make skills clear.
  Partially met needs to be consistent across the school.
- Non-negotiables outlined above (*If you were to walk into a Science lesson …*) are evident in all lessons.
- Children will be able to aware of scientific vocabulary linked to each unit.
  Highlighted on target posters and displays
- Children will be aware of which area of Science they are studying.
  Highlighted on target posters and displays
- Displays will be used by children throughout the lesson to support and develop their learning.
  Central school display and classrooms
- Diversity will be reflected across LTP for Science.
  Year groups look at famous scientists
- End of unit assessment will take place and outcomes inform planning of the next unit.
  In children's books but is it informing next teacher their progress so far.
- Staff to include end of unit tests to identify children's progress and any areas for development.

Priorities beyond 2023

Establish:

- Children will be able to clearly identify skills they have developed.
- Children will be able to complete end of unit assessments to track progression of skills and knowledge with confidence.
- Children will take ownership of their learning through more independent questioning within lessons.
- Science club
- Developing science in the wider community.
- Continuing to organise science events

- **Some websites you might find particularly interesting**
- http://www.bbc.co.uk/schools/websites/4_11/topic/science.shtml
- http://primarygamesarena.com/Subjects/Science
- http://www.primarygames.com/science.php
- https://www.topmarks.co.uk/Search.aspx?Subject=26
- http://www.bbc.co.uk/bitesize/ks2/science/
- http://www.primaryhomeworkhelp.co.uk/revision/Science/index.html
- http://www.childrensuniversity.manchester.ac.uk/
- http://www.coxhoe.durham.sch.uk/