

## **“Science and everyday life cannot, and should not, be separated” Rosalind Franklin**

### **Subject Rationale**

At Mount Street Academy we are scientists. Science is a vital part of understanding the world around us. Our science curriculum supports both a depth of understanding and skills development, whilst igniting the natural curiosity of all our pupils.

During their time at Mount Street, we want children to develop confidence through the acquisition of knowledge, to question the world around them and to nurture the desire to make a difference and to champion sustainable practices. We want children to recognise the importance of science and develop a sense of excitement and curiosity. Our children will understand how science can be used to predict, observe, discuss and explain what is happening. We want children to gain knowledge and understand the methods and processes of science.

We will:

- Create an environment where children are excited to know more.
- Develop pupils’ understanding of the world around them.
- Create future custodians that will look after and appreciate the world they have.
- Encourage children to apply scientific enquiry to enhance their knowledge and understanding.
- Give children the skills, confidence and resilience to experiment, problem solve and find solutions.

### **SCIENCE CURRICULUM INTENT**

At Mount Street Academy, in conjunction with the aims of the Early Years Foundation Stage and the National Curriculum, our Science teaching offers opportunities for children to:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry and Physics;
- Develop understanding of the nature, processes and methods of Science through different lines of enquiry that help them to answer scientific questions about the world around them.
- Be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future.
- Develop the essential scientific enquiry skills to deepen their scientific knowledge.
- Use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including I.C.T., diagrams, graphs and charts.
- Develop a respect for the materials and equipment they handle with regard to their own, and other children’s safety.
- Be curious and ask questions about what they observe to gain a deeper level of understanding.
- Develop an enthusiasm and enjoyment of scientific learning and discovery.

Through teaching Science, we aim to provide our pupils with the foundations to understand the world around them. At Mount Street Academy, Science begins in EYFS, Children in nursery and reception experience, explore and observe phenomena in the natural and man-made world. They then begin to communicate what they experience and see. Science is embedded throughout the whole EYFS curriculum, each learning environment allows children to develop their knowledge of science through Understanding the World, Communication and Language and Physical Development. In KS1 children build on these skills under the specific focus of science. At the end of KS1 children should be secure in their scientific knowledge and application of scientific enquiry in accordance with the relevant Programme of Study.

### **Key Science Concepts in the EYFS:**

- Noticing detailed features in their environment
- Comments and asks questions about aspects of the familiar world e.g. where they live or the natural world
- Can talk about some things they have observed e.g. plants, animals, natural and found object
- Talk about why things happen and how things work
- Developing an understanding of growth, decay and changes over time
- Shows care and concern for living things and the environment
- Look closely at similarities, differences patterns and change

### **Understanding the World**

#### **The Natural World : Early Learning Goal**

*Children explore the world around them, making observations and drawing pictures of animals and plants.*

*Children know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.*

*Children understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.*

The National Curriculum will provide a structure and skill development for the science curriculum being taught throughout the school.

### **KS1**

Through our science curriculum children will be able to develop their skills of scientific enquiry through first hand practical experiences combined with other sources such as video, photographs and books. This will build on the skills previously learned during their early years' experiences and enable children to acquire a firm understanding of each concept to ensure a genuine progression. We will endeavour to offer children the opportunity to develop their knowledge and skills in questioning, observing, recording, classifying and using simple equipment through practical application.

**By the end of Key Stage 1, a Mount Street Scientist will be able to...**

Use simple scientific language to share their knowledge and understanding

Perform simple tests

Observe scientific phenomena using simple equipment



Use their observations to suggest answers to questions using data they have gathered to inform these answers

Identify and classify

## IMPLEMENTATION

At Mount Street Academy we implement our approach through high quality teaching that provides appropriately challenging work for all individuals. We ensure from the moment that children start at Mount Street:

- Children have the opportunity to observe, explore and perform simple tests
- Science is taught on a weekly basis within the KS1 curriculum.
- Ensure that teaching builds on what the children already know.
- There is clear progression within the KS1 curriculum from Year one to Year two that builds on the knowledge and skills learned in Foundation Stage.

Each science lesson begins with a **science board** which identifies the key concepts and areas of science to be covered in that lesson. This allows the children to build links with previously learned work and to set clear outcomes. Experiments are delivered in the classroom, these involve children and create awe and wonder whilst developing their scientific thinking. Ways of working scientifically are carefully considered at the planning stage of all lessons to ensure children are developing their skills along with their knowledge. We wish to create young scientists who are able to predict, observe, question and share opinions.

Cross curricular links are made where possible and in particular our 'Fit to Fly' week links science with PE. Children are able to observe the effects of exercise on their body, learn the importance of food groups and the need to limit certain foods in order to live a healthy lifestyle. Children are encouraged to make healthy choices and use their scientific knowledge to make a healthy snack for their friend during DT lessons.

The local environment is used around the school to promote scientific enquiry. Children embark on minibeasts hunts searching out micro habits around our pond area. We utilise the shrubbery growing within our grounds to promote the learning of plants.

## Science and SMSC

At Mount Street Academy we are all committed to flourishing our children's Spiritual, Moral, Social and Cultural understanding. Through developing their scientific enquiry and knowledge we hope our children will leave us valuing diversity and with a commitment to care for, protect and cherish their world and those within it for a sustainable future.

<b>Spiritual</b>	<ul style="list-style-type: none"> <li>● Children will be taught to question and enquire about the world and phenomena within it</li> <li>● They will begin to consider the ethics involved when working scientifically and through discussions and debates</li> <li>● Their curiosity will be sparked through the awe and wonder of science</li> <li>● Deeper thinking may develop beliefs that consider both religious and scientific view</li> </ul>
<b>Moral</b>	<ul style="list-style-type: none"> <li>● Children will be aware of their moral responsibility towards the world and its inhabitants</li> <li>● They will consider the effect of their behavior on the world around them</li> <li>● They will consider changes that could promote sustainable living</li> <li>● They will listen to and show respect for the beliefs of others</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>● Through working scientifically children will be expected to work alongside others respectfully</li> <li>● Skills of communication, listening, sharing, respect and team work will be developed</li> <li>● They will take responsibility for their own and the safety of others</li> </ul>
<b>Cultural</b>	<ul style="list-style-type: none"> <li>● Children will be accepting of science as part of the culture within their education in the same way they accept reading, writing and number</li> <li>● They will explore and celebrate scientists and scientific discoveries through different cultures</li> <li>● Science will be relevant to the culture around them but will also consider how scientific discoveries from around the world have affected our lives</li> </ul>

## Science and British Values

<b>Democracy</b>	<ul style="list-style-type: none"> <li>● Children will learn that everyone's opinions matter</li> <li>● Children will take the views and opinions of all children into account</li> <li>● They will be fair and take turns</li> </ul>
<b>The rule of the law</b>	<ul style="list-style-type: none"> <li>● Children will understand the importance of safety rules when using equipment to work scientifically</li> </ul>
<b>Individual liberty</b>	<ul style="list-style-type: none"> <li>● Children will make their own predictions and choices when planning an experiment</li> <li>● Children will learn that it is ok to have a different idea or opinion</li> </ul>
<b>Tolerance</b>	<ul style="list-style-type: none"> <li>● Children will learn about science across the cultures</li> <li>● They will begin to understand that Religious beliefs may compete with Scientific beliefs</li> </ul>
<b>Mutual respect</b>	<ul style="list-style-type: none"> <li>● Children will work together during investigations</li> <li>● Children will learn to discuss their findings</li> <li>● Children will offer support and advice to others</li> </ul>

## IMPACT

We expect that when we have implemented all of the above, by the time the children leave us at Mount Street they will have:

- developed detailed knowledge and skills in the key concepts of science and have achieved the expected standard for each year group.
- gained a deeper level of understanding of the world around them and will use this understanding as a foundation to their learning in Key Stage Two.
- had the chance to develop the ability to make connections in science lessons to other areas of learning.
- pride in what they have achieved and present this in a positive manner, whether in books, through pictures or in conversations.

Marking and Assessment:

At the end of KS1 teachers will use the pupil I can statements from within the statutory teacher assessment framework to inform their judgements. This will be based on evidence gathered within the classroom that shows that the children have grasped all the 'working scientifically', statements and all the 'science content' taught during KS1. This evidence may also come from work produced in different curriculum subjects.

Teachers will consider a range of evidence such as:

- Pupils' responses to practical work
- Teachers' notes relating to practical work
- Answers to questions from science quizzes

The Science Subject Leader has a clear role and overall responsibility for the progress of all children in science throughout school. Regular book looks, learning walks, planning scrutiny and child interviews provide the overall picture of Science across school and supports the monitoring and evaluation of the intent and implementation outlined above, allowing for exploration and challenge. The key focus for this is to seek:

<b><u>PUPIL VOICE</u></b>	<b><u>EVIDENCE IN KNOWLEDGE</u></b>	<b><u>EVIDENCE IN SKILLS</u></b>	<b><u>BREADTH AND DEPTH</u></b>
Through discussion and feedback, children talk enthusiastically about their science lessons and speak about how they love learning. They can articulate the context in which Science is being taught and relate this to real life purposes.	Pupils know how and why Science is used and is evident in the outside world and in the workplace.	Pupils use acquired vocabulary in science lessons. They have the skills to use methods independently, show resilience, follow lines of enquiry and ask relevant questions.	Teachers plan a range of opportunities to use science inside and outside school.

Throughout Y1 and Y2 teachers currently use statements provided by the Teacher Tracker assessment tool to record children's progress. The statements are highlighted in either red, amber or green to show how secure the children are within each statement. Teachers use the range of evidence mentioned above to inform their decision. A record of this assessment is kept in each child's science book. The science book follows the child from Y1 to Y2 giving the teacher the opportunity to visit previous learning. The science book is a place for children to share their knowledge and skills and for class teachers to record their own observations of each child's learning. The use of retrieval practice strategies such as brain dumps and science quizzes are used to reinforce the children's knowledge and to inform teacher planning and assessments.