

# St Joseph's Catholic Primary School



## Science Policy

Signed by:

A Whitehead

Subject Leader

Date: February 23

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Head Teacher

Date: \_\_\_\_\_

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Chair of Governors

Date: \_\_\_\_\_

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# 1. Statement of intent

## Science curriculum

- 1.1 At St Joseph's we believe that science 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.
- 1.2 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.
- 1.3 At St Joseph's, we aim to ensure that all pupils:
- 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 types of science enquiries that help them to answer scientific questions about the world around them
  - Are equipped with the scientific knowledge required to understand the **uses and implications** of science today and for the future.

## 2. Legal framework

- 2.1 This policy has due regard to all relevant legislation and statutory guidance including, but not limited to, the following:
- DfE (2013) [National curriculum in England: science programmes of study: key stages 1 and 2](#)
  - DfE (2017) [Statutory framework for the early years foundation stage](#)
  - Equality Act 2010
- 2.2 This policy operates in conjunction with the following school policies:
- Equal Opportunities Policy
  - Primary Assessment Policy
  - SEND Policy.

## 3. Roles and responsibilities

### 3.1 The **subject leader** is responsible for:

- Preparing policy documents, curriculum plans and schemes of work for science
- Reviewing changes to the National Curriculum and advising teachers on the implementation of these
- Monitoring the learning and teaching of science, providing support for staff where necessary
- Ensuring the continuity and progression from year-group to year-group
- Helping to develop colleagues' expertise in science
- Organising the deployment of resources and carrying out an annual audit of all related resources
- Liaising with teachers across all phases
- Liaising with the SENCO about support for pupils with SEND
- Communicating developments in the teaching of science to all teaching staff and the SLT as appropriate
- Leading staff meetings and providing staff members with the appropriate training
- Organising, providing and monitoring CPD opportunities in science
- Ensuring common standards are met for recording and assessing pupil performance
- Advising on the contribution of science to other curriculum areas, including cross-curricular links and extra-curricular activities
- Collating assessment data and setting new priorities for the development of science in subsequent years.

### 3.2 The **classroom teacher** is responsible for:

- Acting in accordance with this policy
- Ensuring the progression of pupils' knowledge and working scientifically skills, with due regard to the National Curriculum
- Planning lessons effectively, using the school's chosen scheme of work and ensuring a range of teaching methods are used to cover the content of the National Curriculum
- Sharing and displaying pupils' work in a way that enhances the learning environment and promotes a variety of ideas and designs
- Liaising with the subject leader about key topics, resources and support for individual pupils
- Monitoring the progress of the pupils in their class and reporting this to parents and/or carers on an annual basis
- Reporting any concerns regarding the teaching of science to the subject leader or a member of the SLT
- Undertaking any training that is necessary to effectively teach science
- Evaluating schemes of work and maintaining the resources required to deliver lessons.

### 3.3 The **SENCO** is responsible for:

- Liaising with the subject leader to implement and develop specialist science-based learning throughout the school
- Organising and providing training for staff regarding the curriculum for pupils with SEND
- Advising staff on how best to support pupils' needs
- Advising staff on the inclusion of science in pupils' learning support plans (LSPs)
- Advising staff on the use of TAs to meet pupils' needs.

#### **4. Curriculum objectives**

4.1 The science curriculum will cover all statements contained within the [National curriculum in England: science programmes of study: key stages 1 and 2](#) and the [Statutory framework for the early years foundation stage](#).

#### **5. Subject content**

##### **EYFS**

5.1 Pupils will be taught following the statutory framework for the early years foundation stage.

##### *EYFS end point*

5.2 By the end of Foundation 2, pupils will know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes. This will prepare pupils to readily access the Key Stage 1 curriculum.

##### **Key Stage 1**

5.3 Pupils will be taught following the National curriculum in England: science programmes of study: key stage 1.

KS1 end point – statements from the [Teacher assessment frameworks at the end of key stage 1](#)

##### Working scientifically

5.4 The pupil can, using appropriate scientific language from the National curriculum in England:

- Ask their own questions about what they notice
- Use different types of scientific enquiry to gather and record data, using simple equipment where appropriate, to answer questions:
  - Observing changes over time
  - Noticing patterns
  - Grouping and classifying things
  - Carrying out simple comparative tests
  - Finding things out using secondary sources of information
  - Communicate their ideas, what they do and what they find out, in a variety of ways.

## **Knowledge**

### 5.5 The pupil can:

- Name and locate parts of the human body, including those related to the senses [Year 1], and describe the importance of exercise, a balanced diet and hygiene for humans [Year 2]
- Describe the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults [Year 2]
- Describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants [Year 2]
- Identify whether things are alive, dead or have never lived [Year 2]
- Describe and compare the observable features of animals from a range of groups [Year 1]
- Group animals according to what they eat [Year 1], describe how animals get their food from other animals and/or from plants, and use simple food chains to describe these relationships [Year 2]
- Describe seasonal changes [Year 1]
- Name different plants and animals and describe how they are suited to different habitats [Year 2]
- Distinguish objects from materials, describe their properties, identify and group everyday materials [Year 1] and compare their suitability for different uses [Year 2].

## **Key Stage 2**

5.6 Pupils will be taught following the National curriculum in England: science programmes of study: key stage 2.

KS2 end point – statements from the [Teacher assessment frameworks at the end of key stage 2](#)

Working scientifically

5.7 The pupil can, using appropriate scientific language from the National curriculum in England:

- Describe and evaluate their own and others' scientific ideas related to topics in the National Curriculum (including ideas that have changed over time), using evidence from a range of sources
- Ask their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources)
- Use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate
- Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Draw conclusions, explain and evaluate their methods and findings, communicating these in a variety of ways
- Raise further questions that could be investigated, based on their data and observations.

## **Knowledge**

5.8 The pupil can:

- Name and describe the functions of the main parts of the digestive [Year 4], musculoskeletal [Year 3] and circulatory systems [Year 6]; and describe and compare different reproductive processes and life cycles in animals [Year 5]
- Describe the effects of diet, exercise, drugs and lifestyle on how the body functions [Year 6]
- Name, locate and describe the functions of the main parts of plants, including those involved in reproduction [Year 5] and transporting water and nutrients [Year 3]
- Use the observable features of plants, animals and micro-organisms to group, classify and identify them into broad groups, using keys or other methods [Year 6]
- Construct and interpret food chains [Year 4]
- Describe the requirements of plants for life and growth [Year 3]; and explain how environmental changes may have an impact on living things [Year 4]
- Use the basic ideas of inheritance, variation and adaptation to describe how living things have changed over time and evolved [Year 6]; and describe how fossils are formed [Year 3] and provide evidence for evolution [Year 6]

- Group and identify materials [Year 5], including rocks [Year 3], in different ways according to their properties, based on first-hand observation; and justify the use of different everyday materials for different uses, based on their properties [Year 5]
- Describe the characteristics of different states of matter and group materials on this basis; and describe how materials change state at different temperatures, using this to explain everyday phenomena, including the water cycle [Year 4]
- Identify and describe what happens when dissolving occurs in everyday situations; and describe how to separate mixtures and solutions into their components [Year 5]
- Identify, with reasons, whether changes in materials are reversible or not [Year 5]
- Use the idea that light from light sources, or reflected light, travels in straight lines and enters our eyes to explain how we see objects [Year 6], and the formation [Year 3], shape [Year 6] and size of shadows [Year 3]
- Use the idea that sounds are associated with vibrations, and that they require a medium to travel through, to explain how sounds are made and heard [Year 4]
- Describe the relationship between the pitch of a sound and the features of its source; and between the volume of a sound, the strength of the vibrations and the distance from its source [Year 4]
- Describe the effects of simple forces that involve contact (air and water resistance, friction) [Year 5], that act at a distance (magnetic forces, including those between like and unlike magnetic poles) [Year 3], and gravity [Year 5]
- Identify simple mechanisms, including levers, gears and pulleys, that increase the effect of a force [Year 5]
- Use simple apparatus to construct and control a series circuit, and describe how the circuit may be affected when changes are made to it; and use recognised symbols to represent simple series circuit diagrams [Year 6]
- Describe the shapes and relative movements of the Sun, Moon, Earth and other planets in the solar system; and explain the apparent movement of the Sun across the sky in terms of the Earth's rotation and that this results in day and night [Year 5].

## **6. Equal opportunities**

6.1 We are an inclusive school that ensures all pupils are provided with equal learning opportunities, regardless of social class, gender, culture, race, disability or learning difficulties. Our Equal Opportunities Policy ensures all pupils are able to achieve their potential in all areas of the curriculum.

6.2 In order to ensure pupils with SEND achieve to the best of their ability, outcomes are adapted, and the delivery of the science curriculum is differentiated for these pupils, in line with the school's SEND Policy.

6.3 The planning and organising of teaching strategies for science will be reviewed on a termly basis by the subject leader to ensure that no pupil is at a disadvantage.

6.4 The school aims to maximise the use and benefits of science as one of many resources to enable all pupils to achieve their full potential.

## **7. Cross-curricular links**

### **English**

7.1 Science enhances English through **spoken language** by pupils:

- Participating in discussion, taking turns and listening to what others say
- Asking relevant questions to extend their knowledge and understanding
- Listening and responding appropriately to adults
- Giving verbal descriptions and explanations
- Considering and evaluating different opinions
- Using discussions as a way to explore ideas and viewpoints.

7.2 Science enhances English through **writing** by providing opportunities for pupils to:

- Write for real purposes and audiences
- Develop descriptive writing based on first-hand experience
- Write instructions about how to carry out a scientific process e.g. separating materials
- Write about their science learning using appropriate text types.

### **Mathematics**

7.3 Science enhances **Mathematics** by providing opportunities for pupils to:

- Use appropriate standard and non-standard measures
- Use a range of measuring equipment
- Convert between different units of measure
- Record data in a range of tables, charts and graphs
- Interpret data to answer science enquiry data.

### **Computing**

7.4 Science enhances **Computing** by giving pupils opportunities to:

- Use technology purposefully to create, organise, store, manipulate and retrieve digital content e.g. photographs
- Use technology to collect and present data e.g. using a data-logger
- Use software to present data e.g. using a spreadsheet to present data as charts and graphs
- Use technology for research.

## **Art and Design**

7.5 Science enhances **Art and Design** by providing a context for pupils to:

- Create sketch books to record their observations and use them to review and revisit ideas
- Improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay].

## **Design and Technology**

7.6 Science enhances **Design and Technology** by giving pupils the knowledge:

- To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- To use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- To use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- Of a healthy and varied diet
- Of seasonality, and where and how a variety of ingredients are grown.

## **Geography**

7.7 Science enhances **Geography** by giving pupils opportunities to:

- Identify seasonal and daily weather patterns in the United Kingdom
- Use simple fieldwork and observational skills to study the geography of their school and its grounds.

## **History**

7.8 Science enhances **History** by giving pupils opportunities to:

- Investigate products past and present; exploring the materials used
- Learn about how scientific ideas have changed over time
- Learn about a significant person/people in their locality linked to science.

## **8. Health and safety**

8.1 Teachers will seek and follow health and safety guidance from CLEAPSS/local authority to ensure that they, and their pupils, are safe during practical work. Teachers check equipment before use to ensure it is safe to use. Pupils will be taught to use scientific equipment safely during practical activities.

## **9. Teaching and Learning**

9.1 Science lessons are delivered weekly for pupils in Key Stage 1 and Key Stage 2. It is down to the discretion of the class teacher if the lessons are taught in two short or one longer session.

9.2 The school uses a variety of teaching and learning styles in science lessons that are matched to the activity and ability of pupils. The main aim of these lessons is to develop pupils' knowledge and working scientifically skills.

9.3 Teaching and learning styles are adapted to support pupils with SEND to ensure these pupils continue to have their confidence and self-esteem raised.

9.4 Teachers ensure pupils apply their knowledge and working scientifically skills when carrying out enquiry work.

9.5 The school uses a mixture of whole-class teaching, group work and individual activities. Pupils are given the opportunity to work on their own and collaborate with others, listening to the ideas of others and treating these with respect.

9.6 Principles for effective teaching include:

- Setting tasks in the context of pupils' prior knowledge – revisiting prior learning
- Promoting active learning
- Inspiring, exciting and motivating pupils to know more.

9.7 Strategies for effective teaching include:

- Ensuring the teaching methods used suit the purpose and needs of the pupils
- Providing a meaningful context and clear purpose for science enquiry
- Using focussed teaching of working scientifically skills
- Ensuring enquiry work builds a body of knowledge.

9.8 The classroom teacher will work with the subject leader to ensure that the needs of all pupils are met by:

- Setting tasks which can have a variety of creative and innovative responses
- Providing resources of differing complexity, according to the ability of the pupils

- Setting tasks of varying difficulty, allowing challenge for all
- Utilising support staff to ensure that pupils are effectively supported.

9.9 Evidencing work is essential as it is a record of individual pupils' experiences and ideas throughout a year and key stage, and will be seen as evidence for assessment and reporting purposes. Work can be evidenced through the following:

- Photographs
- Videos
- Displays
- Written work
- Notes; discussion points on post-it notes can be kept in the class floor book
- Class blog/social media page.

9.10 Displays of work are used to celebrate achievement and support teaching and learning. The school promotes displays of work in classrooms and corridors to influence how pupils feel about their environment, promote high expectations and raise self-esteem. Displays are used to communicate ideas, stimulate interest, celebrate pupils' work, reflect the ethos of the school and respond to pupils' interests. A virtual display can be used on the school website to promote learning throughout the school.

## **10. Planning**

10.1 The school creates long-term, medium-term and short-term plans for the delivery of the science curriculum. These are as follows:

- Long-term – includes the sequence of topics studied through the year
- Medium-term – includes the coverage within each topic and the scientific vocabulary
- Short-term – includes the coverage within each lesson.

10.2 The subject leader is responsible for reviewing and updating long-term and medium-term plans and communicating these to teachers.

10.3 Class teachers are responsible for reviewing and updating short-term plans, building on the medium-term plans, taking into account pupils' needs and identifying the most appropriate strategies to cover the National Curriculum statements.

10.4 All relevant staff members are briefed on the school's planning procedures as part of their staff training.

10.5 Short-term plans will have clear learning intentions or enquiry questions which are shared and reviewed with pupils.

10.6 Short-term plans will specify the types of enquiry.

- 10.7 Issues of health and safety are addressed in the short-term planning and delivery of the science curriculum.
- 10.8 There will be a clear focus on direct, instructional teaching and interactive oral work with the whole class and targeted groups.
- 10.9 Short-term planning will be used flexibly to reflect the intention of the lesson, the success criteria and the aims of the next lesson.

## **11. Assessment and reporting**

- 11.1 Pupils will be assessed, and their progression recorded using Balance.
- 11.2 By the end of each key stage, pupils are expected to know, apply and understand the knowledge, skills and processes specified in the relevant programme of study.
- 11.3 An EYFS profile will be completed for each pupil in the final term of the year in which they reach age five. This will include reporting on characteristics of effective learning.
- 11.4 The progress and development of pupils within the EYFS is assessed against the early learning goals outlined in the [Statutory framework for the early years foundation stage](#).
- 11.5 The progress and development of pupils within Key Stage 1 and Key Stage 2 is assessed against the descriptors outlined in the [National curriculum in England: science programmes of study: key stages 1 and 2](#).
- 11.6 Throughout the year, teachers will plan on-going assessment opportunities in order to gauge whether pupils have achieved the key learning objectives.
- 11.7 Assessment will be undertaken in various forms, including the following:
- Listening to how pupils make decisions about their enquiry work
  - Watching how pupils use their working scientifically skills
  - Questioning

- Discussions
- Marking work
- Peer and self-evaluation.

11.8 Formative assessment, which is carried out informally throughout the year, will be used to identify pupils who are secure or not secure with the knowledge and working scientifically skills covered, in order to inform lesson planning.

11.9 Summative assessments of knowledge are made at the end of a topic. Teachers will make a judgement about the learning of each pupil in relation to the National curriculum in England and record assessments using Balance.

11.10 Summative assessment of the working scientifically skills are made at the end of the year based on the formative assessment throughout the year.

11.11 End-of-year assessments will be passed to relevant members of staff, such as the subject leader and future teachers, in order to demonstrate where pupils are at a given point in time. Where pupils are identified as not being secure in particular statements, teachers look for opportunities later in the year to cover this knowledge again.

11.12 Verbal reports will be provided at parents' evenings and written reports will be issued in line with school policy.

11.14 The progress of pupils with SEND will be monitored by the SENCO.

## **12. Resources**

12.1 The school has a selection of centrally stored equipment which is audited each year so that the pupils have the resources they require.

12.2 The school library contains resources and topic books to support pupils' research and use of the Education Library Service is encouraged.

12.3 The subject leader shares appropriate resources, including websites, with class teachers.

12.4 The science budget covers the cost of replacement equipment.

12.5 Class teachers are responsible for informing the subject leader if equipment is needed a term prior to teaching the topic, to give adequate time for these to be ordered if required.

12.6 Class teachers are responsible for collecting and returning resources to the central store.

12.7 Class teachers are responsible for reporting any broken or damaged equipment.

12.8 Pupils may occasionally be asked to bring materials from home if they can. However, to provide all pupils with the same opportunities, the school will provide for pupils who are unable to do this.

12.9 At the start/end of each school year, the subject leader will work with the head teacher to assess the school's science equipment to ensure there is sufficient for the pupils.

### **13. Monitoring and review**

13.1 The subject leader will monitor science through learning walks, work samples and pupil voice and report to the headteacher and members of the SLT.

13.2 The subject leader will write an action plan at the beginning of each academic year and review the progress throughout the year.

13.3 The subject leader will produce a report, using evidence from their action plan, which will be shared with governors at the end of each year.

13.4 This policy will be reviewed every two years by the subject leader and headteacher.

13.5 Any changes made to this policy will be communicated to all members of staff.

13.6 All members of staff directly involved with teaching science are required to familiarise themselves with this policy.

13.7 The next scheduled review date for this policy is February 2025