

## Science Policy

Blessed John Duckett School is a Catholic School and God's love is at the centre of our community.

We experience prayer and worship together, share and recognise pupils' understanding and deepening of the Christian faith.

By working together, we strive to meet the spiritual, pastoral and academic needs of our children and community.

We demonstrate our love by caring for God's world and the diverse people in it.

We aim for respect, fairness and justice in all we do.

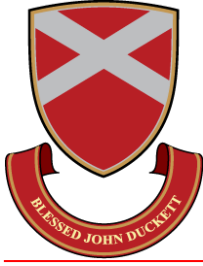
Policy agreed by Staff Summer Term 2020

Signed *Mrs S. McQuiggin* Headteacher

Agreed by Governors Summer Term 2020

Signed *Mrs E. McGurk* Chair of Governors

To be reviewed Summer Term 2022



### **Introduction**

At Blessed John Duckett Primary School, we are committed to providing all children with learning opportunities to engage in Science. This policy reflects our school's values and philosophy in relation to teaching and learning. It sets out a framework within which teaching and non-teaching staff can work, and gives guidance on planning, teaching and assessment. It has been developed through a process of consultation with school staff and Governors.

### **Rationale**

Science is an investigation of the biological, physical and chemical aspects of all things in the world. For children to gain a solid understanding and a high level of knowledge, children will have the opportunity to have first-hand experiences and use other sources of information. They will participate in investigative and problem-solving activities which will deepen their understanding of the concepts. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014.

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. It also satisfies their curiosity with knowledge. Science links direct practical experience with ideas and it engages learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling.

Through Science, pupils at Blessed John Duckett RC Primary School will continue to deepen their knowledge, respect, care and appreciation for the world and everything that is in it.

### **Statement of Intent**

At Blessed John Duckett, it is our intention for our science curriculum:

- To encourage children to have a thirst for knowledge, curiosity and fascination for Science and to instil a level of respect for the world and for all living and non-living things.
- To develop in children a passion for Science allowing them to see how it has the ability to change people's lives and the world around them.
- To raise the aspirations of children, when considering their own future by finding out about famous Scientists who have made a difference to the world.
- To give children the opportunities to discover new things through exploring and investigating.
- As Scientists, our children will develop an enquiring mind by being encouraged to ask thought-provoking, far-reaching questions.
- As Scientists, by asking and answering questions they will develop a deeper understanding of how the natural world works.

- As Scientists, children will learn to work in teams and on their own to draw conclusions
- They will be given the opportunity to apply their scientific knowledge and skills to solve problems and present their findings.
- As Scientists, children will acquire life-long skills, knowledge and concepts.
- Children will develop positive attitudes and become resilient learners.
- Children will develop a range of investigation and problem-solving skills that are transferable to other curriculum areas and which can be used to promote spiritual, moral, social and cultural development;
- This will enable pupils to develop explanation and evaluating skills.
- Children will develop a good range of scientific and technical vocabulary.
- As Scientists, children will be able to carry out research and communicate their findings in a variety of ways, including using IT. They will collect, analyse and communicate data.
- Themed home learning tasks are designed to encourage and deepen children's own knowledge and interests.
- We make the most of our scientifically rich heritage to develop children's appreciation of the influence that local people have made.
- Children will also learn about Health and Safety and know that certain rules and processes have to be followed when carrying out experiments.
- Our curriculum is tailored to the diverse needs of our children.
- We provide an enhanced curriculum which goes beyond the classroom by way of using the natural environment, local fieldwork, community links, trips and residential stays.

### **Legal Framework: The National Curriculum**

We use and adapt the National Curriculum, building on the principles of the EYFS Statutory Framework Guidance as the basis for our Science teaching.

The aims of the 2014 National Curriculum are for our pupils 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 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.

### **Aims and Objectives**

The aims and objectives at Blessed John Duckett are for pupils to:

- to develop pupils' enjoyment and interest in science
- to have an understanding of the impact that Science has on all our lives.
- to create a sense of awe and wonder for the natural world
- to carry out a range of investigations and activities to give pupils a greater understanding of the concepts and knowledge of science
- to develop a good use of scientific words,
- to develop pupils' practical skills using a range of equipment including computers.
- to extend the learning environment for our pupils by using our enriched rural environment around us,
- to promote a healthy, balanced lifestyle.

## **Roles and Responsibilities**

The Science Subject Lead is expected to:

- Attend relevant CPD and Network meetings and feedback to staff
- Ensure that teachers have knowledge of the National Curriculum for Science and know the expectations for their year group(s).
- Prepare, organise and lead CPD
- Provide advice and support for staff regarding delivery of lessons
- Monitor pupils progress and subject coverage
- Analyse results
- Organise and carry out audits of resources
- Liaising with other colleagues, from local primary and feeder secondary schools.
- Helping develop educational visits or specialist visitor provision across the school.

## **Subject Content Overview**

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.

## **EYFS**

Through play and teacher led activities children begin to develop scientific concepts and scientific thinking. By giving children the necessary skills and language they will begin to make sense of the world around them and gain an understanding of how things work. Teachers will use both indoor and outdoor learning experiences. They will learn about plants, animals, materials, weather, seasons, growth, decay and changes over time as well as natural phenomena such as forces and magnets, floating and sinking, states of matter.

## **Key Stage 1**

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

Pupils should be taught about plants, animals including humans, everyday materials, living things and their habitats and seasonal changes.

## **KS2**

The principal focus of science teaching is to enable pupils to broaden their scientific view of the world around them and to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

As they progress through the key stage, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should ask questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Pupils should be taught about plants, animals including humans, everyday materials, living things and their habitats, seasonal changes, rocks, light, forces and magnets, states of matter, sound, electricity, earth and space, evolution and inheritance.

### **Planning**

We have developed and reviewed the national scheme of guidelines for Science as the basis for our curriculum planning. We have adapted the national scheme to the local circumstances of our school wherever this is appropriate.

Our curriculum planning is in three phases, long-term, medium-term and short-term.

### **Long Term Planning**

Our long-term plan maps the Science topics studied in each term during each key stage. The subject leader works this out in conjunction with teaching colleagues in each year group. In some cases, we combine the scientific study with work in other subject areas. At other times, we arrange for the children to carry out a scientific study independently or make links through research projects.

A long term map is created. This consists of a 4-year rolling plan for KS2 and 2 year rolling plan that is repeated twice for EYFS and KS1.

### **Medium Term Planning**

Teacher's medium-term plans are linked with the overarching term's topic. These have been carefully planned out through our rolling programme.

Teachers will use knowledge maps as starting point for their planning. This informs them, of the programme of study, key knowledge and skills, ideas for working scientifically, key vocabulary and links to previous work.

### **Short term planning**

Teachers base their short-term planning on the areas indicated by the medium-term plans. The lessons are then broken down into small learning steps, with an enquiry

question and objective written for each lesson. These sequential lessons make cross curricular links and fundamental connections that provide opportunities to review, remember, deepen and apply their knowledge and understanding.

### **Teaching and Learning**

Teachers use a range of resources, ideas and strategies to deliver lessons that are engaging and ensure pupil progress.

This is carried out through a mixture of whole-class teaching and individual or group activities. Teachers encourage the children to ask as well as answer scientific questions. The children have the opportunity to use a variety of secondary sources of information, where it will enhance learning as well as gaining first hand experiences, for example, the use of books, photographs, graphs, diagrams, and computers.

As with every subject and class, we understand and recognise that we will have children with differing scientific ability in all our classes and so we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child.

### **Assessment**

Teachers use formative assessment consistently and effectively to assess the pupils' understanding and progress. This is carried out in many ways such questioning and discussions with pupils. The use of objectives and success criteria and effective feedback.

Teachers continuously evaluate each child's learning and progress. If appropriate children are given time to self-assess their learning and progress each lesson. Children's work is marked in line with the Marking Policy providing feedback and gives children opportunities to correct misconceptions and to further their understanding.

Using their knowledge of the pupil, teachers make summative assessments on a termly basis. They use their judgement of the work produced to make an assessment if a child is working at, below or above age-related expectations.

The class teacher and Science subject leader keeps samples of the children's work in a portfolio.

### **Monitoring and Review**

The subject leader is responsible for monitoring the standard of the children's work and the quality of teaching in Science, in line with the school's monitoring programme. This will take the form of lesson visits, scrutiny of work, pupil discussion, learning walks, subject audits, pupil reviews etc.

It is the responsibility of the Science Subject Leader, the Headteacher and Governors to monitor the standards of children's work and the quality of teaching in science. The Science Subject Leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school.

The Science Subject Leader gives the Headteacher an annual action plan in which s/he evaluates the strengths and weaknesses in the subject and indicates areas for further improvement.

The subject leader meets with the link governor to review the science element of the school improvement plan.

## **Resources and Equipment**

We keep these resources in a central store. We also keep a variety of resources within the classrooms. In the library we have a range of Science topic books. Topic boxes are ordered in accordance with the long term plan from Durham Learning Resources, this ensures the most up-to-date equipment, artefacts and quality reading materials are always available. These supplement our already existing resources.

[Appendix 2 – Resource List]

## **Curriculum Links**

There are many curriculum links that can be made to Science when delivering other lessons. For example, in PE the effects of exercise and healthy eating can be measured and discussed. When children are carrying out practical activities there are links made to Maths such as measuring and recording results.

In Design and Technology lessons links can be made with forces, types of materials used and many more. Computing skills will be reinforced when carrying out observation, research, collecting and presenting data, writing up findings and investigations.

Teachers are aware of the links and will make them accordingly when delivering lessons.

## **Home School Links**

Topic overviews provide information to parents about what their children will be studying throughout the term. Parents are also informed of termly school visits and/or visitors which are organised to further enrich our curriculum.

Parents have the opportunity to attend consultation evenings on a termly basis. This concludes with an annual written report outlining pupil progress within all curriculum subjects. Curriculum Information is also provided on the school website.

Homework tasks are given on a termly basis in line with the topic being studied. This provides children with the opportunity to investigate, research and reinforce their skills in a practical, creative way. Homework tasks are cross curricular and designed in such a way to engage children and families in their own learning. [Homework Policy]

## **Equal Opportunities**

At Blessed John Duckett RC Primary School we have due regard for our duties under the Equality Act 2010. Children and adults have equality of opportunity in terms of access and outcome throughout all aspects of school life.

Children are given opportunities to work with others, listen to each other and treat everyone with respect. We will ensure that we eliminate discrimination, advance equality of opportunity and foster good relations. We aim for every pupil to fulfil their potential no matter what his/her background or personal circumstances.

Please refer to our Equality Statement.

## **Special Education Needs and Disabilities**

Through our science teaching we provide learning opportunities that enable all pupils to make progress. We all recognise the importance of ensuring that children with identified Special Educational Needs and/or Disabilities have access to an ambitious curriculum.

Within Science, SEND children will be provided with reasonable adjustments through their tasks and level of challenge provided. Advice can be sought from the school's SENDco where applicable.

Please refer to the SEND Policy

## **Health and Safety**

The general teaching requirement for health and safety applies in this subject. Teachers will carry out a risk assessment before each activity, considering their tools, materials and equipment being used and reporting any perceived hazards to the Headteacher.

Before undertaking practical tasks, children should be taught to use scientific equipment safely correctly in order to ensure safety. Children should know that certain rules and processes have to be followed when carrying out experiments or undertaking field studies.

Equipment will be regularly checked and damages reported.

Where children use computers for work in Science, the school has an e-safety policy to protect the staff, pupils and the school.

Full risk assessments on all aspects of off-site visits are carried out by class teachers to ensure that all children, staff and adult helpers are kept safe and secure whilst away from the school environment.

Please refer to the appropriate policies and available risk assessments and guidance materials

## **SMSC**

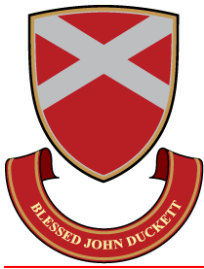
We aim to promote a caring, compassionate and fair environment within which all pupils are valued and enabled to reach their full potential. We facilitate this by fostering the values of friendship, kindness, perseverance, respect, responsibility and creativity.

All these values can be encouraged in all science lessons and all teachers will actively promote these and celebrate them.

## **Safeguarding**

This school is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment. Please refer to the Safeguarding Policy.





Year A			
	Forests	Voyages of Discovery	Mountains
	Autumn	Spring	Summer
EYFS	Seasons Materials	Working Scientifically Plants	Animals including humans (senses/basic needs/hygiene) Famous Scientists
KS 1	Seasons Materials	Working Scientifically Plants	Animals including humans (senses/basic needs/hygiene) Famous Scientists
KS 2	Food chains Life cycles and reproduction Working Scientifically	Rocks Forces Working Scientifically	Plants Water and life cycles Life and Growth Famous Scientists
Year B			
	African Adventures	Festival of Britain	Dig, Dig, Dig
	Autumn	Spring	Summer
EYFS	Seasons Animal including humans (Animals and reproduction)	Working Scientifically Plants	Living things, Habitats and food chains) Famous scientists
KS 1	Seasons Animal including humans (Animals and reproduction)	Working Scientifically Plants	Living things, Habitats and food chains Famous scientists
KS 2	Skeletons and muscles Teeth Changes in Humans Evolution	Animals including Humans Nutrition Microbiology	Digestive system Circulation Famous Scientists
Year C			
	Myths & Legends	Explorers and Travellers	Helpful Heroes
	Autumn	Spring	Summer
EYFS	Seasons <u>Materials</u>	Working Scientifically Plants	Animals including humans (senses/basic needs/hygiene)
KS 1	Seasons Materials	Working Scientifically Plants	Animals including humans (senses/basic needs/hygiene)
KS 2	Working Scientifically Famous Scientists	Living things/habitats Classification Forces and Magnets	Electricity
Year D			
	Our World, One World	Travel and Transport	Castles and Coast
	Autumn	Spring	Summer
EYFS	Seasons Living things and habitats	Working Scientifically Plants	Animals – reproduction Famous scientists
KS 1	Seasons <u>Living things and habitats</u>	Working Scientifically Plants	Animals – reproduction Famous scientists
KS 2	Living things and habitats Famous Scientists	Earth in space Forces Light	States of Matter Water cycle Properties of Materials