



# **Science Policy**

## **2020-2023**

This policy is reviewed every three years and was agreed by the Governing Body of Chellaston Junior School in Autumn 2020 **and will be reviewed again in Autumn 2023**

Signed: \_\_\_\_\_ Chair of Governors

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

### ***Non-Statutory Policy***

Science Policy

Aims and Vision

**Chellaston Junior School**



“Together we are **stepping to success**. Together we are **working to achieve our best**.”



**Our aim** In striving to become an outstanding school, at CJS we will help ALL pupils to be:

- **Successful Learners** who enjoy learning, make excellent progress and achieve very high standards across the curriculum
- **Confident Individuals** who are able to lead happy, safe, healthy and fulfilling lives
- **Responsible Citizens** who make a positive contribution to British and the global society

Curriculum Intent

At Chellaston Junior School, we ask, “**Why?**”. Our curriculum is based on developing enquiring minds.

Through our curriculum, we teach our pupils core knowledge, which then equips them with the ability to showcase their **reasoning** skills. We want our children to ask ‘why?’ and develop their independence and **resilience** to answer their own questions for themselves.

We encourage and foster pupils’ **creative thinking**, allowing them to explore and respond to the world we live in, through the curiosity of asking ‘why?’

At Chellaston Junior School, we never put a ceiling on what pupils can achieve; we stretch them so that each pupil can reach their full potential. We adapt our curriculum to suit the needs of all our learners. Our adaptations allow equality of opportunity for every child; no pupil is left behind.

Curriculum Intent for Science

Science stimulates and excites pupils’ curiosity. We encourage this **inquisitiveness** and develop pupils’ interest and enjoyment of Science by building on their interest with activities that inspire our pupils to experiment and investigate the world around them. We **excite their enquiring minds by helping them to raise and pose their own questions such as “Why.....?”, “How...?” and “What happens if...?”** We ensure that the Working Scientifically skills are built-on and developed throughout the school so that pupils can apply their science knowledge when using equipment, conducting experiments, **building arguments and explaining concepts confidently**. Across the school, pupils learn about a wide range of living things, materials and physical phenomena. They make links between ideas and, with a broadening scientific vocabulary, explain things using simple models and theories. Through various trips and interactions with experts, children build the

understanding that science has changed our lives and that it is vital to the world's future prosperity.

## 2. Teaching

Our teaching in Science should:

- Stimulate enjoyment and pleasure
- Help children acquire key subject knowledge
- Develop a child's self-confidence and independence
- Provide a feeling of achievement and satisfaction
- Promote spiritual, moral, social and cultural development
- Promote key skills of communication, application of number, ICT, improving own learning and performance, problem-solving
- Increase powers of concentration, perseverance and self-discipline
- Develop sensitivity, creativity and emotional involvement
- Offer opportunities for problem-solving in creative work
- Help our children to acquire practical scientific skills.
- Make links between Science and other subjects such as Mathematics and Design Technology.
- Offer skilful open and closed questioning and accurate teacher explanations.
- Develop the use of scientific vocabulary, language, recording and techniques.
- Develop the skills of investigation – including observing, measuring, predicting, hypothesising, experimenting, interpreting, explaining and evaluating.

Pupils will have the opportunity to work individually, in pairs and in groups. 'Pupil talk' is a central feature of our teaching to ensure that we encourage '**enquiring minds**' and shared '**creativity**'.

Curriculum Journey books will be used to record observations and to develop concepts.

Examples of how pupils can be encouraged to ask '**why**' in science lessons:

- Why does the car slow down?
- Why is it dangerous to put a plug in when it is wet?
- How are rainbows made?
- Why are sharks' defined as mammals?
- How do scientists know how much the earth weighs?
- Why can we see the moon during the day?

Pupils will be encouraged to think about 'Big Questions' each lesson and provide their own answers to these. Pupils will have the opportunity to engage in 'hands – on' practical elements to each Science lesson and use a wide variety of resources including ICT for enquiry work, such as ipads, cameras and data loggers.

## 3. Planning

At Chellaston Junior School, learning is planned by the subject leader on a medium-term planner from the themes identified in the year group long term plan. Teachers use the medium-term plans to deliver the learning opportunities as individual lessons ensuring they cover the skills and knowledge outlined in the National Curriculum.

Teachers will teach a minimum of two hours of Science each week and each lesson should aim to include one practical element. Some teachers may choose to 'Block' their Science lessons and this is acceptable practice if the whole amount of teaching time is the same as weekly lessons for the term.

#### **4. Inclusion**

Our school is an inclusive school. We aim to make all pupils feel included in all our activities. We try to make all our teaching fully inclusive. We recognise the entitlement of all pupils to a balanced, broadly-based curriculum. We have systems in place for early identification of barriers to their learning and participation so that they can engage in school activities with all other pupils. We acknowledge the need for high expectations and suitable targets for all children.

##### **4.1 Pupils with Special Educational Needs**

Pupils with learning difficulties in Science may be supported by a classroom assistant where appropriate. Learning will be differentiated by task but the aim will always be that the outcome, in terms of knowledge acquisition is the same for all pupils. Teachers will seek innovative ways to support less able learners.

##### **4.2 Pupils identified as More Able**

Pupils who are identified as talented in any aspect of the Science curriculum will, where appropriate, have their learning experiences extended and enriched by use of the knowledge, concepts and skills from KS3. They will be encouraged to attend suitable out of school activities and bring their own expertise to lessons.

Pupils we recognise as strongly engaging with Science lessons, our more able children, will have the opportunity to become a STEM ambassador.

#### **5. Assessment, Reporting and Recording**

##### **5.1 Assessment**

Formative assessment is used to identify a child's progress in each aspect of Science. It involves determining what each child has learned and what, therefore, should be the next stage of learning. Formative assessment is mostly carried out during the course of day to day teaching and through marking and feedback to pupils. There is no statutory assessment for Science at the end of Key Stage Two.

At the end of each unit taught, objectives that have been covered are highlighted on the subject progression map. On the progression map, names are recorded of pupils not yet achieving the objectives and any pupils having exceeded the objectives. The subject leader uses this information, alongside scrutiny of work and pupil interviews to complete feedback and action to share with year group teams. This review allows year groups to adapt future planning.

#### **By the end of Key Stage 2, pupils at CJS should be able to:**

- 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].

### **Working scientifically**

...using appropriate scientific language from the national curriculum, throughout the school, pupils should be able to:

- 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.

## 5.2 Reporting

Reporting on Science is done annually through a written pupil report to parents. The end of year report is based on the ongoing assessment record kept by the teacher throughout the year.

## 5.3 Recording

An assessment of learners' skills is recorded on the school's MIS (Integris) is completed and kept as an ongoing record of achievement against the skills taught. This assessment informs the end of year report and is passed on to the next teacher as part of transition.

Recorded evidence and copies of assessment sheets will be monitored by the subject leader and kept as evidence of curriculum coverage and progression.

## 6 Links across the Curriculum

Cross-curricular links are made with many subjects in Science, including the core subjects Maths and English. All topics are taught at the same time as other subject topics which have a similar theme, for example the 'Space Unit' topic is taught at the same time as the DT topic which involves 'Space Buggies'. Also, the 'Electrical Circuits Unit', focusing on how electrical circuits and components can be used to create functional parts, is taught alongside the 'Lego' DT topic.

- Maths – Data handling and statistics, including using different diagrams to sort information, Measurements, Percentages and fractional changes, decimals, calculating, Measuring changes in temperature and light.
- English – Writing reports, creating and answering questions.
- Geography – Physical geography including biomes and vegetation belts, locating plants by their countries or regions, The water cycle, weather patterns,
- ICT – Using software to support science lessons and practical activities.
- P.E – How the body works including changes during exercise, Fitness tests, use of muscles, heart rate/ pulse and how this is affected by exercise
- PSHE – Keeping safe, RHE – Reproduction, changes through age phases,
- Design Technology – Design project based around a particular brief, Food and change in state through temperature.
- Music – Recall sounds with increasing aural memory
- Art – Recreating plants and the key features, either through sketching or modelling
- History – Stone Age to Iron Age, Ancient Greece, change in medicine and medical understanding, How our understanding has changed, how we use light has changed over the years, How what we know has changed over history, how scientists have built up on previous work
- <https://www.stem.org.uk/cross-curricular-topics-resources>

## 7 Resources

All resources must be neatly placed back into the correct storage area or cupboard. Any broken or faulty resources must be reported to the Science coordinator via SHAREPOINT so that they can be quickly replenished.

All the reusable resources are in labelled containers in the Science cupboard. A list is on the back of the door to show what we have. Teachers should complete the check sheet on SHAREPOINT to record resources that are running low, so that the Science coordinator can regularly be informed of when to replenish resources.

Electricity boxes set up so that there is one for each class to use with equipment for children to have in small groups. These can be found outside Hartington class.

The science cupboard and resources in the corridor outside Y4/Y5 classrooms and in the hall are organised and have labels on each drawer.

## **8 Health and Safety**

An important aspect of Science is the need to develop the children's awareness of the need to work safely and with due regard to the health and safety of themselves and others during practical Science activities. Children will be shown how to use equipment correctly and will be under supervision at all times.

The teacher is the final decision maker about safety in his/her classroom. If there is any doubt about how to work safely, or the capacity to provide the necessary level of supervision then the activity should be postponed until advice from the subject manager or Headteacher has been obtained. If activities are deemed to be dangerous then other alternatives should be sought.

All staff should currently follow the CLEAPS guidance for carrying out practical Science during the COVID-19 epidemic.

- TRY TO MINIMISE GROUP SIZES WHEN CARRYING OUT PRACTICAL ACTIVITIES. HOWEVER, LEARNING DOES NOT NEED TO BE COMPROMISED IN AN ATTEMPT TO MAINTAIN IN-BUBBLE DISTANCING.
- WASH / GEL HANDS BEFORE AND AFTER HANDLING EQUIPMENT – TEACHERS AND CHILDREN.
- EQUIPMENT CAN BE SHARED BY PUPILS WITHIN THE SAME BUBBLE.
- EQUIPMENT CAN BE MOVED BETWEEN CLASSES IN THE SAME BUBBLE AS LONG AS IT'S ONLY USED BY THE BUBBLE.
- IF EQUIPMENT IS USED ONE LESSON BUT IT'S NOT FINISHED WITH, IT CAN BE USED AGAIN THE NEXT DAY, WITHOUT BEING QUARANTINED.
- TEACHERS WILL NEED THEIR OWN SET OF EQUIPMENT FOR DEMONSTRATIONS. IT WILL NEED TO BE QUARANTINED BEFORE USED BY ANOTHER TEACHER OR FORMS PART OF THE PUPIL SET.
- EQUIPMENT MUST NOT BE BORROWED FROM A PUPIL TO DEMONSTRATE.
- QUARANTINE THE EQUIPMENT FOR 72 HOURS, AS MOST SCIENCE EQUIPMENT WILL HAVE SOME PLASTIC IN IT. METICULOUS CLEANING MAY DAMAGE EQUIPMENT.
- ALL RESOURCES THAT NEED TO BE QUARANTINED MUST GO BACK INTO SCIENCE CUPBOARDS WITH A CLEAR SIGN STATING THAT IT IS IN QUARANTINE AND THE DATE IT WILL BE READY TO BE USED AGAIN.
- RESOURCES PLACED IN QUARANTINE STORAGE MUST INDICATE CLEARLY WITH A LABEL WHEN THEY ARE NEXT 'SAFE TO USE'.

## **9 Monitoring and Evaluation**

It is the role of the Subject Leader for Science to monitor standards and progress in Science.

Monitoring and evaluation of Science is achieved through:

- Scrutiny of Curriculum Journey books
- Pupil interviews
- Learning walks (where the subject leader has time to do this)
- Giving feedback to teachers
- Analysis of assessment information for all classes and year groups

### **Equality Statement**

At Chellaston Junior School, we actively seek to encourage equity and equality through our teaching. As such, we seek to advance the equality of opportunity between people who share any of the following characteristic:

- sex;
- ethnicity;
- disability;
- religion or belief;
- sexual orientation;
- gender reassignment;
- pregnancy or maternity.

The use of stereotypes under any of the above headings will always be challenged.