



# Science Policy

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Governor Responsibility: Quality and Outcomes Committee

Signed:

Date:

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## **Introduction**

This policy reflects the values and philosophy of Heltwate School in relation to the teaching and learning of Science. It sets out a framework within which teachers and teaching assistants can operate and gives guidance on planning, teaching and assessment.

*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.*

The National Curriculum in England 2014

## **Aims**

The aims of Science in this school are set out below and are reflective of the school's mission policy, along with the National Curriculum:

- to develop and nurture an interest in Science
- to develop scientific knowledge and conceptual understanding
- to develop an 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
- to develop an understanding of how science relates to pupils own bodies and everyday life
- for pupils to be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future
- to ensure Science is taught taking account for safe working practices
- to give pupils understanding of how to be safe when conducting experiments and investigations
- to make sure there is progression through the use of Cornerstones tailored schemes of work and through pupil's individual plans (based upon abilities, need and aspirations of students)

## **Teaching and learning**

The programs of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop a secure understanding of each strand of knowledge and understand the concepts in order to progress to the next stage. In order to achieve these aims and to ensure all areas of the Curriculum are met, the programs of study for science are set out year-by-year across the school and are linked to other areas of the Curriculum in order to develop cross-curricular studies.

The Science elements within the school are taught through 5 different pathways, these are Engage, Explore, Develop, Discover and Stepping on. Pupils on the Engage and Explore pathway learn through a play based approach, Science is not taught discreetly but embedded into pupils curriculum journey. The Engage pathway is split into the stands of 'my engagement', 'my development', 'my skills to learn' and 'my play to learn'. When pupils progress onto the Explore curriculum, they start to learn about 'the world around me'. This is extended further when pupils reach the Develop and Discover curriculum, they then start discreet Science lessons taught through a topic approach. All of the pathways involve guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment.

All classes up to Year 11 follow the Development Matters Framework and some Upper school classes use the National Curriculum KS1 Science framework, all planning should be clearly linked to the objectives. Planning is also centered around pupils individual independent learning plans; these are made up of targets specific to the pupil and are based around their needs and EHCP targets.

In addition to the EYFS framework, planning also has links with the Cornerstones 'topic' schemes of work. These topics allow Science to be taught in a meaningful, practical and interesting way to ensure conceptual understanding is developed, in line with individual pupils' targets and appropriate curriculum objectives. Cornerstones topics have different curriculum focuses, which may not always be Science based, however Science is always incorporated within these sessions to ensure continual development of knowledge and understanding. This allows pupils to transfer scientific knowledge to alternative situations and reinforce their learning. Throughout all pathways, it is encouraged that pupils develop and enrich their scientific vocabulary where appropriate and embed contextual understanding behind scientific vocabulary.

Post 16 follow the Stepping on pathway, Science is not taught discreetly but is embedded in the Preparing for Adulthood Curriculum. Both Olympic classes follow the EQUALS Moving on accredited schemes of work, Science concepts are covered in Vocational Studies, World Studies and Independent Living modules. Olympic College classes also complete ASDAN units, which include scientific elements. Pupils learn about practical science such as; safety in the kitchen, the human body, using chemicals and healthy diets, this hands on approach allows pupils to gain an understanding of scientific concepts in contextual environments.

All Students at Heltwate are provided with opportunities to use the grounds of the school to improve their scientific knowledge, as well as their understanding and curiosity, through the taught lessons at the allotment/gardening areas. Each class also has the opportunity, if appropriate to access Forest Schools sessions taught by a trained Forest School leader. Forest School has strong cross-curricular links, and the environment lends itself to exploring seasonal change, using and discovering properties of materials, plants, habitats, birds and animals. These additional learning opportunities encourage students to transfer their knowledge into alternate environments and to develop their understanding. These activities also provide students to learn as they play, challenge their own opinions and develop their interest in the world around them.

### **Attainment and Assessment**

Assessment is used to inform future planning and to provide information about individuals throughout their time in the school. Assessment techniques will ensure that teachers assess the investigative process and not simply the final outcome.

These techniques should include:

- teachers' observations of pupils on Earwig including written statements, photographs and videos
- data gathered on Earwig against the Development Matters, KS1 National Curriculum, EHCP targets and accreditation
- teacher-pupil discussion and questioning
- pupils' work produced
- pupils' ongoing analysis of their achievements
- use of ICT as appropriate

When reviewing the pupils' progress in Science, teachers must consider the children's ability to:

- show interest and engagement in Science
- question why things happen
- explore the world around them
- understand the changes in their body and how it works
- recognise the need to control variables to conduct a fair test
- select and use appropriate equipment safely and effectively
- accurately observe and measure
- interpret results and draw conclusions

Teachers use their assessment to inform planning and set targets. Each term's progress for pupils following the Cornerstones schemes are updated termly on the Earwig online assessment tracker and progress made against EHCP targets are updated on the regular basis by both teachers and teaching assistants. Yearly targets are set for pupils for each subject around individual progression. Children's individual progress and achievements in Science are shared with parents in the form of a report at the end of each term as well as termly Effort Grade reports to highlight how well they engage in Science for all pathways apart from Engage as the focus is based upon their overall engagement with adults, peers and tasks set. Science in Post 16 is assessed through moderation, a sample of all accreditation is sent for external moderation. EQUALS modules are graded through pupils level of understanding and engagement with a topic.

### **Role of the Governing Body**

The Governing Body has:

- delegated powers and responsibilities to the Head Teacher for all school personnel to comply with this policy;
- responsibility for ensuring funding is in place to support this policy;
- responsibility for ensuring policies are made available to parents;
- nominated a link governor to visit the school regularly, to liaise with the Head Teacher and to report back to the Governing Body;
- responsibility for the effective implementation, monitoring and evaluation of this policy

### **Role of the Head Teacher**

The Head Teacher will:

- ensure all school personnel are aware of and comply with the science policy requirements;
- monitor the effectiveness of this policy.
- annually report to the Governing Body on the success and development of this policy

### **Coordinator's Role**

The teachers responsible for coordinating Science are Emma Williams and Lorraine White. This may include the following:

- review and contribute to teacher planning
- prepare a policy
- develop the policy and scheme of work with staff
- prepare a subject development plan
- plan a Science Curriculum Day, including gathering feedback
- provide guidance, advice and skill
- in class teaching support
- ensuring the Science risk assessment is current
- supporting pathway leads in ordering resources
- monitoring teaching and learning in science.

The coordinators are able to monitor teaching and learning through monitoring teachers' planning, displays, Earwig scrutiny and lesson observations.

### **Role of School Staff**

School Staff are expected to:

- comply with this policy
- develop planning for Cornerstones schemes of work linking to the Science National Curriculum / Development Matters Framework
- be aware of pupils individual learning plans and target set as appropriate
- develop and deliver planning linked to Accreditation
- to ensure work for EQUALS and ASDAN Accreditation is marked and recorded appropriately and sent away to be externally moderated
- ensure lessons are supported by high quality resources
- ask for resources to be ordered which will benefit the learning of individuals, the class, or the school as a whole
- complete assessment using the following moderation tools: National Curriculum level descriptors/Development Matters, recording observation and work on Earwig
- Teachers and support staff are to ensure all work is differentiated according to cognitive levels and physical needs of all children. Where possible symbols will be used to support reading and writing, within the Science curriculum, to ensure all children can access all learning opportunities.

### **Role of Pupils**

Pupils are expected to:

- to take part in all lessons and try their best
- to look after all Scientific resources
- to listen to adult instructions at all times when taking part in any experiment
- to wash hands before and after using science equipment
- to adhere to all health and safety rules as set by teachers

### **Review and Monitoring**

This Policy will be reviewed annually allowing for any changes in the ethos of the school regarding display.

Teaching of science will be discussed with Senior Management, regarding any modifications deemed necessary.

We will raise awareness of this policy via:

- The School Handbook/Prospectus
- The school website
- The Staff Handbook
- Reports, such annual report to parents and Head teacher reports to the Governing Body