Pendle Community High School & College
Science Policy

Document Purpose

This policy reflects the school values and philosophy in relation to the teaching and learning of Science. The policy draws together National Curriculum (NC) guidelines and statutory requirements for KS1 & KS2, where possible Key Stage 3 and accreditation content for Key Stage 4, as well as promoting the Spiritual, Moral, Social and Cultural (SMSC) development which includes British Values. The policy seeks to address the individual learning needs of our pupils and sets out a framework within which teaching staff can operate. For guidance on planning, teaching and assessment, this policy should be read in conjunction with the Scheme(s) of Learning for Science which sets out in detail what pupils in different Key Stages and in different ability ranges will be taught.

This policy has been approved by the Governing Body following consultation with the wider teaching staff and is subject to regular annual reviews by the staff team and Governors.

Audience

This document is intended for all staff and other stakeholders with classroom responsibilities, school governors, parents, the Local Authority and Ofsted. A copy of this policy is made available for all staff within the curriculum policy file on the school network. A copy of this policy is also available to parents via the school website

Overview and Aims (Intent)

At Pendle Community High School and College, the Science curriculum teaches pupils to work scientifically through the disciplines of Biology, Physics and Chemistry. The curriculum is designed to develop pupils' abilities in Science and to recognise its influence in everyday life.

Science shapes and forms our lives and influences our environment. We aim to stimulate and excite pupils' curiosity about the world around them. Through the curriculum pupils are encouraged to be curious and ask and answer questions.

The curriculum is designed to be thought provoking and to develop scientific knowledge, understanding and skills about Biology topics such as Animals including Humans, Plants, Living things and their habitats, Chemistry topics such as Materials and Rocks and Physics topics such as Earth & Space, Forces & Magnets and Electricity.

Science aims to ensure that all pupils

- begin to develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- begin to 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.
- begin to be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

The Science curriculum is broad and balanced with cross curricular links, sets high expectations and is designed to provide enjoyment and appropriate challenge for all pupils.

Cultural Capital

The Science policy at Pendle Community High School and College has been designed to follow and meet the needs of the National Curriculum Programmes of Study as well as supporting the 4 key components of our curriculum intent; being safe, having positive health and wellbeing, gaining independence and improving communication including social interaction. Through these we set out the knowledge, skills and understanding that our pupils of different abilities are expected to gain.

In addition, the Science curriculum is supplemented with a range of activities designed to enrich the learning experience of all of our pupils, furthering their knowledge and understanding of the world around them and preparing them for life beyond school. These opportunities include but are not limited to:

- Providing opportunities for children to visit and explore museums, galleries and science centres.
- Increasing contact with people who work in STEM jobs by bringing them into classroom to talk about their work. This might include parents.
- Ideas for incorporating STEM content into annual and special events throughout the year. For example, British Science Week, Farmvention, Vision for Education's Competitions etc. STEM clubs
- Themed or Drop down days
- Visiting speakers, e.g. Animal Aid, Geologists

Implementation

Science at Pendle Community High School covers the 3 strands of Biology, Chemistry and Physics throughout the year, and is sequenced so that pupils can achieve depth and progression in their learning. Existing knowledge is checked prior to the commencement of each topic ensuring that teaching is planned accordingly from the pupils' starting points identified through the assessment system. Strategies for assessment can range from group tasks, quizzes, concept maps, reflection tasks and presentations. Lessons are differentiated to ensure there is appropriate challenge for all learners.

Science is delivered using a spiral curriculum approach, where learning is spread out over time and content is revisited repeatedly over the years and Key Stages. Working scientifically is central to the curriculum. Topics are encountered with increasing complexity according to the learner's cognitive ability and new learning is built upon previous learning as highlighted in the topic schemes which provide continuity, pace and challenge.

Students are exposed to key scientific terminology and meanings, in order to support their understanding and to begin to use them in their written, mathematical and verbal communication. Students will use a range of resources to develop the knowledge and skills integral to their learning and develop their understanding of working scientifically.

Independent learners are encouraged to be inquisitive, ask questions and work independently. The curriculum is designed to provide challenge and all activities will be appropriately matched for individual learning, as well as encouraging the discovery of the scientific world.

Supported and experiential learners follow a thematic approach, where many areas of the curriculum are connected and integrated within a theme. These classes work in smaller groups whose learning is met primarily through experiences and activities which are multi-sensory and stimulate learning through kinaesthetic approaches and are supported through structure and routines. This curriculum is used to enhance early learning and development in pupils across school who present with sensory issues and those who learn best via a highly experiential, multi-sensory approach.

Science is well resourced and resources are mapped to specific groups and topics to support effective teaching and learning. The Science classroom and corridor has a dedicated Science wall, displaying information facts about photosynthesis, the PH scale, the skeletal, muscular & circulatory systems etc. which ensures the school environment further supports learners in retaining subject knowledge. The local area is fully utilised to achieve the desired outcomes, with extensive opportunities for learning outside the classroom embedded in practice.

Pupils will be taught to:

- ask simple and relevant questions and using different types of scientific enquiries to answer them
- set up simple practical enquiries and perform simple comparative and fair tests.
- develop their scientific enquiry skills which include observing changes over time; pattern seeking and using simple research techniques using secondary sources.
- begin to make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment with increasing accuracy and precision and taking repeat readings when appropriate
- gather, record, identify, classify and present data in a variety of ways to help in answering questions
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- use results to draw simple conclusions, suggest improvements, raise further questions and make predictions to set up further comparative and fair tests
- begin to identify differences, similarities or changes related to simple scientific ideas and processes
- use straightforward scientific evidence to answer questions or to support their findings.

National curriculum DfE programmes of study states the importance of spoken language in pupils' development across the whole curriculum. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and being able to articulate scientific concepts clearly and precisely. Pupils must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

In KS4, Science continues to follow the above guidance but aims to follow the AQA accreditation route with AQA Unit Awards and the AQA Entry Level Certificate Single/Double Awards, with a focus on Scientific Enquiry, Physics, Biology and Chemistry.

Meeting the needs of all pupils within Science

Pupils at Pendle Community High School & College have Moderate, Severe and / or Profound and Multiple Learning Difficulties including other associated difficulties such as Autism, Multi-Sensory, Visual & Hearing Impairment(s). All pupils access a wide range of learning opportunities within science e.g. pupils with the most complex learning needs teaching and learning is based upon an immersive, multi-sensory and thematic approach.

Time Allocation / Cross-Curricular Links

The subject of science is allocated the appropriate amount of time, considering NC guidance, to provide all pupils with a broad and balanced curriculum which is appropriate for their needs. For some pupils with more profound and complex needs the breadth and balance of the curriculum is addressed through a thematic approach and/ or the engagement assessment alongside personalised timetables. This subject affords opportunities to link to other curriculum areas such as:

Literacy	Opportunities to develop oral communication through vocabulary, discussions, experiments and presentations.
Numeracy	Collecting data. Doing calculations and representing values. Choosing how to represent data. Drawing charts and graphs. Working with proportionality and ratio. Dealing with variability. Looking for relationships: line graphs.
Digital Literacy	Recording role play activities, using the internet for research, recording findings and displaying data, watching video clips.
Music	The teaching of science through the topic of Music, which is predominantly based around the sound area of the curriculum.
Cooking & Nutrition	Seasonal lifecycle of vegetables, fruits and animals
History	Linking The Stone Age to science topics such as: plants, soils, rocks, fossils, magnets, sound, light and animals, including humans.
Geography	Discovering, Evolution and inheritance, Earth and Space, properties and changes of materials and forces through the topic of Earthquakes and Volcanoes. Changing seasons
Careers/ Voc Ed	Working in STEM jobs. Women in STEM
PSHE, RSE and citizenship	The teaching of science topics such as: plants, animals, including humans through the topic of Food and Diet, Reproduction.
PE	Respiration, Circulation, fitness and health

Impact

As a pupil progresses through the school, they develop an understanding and appreciation of scientific concepts. Skills and knowledge taught in science are transferable and support pupils to do more and engage more in other curriculum areas. Teachers have high expectations and evidence of this is demonstrated in progress data and KS4 accreditation results.

Impact is also recognised in pupils' contributions, questions, reflections and enthusiasm in lessons, participation in themed days and assemblies where pupils demonstrate what they know and remember using appropriate scientific vocabulary. Some pupils will begin to develop leadership skills when working collaboratively and practically to investigate and experiment.

Pupils further develop their abilities in the 4 key components of the curriculum as well as improving writing, reading and enquiry skills. Some pupils will become more confident in analysing their own

work and drawing conclusions from results. The depth of knowledge that pupils will attain will vary but all will demonstrate progress from their individual starting points.

Pupils will have also learnt about careers and related work opportunities that are accessible for them in the local and wider community. This is enhanced by visitors to school, educational visits and fieldwork which provide opportunities for further relevant and contextual learning.

Assessment, Recording and Feedback

Teachers record progression with evidence and levels of mastery through the school's online data recording system which allows all teachers access to cross curricular targets from other subjects. Staff have a good knowledge of the strengths and areas for development of individual pupils. From this, accurate judgements can be discerned to ensure targets are sufficiently challenging to meet staff's high expectations through:

- Continuous Teacher assessment of small step targets which are related to previous National curriculum and P scales descriptors.
- External assessment leading to nationally recognised accreditation.
- The monitoring and evaluation of Individual Education Plans (IEPs) and individual objectives, target planning and recording.

In addition, summative information can be found through:

- End of Key Stage 4 Record of Achievements and accreditation
- the Annual Review of a learner's Education, Health & Care Plan.
- the annual End of Year Report.

Additional supporting comments can be gathered through:

- Regular parents' evenings.
- Comments and input from parents and other professionals.

Annotation and Feedback

Student work (be it digital or physical form) should be named, dated and annotated by staff. This annotation should include achievements, level of independence and any staff input. This is done in accordance with the annotation & marking policy and will inform future lessons and provide evidence towards student assessment progress on Onwards and Upwards.

Verbal feedback is provided constantly by staff to support and allow the student to gauge their progress and success immediately. This allows students to learn from errors/ misconceptions and to make appropriate adjustments in their learning. Verbal feedback must be appropriate to the level and understanding of the learner. Staff regularly inform the teacher as to the level of independence and mastery of targets throughout the lesson and all these contribute to supporting the staff team and teacher to fully monitor, evaluate and record pupils' progress.

Role of the Subject Leader

The subject leader's responsibilities are to:

- ensure a high profile of the subject in both the independent curriculum and the thematic approach
- ensure a full range of relevant and effective resources are available to enhance and support learning and for providing a regularly updated audit of resources planned through the annual Subject Development Planning cycle and expenditure evaluated as part of that process.
- model the teaching of Science
- ensure progression of the key knowledge and skills identified within each unit and that these are integral to the programme of study and relevant to each child's start and end points.
- monitor data, books and ensure that key knowledge is evidenced in outcomes, alongside and as supported, by SLT
- monitor planning and oversee the teaching of Science
- lead further improvement in and development of the subject as informed by effective subject audits and colleague feedback
- ensure that the Science curriculum has a positive effect on all pupils with SEND
- ensure that the Science curriculum takes account of the school's curriculum drivers which promote independence, communication, being safe and positive physical and mental health & wellbeing.
- ensure that all pupils feel connected, and acknowledging that we all connect differently. Therefore, enabling a total communication approach that supports pupil to connect in the right way for each individual.
- ensure that the curriculum takes account of the school's context and promotes children's pride in the local area and, where possible provides access to positive role models from the local area to enhance the Science curriculum
- ensure that approaches are informed by and in line with current identified good practice and pedagogy; to network and maintain existing links with clusters or individuals with specialist expertise, and take advantage of regular opportunities for professional development to enrich and improve teaching and learning in Science
- have a general responsibility for LA and Schools Safety Policies within their subject area and be directly responsible to the Headteacher for the application of all health, safety and welfare measures and procedures within their own department/ area of work. E.g. conducting risk assessments for the subject and associated educational visits.

Appendices:

1. Subject Maps for Key Stages 3 & 4
2. Schemes of Learning

Links with other policies

- Curriculum Policy
- Annotation and Marking policy
- Autism Policy
- Intensive Interaction Policy
- AAC Policy
- Total Communication Policy
- Online Safety Policy
- Health & Safety policy for subjects

This is not an exclusive list of policies and should not indicate to the reader that there are no other policies or statutory guidance relevant to the understanding of best practice within our learning community.

Policy updated:	September 2024
Policy approved by governors:	October 2024
Review Date:	September 2025
Signed: T Ashton, Chair of Governors	
Signed: D Grogan, Head Teacher