Pennine Way Primary School

Science Policy

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1.1. Statement of intent

Mission Statement: Happiness is.....
Together as a team providing an exciting and challenging learning environment which maximises independence, resilience and potential for all; Being proud of who we are, celebrating the strengths and differences that we have, working together as responsible and caring members of society as we walk the Pennine Way Pathway to Success.

Curriculum Intent

Intent

The children at Pennine Way Primary School are expected to study the different strands of the National Curriculum as they progress through the school with EYFS covering science through Understanding of the World. This will involve as much practical work as possible so that the children will gain the required skills of Scientific Enquiry. These skills include asking questions, using a variety of equipment, identifying and classifying, performing tests and gathering and recording data to help in answering questions. As the children progress through the school, they should record, classify and present data in a variety of ways and use models to describe scientific ideas.

Throughout the child's primary phase they will learn, practise and refine the skills of planning enquiries, creating fair tests and using results to form conclusions.

The children's understanding will follow a clear progression between year groups building on learning from previous year groups, revisiting ideas and addressing any misconceptions. This will help them to have a deeper understanding of the subjects covered as well as improving their long term memory. Differentiation will be used for children with SEND.

Core knowledge is taught so as to match topics taught in other subjects or to match the most suitable season of the year for that particular study ie Plants predominantly taught in Spring which is growing season.

The aims of this policy include:

- Developing pupils' interest in, and enjoyment of, science. By building on children's curiosity, the science curriculum will help to instil a positive attitude towards science in pupils.
- Delivering all the requirements of the national curriculum in relation to science and covering major scientific concepts.
- Ensuring science lessons are purposeful, accurate and imaginative.
- Ensuring pupils have sufficient scientific knowledge to understand both the uses and implications of science, today and in the future. This will also give pupils an appreciation of the changing nature of scientific knowledge.
- The development of pupils' ability to pose questions, investigate these using correct techniques, accurately record their findings using appropriate scientific language and analyse their results.

- Helping pupils develop the skills of prediction, hypothesising, experimentation, investigation, observation, measurement, interpretation and communication.
- Making pupils aware of and alert to links between science and other school subjects, as well as their lives more generally.

Signed by:

_____	Headteacher	Date: _____
_____	Chair of governors	Date: _____

1. Legal framework

1.2. This policy has due regard to statutory legislation and guidance including, but not limited to, the following:

- DfE (2013) 'Science programmes of study: key stages 1 and 2'
- DfE (2021) 'Statutory framework for the early years foundation stage'
- The Control of Substances Hazardous to Health Regulations (COSHH) 2002
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013

1.1. This policy will be used in conjunction with the following school policies and procedures:

- Health and Safety Policy
- Accident Reporting Procedure Policy

2. Roles and responsibilities

2.1. The subject leader is responsible for:

- Preparing policy documents and supporting staff with curriculum plans and schemes of work for the subject.
- Reviewing changes to the national curriculum and advising on their implementation.
- Monitoring the learning and teaching of science, providing support for staff where necessary.
- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an annual audit of all science resources.
- Liaising with teachers across all phases.
- Communicating developments in the subject to all teaching staff.
- Leading staff meetings and providing staff members with the appropriate training.
- Organising, providing and monitoring CPD opportunities in the subject.
- Ensuring common standards are met for recording and assessment.
- Advising on the contribution of science to other curriculum areas, including cross-curricular and extra-curricular activities.
- Analysing assessment data and setting new priorities for development of science in subsequent years.

2.2. The classroom teacher is responsible for:

- Acting in accordance with the school's Science Policy, ensuring that lessons are taught in line with the school's Health and Safety Policy at all times.

- Liaising with the science coordinators about key topics, resources and supporting individual pupils.
- Ensuring that all of the relevant statutory content is covered within the school year.
- Monitoring the progress of pupils in their class and reporting this on an annual basis.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team (SLT).
- Undertaking any training that is necessary in order to effectively teach the subject.
- Making adaptations to the curriculum to ensure that all pupils with SEND have full access to the curriculum, including through adapted resources and being a scribe.

3. The national curriculum

3.1. The national curriculum is followed and provides a full breakdown of the statutory content to be taught within each unit.

3.2. During **reception class**, in accordance with the 'Statutory framework for the early years foundation stage', focus will be put on the seven areas of learning, with the scientific aspect of pupils' work relating to the objectives set out within the framework.

3.3. During **years 1 and 2**, pupils will be taught to:

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.

3.4. During **years 3 and 4**, pupils will be taught to:

- Ask relevant questions and use different types of scientific enquiries to answer these questions, setting up simple practical enquiries, comparative and fair tests.
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.
- Gather, record, present and classify data in a variety of ways to help answer 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, make predictions for new values, suggest improvements and raise further questions.
- Identify differences, similarities or changes related to simple scientific ideas and processes.

- Use straightforward scientific evidence to answer questions or to support their findings.

3.5. During **years 5 and 6**, pupils will be taught to:

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further comparative and fair tests.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of the results and the degree of trust in them. This should be in oral and written forms such as displays and other presentations.
- Identify scientific evidence that has been used to support or refute ideas/arguments.

4. Cross-curricular links

4.1. Wherever possible, the science curriculum will provide opportunities to establish links with other curriculum areas to supplement the discrete Science lessons that are taught. Cross-curricular lessons would be **in addition to** the weekly Science lesson.

4.2. **English**

- Pupils are encouraged to use their speaking and listening skills to describe what is happening.
- Pupils' writing skills are developed through recording their planning, what they observe and what they found out.
- Science based texts are sometimes used in English lessons and in guided reading sessions.

4.3. **Maths**

- Science will involve a degree of numeracy at all levels.
- Pupils use their knowledge and understanding of measurement and data handling.
- Where appropriate, pupils record their findings using charts, tables and graphs.

4.4. **ICT**

- Pupils will use ICT to locate and research information.
- ICT will be used to record findings, using text, data and tables.
- Pupils are encouraged to use calculators and other electronical devices, gaining confidence throughout their school experience.

4.5. **PSHE**

- Health education is taught as part of the science unit about ourselves, which covers:
  - Health and growing
  - Teeth and eating
  - Moving and growing
  - Keeping healthy
  - Life cycles

4.6. **History**

- Scientific discoveries and the contribution of individuals to science will be studied.

4.7. **Spiritual development**

- Pupils' development will be focussed on the vastness of science and the natural world, encouraging a sense of awe.
- Pupils are encouraged to think about the effect of scientific discoveries on the modern world.
- Current scientific developments and issues will be discussed in the classroom, where appropriate.

5. Teaching and learning

5.1. Pupils will be taught to describe associated processes and key characteristics in common language, as well as understand and use technical terminology and specialist vocabulary.

5.2. Lessons will allow for a wide range of scientific enquiry, including the following:

- Questioning, predicting and interpreting
- Pattern seeking
- Practical experiences
- Collaborative work
- Carrying out investigations
- Carrying out time-controlled observations
- Classifying and grouping
- Undertaking comparative and fair testing
- Researching using secondary sources

5.3. Opportunities for outdoor learning will be provided wherever possible.

5.4. A science overview of which objectives and which skills to be taught in each year group is located on the shared drive; this can be used to promote progression throughout the school.

6. Planning

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

6.2. Throughout Pennine Way Primary School, science is taught as a discrete lesson weekly and as part of cross-curricular themes when appropriate.

6.3. Teachers will use the key learning content in the DfE's 'Science programmes of study: key stages 1 and 2' and the national curriculum as a starting point for their planning.

6.4. Lesson plans will demonstrate the balance of visual, auditory and kinaesthetic elements used in teaching, ensuring that all pupils with different learning styles can access the learning experience.

6.5. Long-term planning will be used to outline the units to be taught within each year group.

6.6. Medium-term planning will be used to outline the vocabulary and skills that will be taught in each unit of work, as well as highlighting the opportunities for assessment.

6.7. Medium-term plans will identify learning objectives, main learning activities and differentiation.

6.8. Medium-term plans will be shared with the subject leader to ensure there is progression between years.

6.9. Short-term planning e.g knowledge organisers, knowledge notes, concept maps, trialling investigations and evaluating learning and implications for next steps will be used flexibly to reflect the objective of the lesson, the success criteria and the aim of the next lesson.

6.10. All lessons will have clear learning objectives, which are shared and reviewed with pupils.

6.11. Scientific vocabulary lists can be found on G-drive to ensure clear progression in vocabulary taught.

6.12. Knowledge notes for each objective or skill (this may be over a couple of lessons. The knowledge note will follow the same format as the planning and resource (Picture and consolidation, Memory, Discover, Interpret, Reflect).

6.13. Each study will have a knowledge organiser (a summary of information about the study), which will be in the pupils' book, available for them to use throughout the study to refer to.

6.14. Key scientific skills underpin all Science lessons.

7. Assessment and reporting

7.1. Pupils will be assessed and their progression recorded in line with the school's Assessment Policy (FFT)

7.2. Pupils will be assessed continuously throughout the year using concept maps. These will be done independently in KS2 with whole class concept maps being done in KS1 (Year 1 beginning in Spring 1) an example of which can be found in appendix 1.

7.3. Throughout the year, teachers will plan on-going formativeassessment opportunities in order to gauge whether pupils have achieved the key learning objectives.

7.4. **Assessment in science is based upon scientific knowledge and understanding,** rather than achievement in English or maths.

7.5. Assessment will be undertaken in various forms, including the following:

- Talking to pupils and asking questions

- Discussing pupils' work with them (Deep Dives)
- Marking work against the learning objective and skills
- Specific assignments for individual pupils
- Observing practical tasks and activities
- Pupils' self-evaluation of their work

7.6. Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding of subjects and informs their immediate lesson planning.

7.7. Parents will be provided with a report about their child's progress during the spring term every year.

7.8. Verbal reports will be provided at parent-teacher interviews during the Autumn and Spring terms.

7.9. Pupils with special educational needs and disabilities (SEND) will be assessed as appropriate to their specific needs and monitored by the special educational needs coordinator.

8. Equipment and resources

8.1. Science resources for each unit are stored in appropriate year groups (G-Drive)

8.2. The subject leader is responsible for ensuring that all resources and equipment are sufficiently maintained.

8.3. Equipment will be checked prior to each use and any damages or defects must be reported to the subject leader immediately.

8.4. Staff members must inform the subject leader of any changes regarding science resources, such as broken items or when new resources are required.

8.5. The subject leader will carry out an annual audit of the science resources, reordering any consumables when necessary.

8.6. Class teachers can discuss the need for new resources with the subject leader.

8.7. The subject leader is responsible for negotiating requests from staff members and ensuring resources are bought within the annual budget.

9. Health and safety

9.1. Staff members will act in accordance with the school's Health and Safety Policy at all times.

9.2. Accidents and near-misses will be reported following the procedure outlined in the school's Accident Reporting Procedure Policy.

9.3. A risk assessment will be carried out by teachers before conducting an experiment or undertaking practical activities.

9.4. All pupils will be shown how to correctly use equipment and will be monitored by staff members whilst using equipment.

9.5. All pupils will be made aware of how they are expected to behave, ensuring that they show respect to other people and the environment.

9.6. Pupils are made aware of the personal safety protocols and equipment needed when using different equipment or carrying out different tasks.

9.7. Staff members will be made aware of the COSHH and RIDDOR regulations as part of their induction training and will act in accordance with these whilst undertaking activities.

9.8. Any 'new' experiments or activities which a teacher has not used in the classroom before will be trialled prior to being performed with pupils.

9.9. At the beginning of any experiment, the teacher will outline the purpose of the experiment to the class, and all hazards and safety precautions will be thoroughly outlined.

10. Equal opportunities

10.1. All pupils will have equal access to the entire science curriculum, including practical experiments.

10.2. Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all science lessons.

10.3. Where it is not possible for a pupil to participate in a lesson because of reasons related to any of the factors outlined above, the lessons will be adapted to meet the pupil's needs and alternative arrangements involving extra support will be provided where necessary.

10.4. All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.

10.5. Pennine Way Primary School aims to provide more academically able pupils with the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

11. Monitoring and review

11.1. This policy will be reviewed on an annual basis by the subject leader.

11.2. The subject leader will monitor teaching and learning in science at Pennine Way Primary School, ensuring that the content of the national curriculum is covered.

11.3. Any changes made to this policy will be communicated to all teaching staff.