Applebee Wood Community Specialist School

Science Policy

School Vision

To offer a safe place for children with special needs to thrive, their needs are at the heart of everything we do. The whole Applebee Wood team works together to meet the needs of the child and families with support from SEN experts and outside agencies.

School Values

Respect

Belonging

Trust

Resilience

Aspiration

School Beliefs

It is important to create a happy, safe and secure leaning environment where all pupils' needs are met, where progress achievements and success are recognised and praised.

It is important to help students acquire knowledge, skills, and confidence, which enables them to lead a full, interesting and independent life.

It is important to listen and respect the pupils voice and their contributions.

It is important to develop pupil's personal responsibility and encourage decision making and choice, communicating through whatever means appropriate.

It is important to offer opportunities of working cooperatively alongside others, developing friendship and respect for others.

It is important to promote the pupil's spiritual, physical and emotional well-being so that they are secure, confident and well-motivated.

It is important that all statutory guidance is delivered to the pupils.

It is important that all staff are provided with training and development opportunities to enable effective practice.

School Aims

Every child is unique we aim to create a special place where children feel happy, safe and loved.

We believe that successful learning thrives in a fun, creative and stimulating environment.

We strive for excellence and enjoyment in everything we do.

We believe that that the individual matters. We are committed to breaking down barriers and providing equal opportunities for everyone.

We value effective partnerships with our families and friends and firmly believe that together we can help every child reach their dreams.

Science in EYFS,KS1,2,3 & 4

Science contributes to the school curriculum by stimulating and exciting pupils' curiosity and their interest in, and knowledge of, phenomena and events of the world around them. Pupils are helped to understand major scientific ideas, to appreciate how these contribute to technological change, and to recognise the cultural significance of science and the extent of its cross cultural acceptance.

Studying science enables pupils to understand the role of experimental evidence and models in evaluating explanations of phenomena and events. Science offers a range of activities which can engage all learners by linking direct experiences with ideas, developing key skills and encouraging critical and creative thought.

Pupils learn how technologies based on science have been used in industry, business and medicine and how these developments have contributed greatly to the quality of life for most people. Pupils engage in questioning and discussion about science-based issues which affect their lives, the society in which they live and the world as a whole and through this become more confident in expressing views and evaluating decisions about such matters.

Science is a body of knowledge which has been built up through the experimental testing of ideas, and which is organised in a way that makes it easy to use. Science is also a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

This document is a statement of the aims, principles and strategies for teaching and learning of science at Applebee Wood Community Specialist School.

Rationale

We believe that all pupils of this school must have regular access to science appropriate to their age and state of development and that emphasis should be given to this as a core subject.

Aims

- To provide maximum coverage of the National Curriculum in Science
- To actively involve pupils in and enable them to reflect upon their own learning and provide clear attainable goals, so that they can achieve at an appropriate level.
- To use ICT to collect, store, retrieve and present scientific information.
- To use a tracking system for assessment to cover the requirements of the National Curriculum, including reporting to parents.

National Curriculum Coverage

In the Primary Department it has been agreed by the staff to use Twinkl - PlanIt Scheme of Work for Science. The National Curriculum is covered on a rolling basis due to pupils in primary classes being of mixed ages. Classes using engagement steps access science as 'understanding the world' through continuous provision.

In KS3 the Science department schemes of work are developed by the Science Subject Leader in liaison with teaching staff. Three pathways are now offered depending on classes accessing a formal, semi-formal and pre-formal curriculum. Coverage is ensured by using the BEST Resources and Astra-Zeneca published schemes of work mapped against the National Curriculum Programme of Study. The Best Evidence Science Teaching (BEST) tests and consolidates our formal learner's understanding of key concepts in science. The Science To Raise And Track Achievement (STRATA) Scheme of work embraces a more sensory approach to understanding the world enabling our semi-formal and pre-formal learners to explore concepts and test theories.

Working scientifically skills are taught and assessed termly throughout KS3 in preparation for accreditation at KS4. Pupils are assessed on two strands, knowledge and understanding and working scientifically, progress is mapped against both strands as Combined Science.

At KS4 pupils are offered 4 pathways; AQA pre-Entry Level Units, AQA Entry Level Certificate at either Single or Double Award. GCSE AQA Trilogy Double Award is offered in addition to the Double ELC if appropriate. This offer recognises that in all classes students will exhibit a range of different needs and it allows all students to make progress, by making demands appropriate to their different abilities. It clearly identifies learning targets and provides regular opportunities for assessment and review. The AQA ELC provides for three levels of demand and the higher level requires pupils to make many independent decisions.

Teaching and Learning Styles

A variety of approaches will be used

- Practical work
- Games
- Whole class teaching
- Pupil/teacher discussion
- Pupil collaboration
- Investigations
- Problem solving
- Research
- Reflection

FOUNDATION STAGE

We teach Science in Reception as an integral part of topic work covered during the year. As the Reception class is part of the Foundation Stage of the National Curriculum, we relate the Science aspects of the children's work to objectives set out in the EYFS Development Matters, which underpin the curriculum planning for children aged naught to five. Science contributes to a child's personal and social development. Water and sand trays are provided for pupils to explore the world around them.

Planning, Continuity and Progression at KS1 & 2

By teaching science through stories children are provided with a highly playful and meaningful context for learning science. This scheme of work was developed by the science lead using STEM Learning resource collections alongside the national curriculum to ensure that all KS1 and KS2 content is covered. Donaldson and Rosen Classes access science as 'understanding the world' through continuous provision.

Long Term Plan

We use the Long Term Plan developed by the Subject Leader for all Key Stages.

Medium Term Plan

More detailed plans are written from the Long Term Plan framework.

Short Term Plan

Teachers will write their own short term plans from the medium term plans. These will include learning outcomes and adaptive teaching strategies

Planning, Continuity and Progression at KS3 & 4

Pathways

There are two schemes of work run at KS3, learners accessing a more formal curriculum will follow the BEST scheme of work and those who are accessing semi-formal and pre-formal curriculums will follow the STRATA Scheme of Work. pre-formal learners will follow the scheme of work for learner working up to level one. Whereas, semi-formal learners will follow the scheme of work for learners working from level one to four.

Long Term Plan

Long term plans are based on the yearly teaching objectives for years 7, 8 and 9 and structured on the National Curriculum programme of study for KS3, these are then mapped against the BEST or Astra-Zeneca programmes.

Medium/Short Term Plans

These are taken from the National Curriculum programmes of study for KS3 (see separate document).

Transition from KS2 to KS3

Pupils in upper primary classes, where appropriate, access some science lessons in the laboratory with some of these lessons being taught by the science teacher. This enables children to become accustomed to the room and equipment and to understand what is expected of them in the lab. This in turn informs planning for Year 7 and facilitates a smooth transition between the departments of school. Transition days are also held for those pupils new to school in Year 7, science is, where possible, included on the transition day timetable with lessons being held in the lab, taught by the science teacher.

In addition the Primary department passes on detailed information about the children including:

- Reading ages
- B-Squared assessment for Knowledge and Understanding and Working Scientifically
- Assessment information
- Topics covered
- SATs results (if relevant)

All pupils in school take part in STEM events appropriate for their age and ability which also offers pupils the chance to relate science not only to other subjects but also to see its place in the wider world.

KS4 Pathways

At KS4 pupils are offered 4 pathways; AQA pre-Entry Level Units, AQA Entry Level Certificate at either Single or Double Award and GCSE AQA Trilogy Double Award will be offered in addition if appropriate. Pupils accessing the STRATA Scheme of Study at KS3 will usually access AQA pre-entry units or Entry Level Awards

and those following the BEST Scheme will access AQA Entry Level Certificate Double Award. The most able pupils will be offered to complete a Double GCSE Science course. If appropriate this will be completed in addition to the Double ELC course. This is not definitive and pupils will always be matched with the pathway most appropriate to themselves.

Cross-curricular Links

Children are constantly presented with science, scientific concepts and language. It is a subject that helps children to place themselves, things around them and their environment into some context of understanding.

Science as a subject area can compliment, enhance and supplement the knowledge in the following subject areas (this list provides examples however is not exhaustive):

English

- Pupils talk about matters of immediate interest. They listen to others and respond appropriately. They ask questions and listen to the answers.
- Pupils recognise familiar words in simple texts. They use their knowledge of letters and sound-symbol relationships in order to read words and establish meaning when reading aloud.
- They use their knowledge of the alphabet to locate books and find information.
- Pupils' writing communicates meaning through simple words and phrases. In their reading or their writing, pupils begin to show awareness of how full stops are used.

Maths

- Pupils begin to use everyday non-standard and standard units to measure length and mass. They use non-standard units, standard metric units of length, capacity and mass, and standard units of time, in a range of contexts.
- Pupils sort objects and classify them using more than one criterion. They record their results in simple lists, tables and block graphs, in order to communicate their findings.
- Pupils extract and interpret information presented in simple tables and lists. They construct bar charts and pictograms to communicate information they have gathered, and they interpret information presented in these forms.

ICT

In Information Communication Technology skills pupils will be given opportunities to apply their ICT capability through the use of ICT tools to support their learning:

- Develop their ideas using ICT tools to amend and refine their work and enhance its quality and accuracy.
- Find things out from a variety of sources, selecting and synthesising the information to meet their needs and developing an ability to question its accuracy, bias and plausibility.
- Using word documents to process text and to make tables
- Using Powerpoint to prepare presentations.

- Review, modify and evaluate their work, reflecting critically on its quality, as it progresses.

PSD

Developing a healthy, safer lifestyle. Pupils will be taught:

- To recognise the physical and emotional changes that occur at puberty and how to manage these changes in a positive way.
- How to keep healthy and what influences health, including the media.
- That good relationships and an appropriate balance between work, leisure and exercise can promote physical and mental health.
- Basic facts and laws, including school rules, about alcohol and tobacco, illegal substances and the risks of misusing prescribed drugs.
- In a context of the importance of relationships, about human reproduction, contraception, sexually transmitted infections, HIV and high-risk behaviours including early sexual activity.
- To recognise when pressure from others threatens their personal safety and well-being, and to develop effective ways of resisting pressures, including knowing when and where to get help.
- Basic emergency aid procedures and where to get help and support.

Humanities

- Pupils will explore geological phenomenon and consider the impact of our choices with regards to energy resources.
- Pupils will investigate how our scientific understanding has developed over time and learn about key individuals who have moved our understanding forwards.

Other subjects

Geography - geology and fossil remains, fossil fuels, environment, the weather and water cycles, climate change.

Technology - technical applications of forces, friction, electricity, magnetism and the properties of materials. In food Technology pupils also study reversible changes, dissolving and solutions, nutrition, and testing for the presence of a food type, hygiene and bacterial growth.

Health education - knowledge of the human body and it's systems, microbiology.

Environmental education - pollution and how it affects our surroundings and the habitats of animals.

Careers education - knowledge of kind of career which would be suitable if they find this subject interesting.

Adaptive Teaching:

As each class is composed of pupils with a wide range of understanding, abilities and skills adaptive teaching is essential to ensure that each pupil is appropriately engaged. Pupils must be able to access the lesson at a level which interests them, where they can achieve but also which builds on their current level of attainment, stretching them and testing their limits.

Adaptive strategies can include:

- Incorporating IEPs into lesson planning.
- Setting clear objectives
- Using teaching methods that motivate pupils – visual and discussion based rather than writing.
- Small group or individual work with a TA.
- Questioning targeted at individual pupil
- Use of TA support
- Enlarging or simplifying text on work sheets
- Tasks designed to target limited range of abilities.
- Expected outcome of a task according to ability (all, most, some).
- Using graduated worksheets which contain separate sections that are graded in difficulty.
- Using pupils' ideas as a starting point.
- Teacher intervention at appropriate times by prompting, questioning and guiding.
- In investigations dictate which variables are to be investigated.

Health and Safety

Health and safety is an essential aspect of science activities. In the Primary department the medium term plans for each unit draw attention to any health and safety risk that may be involved. Each teacher may then need to carry out a risk assessment.

In the senior department, safe working practices are introduced, taught and reinforced in every science lesson.

The Science teachers are conversant with the Health and Safety policy and relevant regulations and plans accordingly. All science activities are risk assessed by the teacher and pupils.

Safety is the responsibility of the teacher who will be guided by the safety hazards shown in the following:

- Risk assessments attached to Wikid practical activities
- CLEAPSS
- Health and Safety guidelines laid down by the local authority.

Pupils are taught to recognise the Hazard warnings on chemicals and helped to read them. Continual reminders are given to all pupils to wear eye protection and lab coats etc.

Risks to students are minimised by the way resources are prepared and set out, e.g., only small amounts of solutions are given out. Distribution and collection of resources is managed so that only one group does this at a time. Glassware which has been used with chemicals is placed into a basin filled with water. Glassware that has been used with saliva is placed into a disinfectant solution.

Teachers and Teaching Assistants are familiar with the routine for eye washing and for putting out clothing on fire.

Role of Subject Leader

At **KS1** and **KS2** the subject leader ensures that all pupils receive their science entitlement. The subject leader role is to ensure that the teaching of science throughout the primary department is of a consistently high standard. They are responsible for developing the subject and, where appropriate, help teachers with the planning and delivery of a balanced science curriculum. They are also responsible for informing teachers of any developments in Scientific Strategies and for seeing that all information from INSET is disseminated to all concerned. They are also responsible for the budget and maintenance of equipment and resources through the school improvement plan.

At **KS3** and **KS4** the Science subject leader monitors the teaching of the subject. The subject leader will also operate in a consultative role at KS1 and KS2 and will play an active part in facilitating the transfer of pupils from the primary department.

The Science subject leader is responsible for the long term planning throughout these key stages and ensuring that a balanced curriculum is delivered to all pupils. They are also responsible for the budget and maintenance of equipment and resources through the school improvement plan.

Assessment (also see assessment cycle)

Assessment is an integral part of good classroom practice, essential to teaching, following and informing it. Teachers are constantly observing and assessing children's progress. This assessment is often intuitive, building on overall impression and expectation in reaction to individual performance.

Assessment will serve different purposes. It will be both formative (providing information which teachers can use in planning for future learning), and summative (providing overall evidence of the achievements of a pupil and of what he/she knows, understands and can do.

Purposes of Assessment

- To identify specific achievements.
- To diagnose specific difficulties.
- To give children specific feedback
- To evaluate curriculum and methodology.
- To increase motivation.
- To provide information to other teachers.
- To provide information to parents, governors, LEA, Government.

Assessment is both useful and manageable.

Formative continual assessment in form of a teacher mark book or record sheet and of the constant professional judgements by the teacher assessing progress, areas of difficulty and achievements can be used to inform planning and to review and update individual pupil targets.

Summative assessment can be used at regular intervals to show pupil attainment, track progress and inform reporting to parents, review and produce IEPs.

Main Ways of Assessing

- Observing what the children do, say or make and discussing it with them.
- Thoughtful questioning of pupils using open-ended questions
- Marking pupils work
- End of unit tests – oral or written
- Using B-Squared Progression Steps to find levels
- Pupil self-assessment using target sheets at beginning and end of each unit.

All pupils will be assessed using B-Squared Progression Steps at the end of each unit. This will be used to track and monitor individuals and cohorts.

Staff Development

Staff are encouraged to keep abreast of current practices and are therefore, expected to attend relevant courses and INSET. It is the responsibility of the subject leader to identify training needs of staff. Subject development meetings are held every half term.

Equal Opportunities

All children, regardless of gender, race, class, religion or special needs will be given equal access to the curriculum within the classroom environment. It is recognised, however, that effective teaching can involve some withdrawal of pupils from the classroom, but the teacher should always be aware of the school's emphasis on inclusion and equal access to the curriculum for all.

ORGANISATION OF RESOURCES

In the Primary Department resources are in topic boxes available when necessary. Resources are stored in the Primary Store Room.

In KS3/4 ***Resources Include:***
The lab is well equipped for science teaching at all key stages
Rooms have whiteboards and Multi-media PCs
Specialist equipment eg. Data loggers, cathode ray oscilloscope, dissection kits.
Limited access to ICT room and Internet
The school is developing a collection of materials and objects of scientific interest.

Outside Resources:

Outside area of science lab.

A variety of plants and small creatures in school grounds.

Allotment area.

Outdoor classroom with canopy and fire pit.

FUNDING

Funding is set aside for providing necessary equipment on an annual basis through the Science Subject Development Plan.

The provision of science equipment and published materials is reviewed annually with a view to replacing and updating as necessary.

REPORTING TO PUPILS AND PARENTS

An annual review report is completed on each individual child. In Science a detailed report is given on all aspects of the child's development and also of any problems the child may be experiencing.

There is also an opportunity to advise parents of the child's progress in science at one of the two parents' evenings. This allows both the parent and the teacher to discuss any particular concerns they may have and to encourage parents to take an active interest in what the pupil is doing.

ROLE OF SENIOR LEADERSHIP TEAM

The role of the Senior Leadership Team is to monitor the teaching and learning in Science. Science development plans and budgeting arrangements are discussed with the Curriculum Manager at the start of the financial year.

This policy will be reviewed on an annual basis.

Signed : Danyelle Hodgson
Date : 1st February 2024