2023-24

Science Policy

Executive Headteacher

Mrs K McKechnie

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**Contents:**

* Purpose Page 1
* Rationale Page 1
* Science Aims Page 2
* Curriculum Drivers Page 3
* The Science Airedale Curriculum Page 4
* Monitoring and Review Page 6
* Roles and Responsibilities Page 6
* Inclusion (include a comment around differentiation) Page 8
* Language, Literacy and Vocabulary Page 9

**Purpose**

This policy reflects the requirements for academies to provide a broad and balanced curriculum as per the [Academies Act 2010](http://www.legislation.gov.uk/ukpga/2010/32/section/1A), and the [National Curriculum programmes of study](https://www.gov.uk/government/collections/national-curriculum) which we have chosen to follow.

It also reflects requirements for inclusion and equality as set out in the [Special Educational Needs and Disability Code of Practice 2014](https://www.gov.uk/government/publications/send-code-of-practice-0-to-25) and [Equality Act 2010](http://www.legislation.gov.uk/ukpga/2010/15/part/6/chapter/1), and refers to curriculum-related expectations of governing boards set out in the Department for Education’s [Governance Handbook](https://www.gov.uk/government/publications/governance-handbook).

In addition, this policy acknowledges the requirements for promoting the learning and development of children set out in the [Early Years Foundation Stage (EYFS) statutory framework](https://www.gov.uk/government/publications/early-years-foundation-stage-framework--2)

**Rationale** Our school offers a broad and balanced curriculum which promotes the spiritual, moral, cultural, mental and physical development of pupils at our school and prepares pupils for the opportunities, responsibilities and experiences of life.

The national curriculum provides an outline of core knowledge around which we develop exciting and stimulating lessons to promote the development of pupils’ knowledge, understanding and skills as part of the wider school curriculum.

The national curriculum is just one element in the education of every child. There is time and space in our school day and in each week, term and year to range beyond the national curriculum specifications. Our curriculum provides pupils with an introduction to the essential knowledge they need to be educated citizens. It introduces pupils to the best that has been thought and said, and helps engender an appreciation of human creativity and achievement.

**Science Subject Leaders: Miss Young and Mrs Whitney**

Science at Airedale Infants and Junior Schools aims to develop children’s curiosity and introduce them to the true wonder of the world around them. Science develops children’s independence and ways of working, to enable them to make sense of the world in which they live, through investigation and using and applying their scientific skills.

**The Primary Objectives of teaching Science at Airedale Infants and Junior School are to:**

* Ask relevant questions and recognise that they can be answered in different ways
* Recognise when and how secondary sources can be used
* Identify factors in fair testing including variables and control
* Make decisions about what to observe, what measurements to use and how long to measure them for.
* Choose appropriate equipment to make measurements, using standard units of measure and simple scales accurately and with precision.
* Gather, record, classify and present a range of data in different ways.
* Record data and results using scientific diagrams and labels, keys, tables, bar and line graphs
* Use relevant scientific language to explain my findings and justify scientific ideas.
* Look for different patterns in data and begin to identify evidence that supports or disagrees with scientific ideas.
* Make practical suggestions about how working methods could be improved.
* Use results to identify when further tests and observations might be needed.

**Curriculum Drivers**

Our curriculum drivers underpin all teaching and learning. They are the key values of the school and are taught, revisited and reinforced throughout all elements of the school day.

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| **Ambition** | Aspirations | We will support pupils in identifying and setting goals and aims so that they are always trying to achieve their full potential and be the very best that they can be; and once these goals are achieved, we will strive for more! |
| Resilience | We will provide learning opportunities that present challenges and chances to work on problem solving so that pupils develop the skills and capacity to recover quickly from difficulties, refocus on success and manage themselves to the next success point. |
| Creativity | We will celebrate inventiveness, offering learning opportunities to teach, encourage and develop pupils’ imagination, ingenuity and innovation so that original ideas are explored and built upon and learning between subjects is used to best effect. |
| **Bravery** | Courage | We will inspire pupils to engage with their learning even when they are concerned about their likely success; encouraging pupils to be of strong character and to ‘have-a-go’ at tasks, learning and opportunities. |
| Determination | We will facilitate opportunities for pupils to work independently and with others, supporting them in developing the skills and attitudes needed to persevere and show fortitude in the face of adversity so that they can attain their goals and aims. |
| Curiosity | We will nurture natural curiosity; encouraging our pupils to imagine, enquire, question and investigate so they think critically and solve problems, becoming increasingly enterprising. |
| **Respect** | Tolerance | We will ensure that pupils develop the ability to rationally consider different opinions and views and are willing to explore cultures rich in diversity; they see differences as opportunity to learn and understand about the lives and cultures of others. |
| Communication | We will teach and develop the skills necessary to communicate thoughts, ideas and feelings across a range of contexts whilst listening and considering the opinions and views of others. This will in turn equip pupils with rich vocabulary and language skills. |
| Courtesy | We will promote a culture where all pupils treat one another with kindness and consideration. We will teach pupils to show politeness in their attitude and behaviour towards others; good manners will be promoted and expected. |

The Airedale Science Curriculum

Our curriculum is skills and knowledge based, including full coverage of the National Curriculum which meets the needs of all Airedale Infants and Junior pupils. This takes into consideration the school setting, local, national and international developments.

Our pupils are offered a very wide range of experiences within the curriculum to extend their understanding of themselves and the world in which they live. The children develop skills, attitudes, and values to enable them to become lifelong learners and equip them for the future. The ability to learn is underpinned by the teaching of basic skills, concepts, and values. There should be no limits to curiosity, and we instil a thirst for new experiences and knowledge.

We actively promote British Values and Social, Moral, Spiritual and Cultural differences. We also provide opportunities for our pupils to learn about the contribution of Britons to innovation, excellence and changes in the world.

The Curriculum has been organised into topics which are a vehicle to promote our school values and curriculum drivers, and allow for the development of skills and understanding within and across the subjects. Our curriculum topics allow the teaching of threshold concepts that are the fundamental ‘learning elements’. These concepts are built upon and developed within the year, across the year and over the course of the school experience.

Adaptive teaching (aka agile teaching) recognises: individual needs; the need for varied and additional resources; when, where and how additional support can be facilitated; and how children learn best. Teachers must plan lessons so that all pupils can study every national curriculum subject and experience success against age-appropriate expectations and/or their own bespoke personal targets.

**Topics/Themes 2023-24**

Airedale Infants School

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|  | **EYFS F1** | **EYFS F2** | **Year 1** | **Year 2** |
| **Autumn 1** | I Can Sing a Rainbow | Once upon a Time | Human Body (linked to AIH) | Plants |
| **Autumn 2** | Let’s Celebrate | Let’s Celebrate | Seasonal Changes | Uses of Everyday Materials |
| **Spring 1** | People Who Help us | People Who Help us | Materials |  |
| **Spring 2** | Down on the Farm | Mad about Minibeasts | Animals Inc Humans | Living Things and Habitats |
| **Summer 1** | Let’s Talk about Feelings | Zoom to the Moon |  | Animals Inc Humans |
| **Summer 2** | All Around the World | Oh We Do Like to be Beside the  Seaside | Plants |  |

Airedale Junior School

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|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Autumn 1** | Plants | States of Matter | Change of Materials | Light |
| **Autumn 2** | Animals inc Humans | Electricity | Change of Materials | All Living Things |
| **Spring 1** |  | Animals inc Humans | Earth and Space | Animals inc Humans |
| **Spring 2** | Light |  | Forces | Electricity |
| **Summer 1** | Magnets and Springs | All Living Things | Animals inc Humans |  |
| **Summer 2** | Rocks and Soild | Sound | All Living Things | Evolution |

Science permeates throughout our curriculum and links closely to our school drivers Our Trust values of Ambition, Bravery and Respect underpin our school ethos. Science opens up the children’s mind to a range of possibilities, showing children how they can take risks, investigate and explore the world around them whilst aspiring to be their very best. Through studying specifically chosen significant people in science, we provide our children with the understanding of being ambitious and where this can lead to. Much of science is linked to practical activities, where we encourage our children to be brave, making independent choices linked to working scientifically and being investigative.

Oracy and communication are fundamental skills that we believe equip our children to be life-long learners. This is promoted in science through the use of a variety of technical vocabulary, investigation and use of carefully planned speaking and listening activities in order to develop scientific enquiry and promote inquisitive conversations. The vocabulary in science is very much dependent on prior knowledge of scientific concepts so we have specifically chosen progressive vocabulary which we expect children to know, understand and apply in context.

Being independent and fostering a love for learning is crucial in our school. This is promoted in science regularly through the use of enquiry-based lesson where we encourage children to have enquiring minds.

Through studying a range of scientists, who have had an impact on our world today, children are taught to challenge past stereotypes connected to gender, wealth, disability and cultural background. This increases the children’s cultural capital and gives them a deeper understanding of the diverse world we live in and how science plays a part in this.

When children are in science lessons, they are explicitly told that they are going to be ‘scientists.’ They are then reminded of the key skills that they will learn, use and develop within this subject, specifically linking to their prior learning. The knowledge content is carefully selected and skilfully taught alongside the key skills and scientific concepts, which are threaded throughout the science curriculum. This allows children ample opportunities to revisit, reinforce and embed learning.

Within each unit of study, we pose investigative ‘BIG questions’ in order to engage and motivate them as learners. This enables the children to further develop and deepen their knowledge and understanding whilst driving their own learning forward by questioning, investigating and solving problems.

**Monitoring and Review** Monitoring and review of the quality of the curriculum, takes place on a regular basis in accordance with the school monitoring cycle, the School Development Plan and the Curriculum Action Plan. The information gathered from monitoring and review will be analysed and evaluated to allow the school to judgement the quality of the curriculum provision and how we can further improve or embed it.

Subject Leaders will triangulate a range of evidence to make a judgement on the quality of teaching and learning and when professional development and support is offered. Evidence may be in the form of: lesson observations, pupil interview, book look/work study, pupil progress meetings, learning walk, learning environment check/audit, staff interview/conversations.

**Roles and Responsibilities**

The **Academy Council** will ensure that**:**

* the policy is effective and hold the headteacher to account for its implementation.
* robust framework is in place for setting curriculum priorities and aspirational targets
* the school is teaching a "broad and balanced curriculum"
* proper provision is made for pupils with different abilities and needs, including children with special educational needs (SEN)

The **Headteacher** is responsible for ensuring that this policy is adhered to, and that:

* teaching, learning and assessment of the curriculum is good, or better, allowing all pupils to make good progress and enjoy success and achievement
* all required elements of the curriculum have aims and objectives which reflect the aims of the school and indicate how the needs of individual pupils will be met
* the amount of time provided for teaching the required elements of the curriculum is adequate and is reviewed by the subject leaders, SLT and academy council
* the school’s procedures for assessment meet all legal requirements, are robust and have good impact on the progress pupils make
* accurate provision is in place for pupils with different abilities and needs, including children with SEND so that they are able to achieve the very best they can

The **Senior Leadership Team/Curriculum Leaders** are responsible for ensuring that:

* there is a comprehensive overview of whole school topics and how, when and why key skills and knowledge will be taught through these topics
* there is clear progression of skills within a year and across years and phases and that knowledge is built upon and embedded and contextualised
* there are regular and pertinent opportunities for pupils to apply skills and knowledge within a subject and across subjects
* threshold concepts are identified and recognised by staff as essential components to learning; assessment is linked to these concepts as a manner of assessing the progress and achievement of pupils
* there is collaboration across school, across the Trust and externally so as to develop and embed staff expertise
* subject leaders carry out accurate monitoring, tracking and analysis of the quality of teaching and learning in the curriculum and that this results in high-quality provision
* the Headteacher and academy council are informed on the quality of teaching, learning and assessment within the curriculum and the progress and attainment achieved by all pupils
* the school curriculum is implemented in accordance with this policy.

**Subject Leaders** are responsible for ensuring that:

* there is clear progression of skills in their subject, within a year and across years and phases and that knowledge is built upon and embedded and contextualised
* there are regular and pertinent opportunities for pupils to apply skills and knowledge within their subject and across themes and topics
* they carry out accurate monitoring, tracking and analysis of the quality of teaching and learning in the curriculum and that this results in high-quality provision
* any staff CPD and training needs identified are met and professional development is supported so that teachers are confident and competent teaching the subject
* there is a high-quality learning environment, rich is books and literature, that supports learners in the subject
* the school curriculum is implemented in accordance with this policy.
* accurate provision is in place for pupils with different abilities and needs, including children with SEND so that they are able to achieve the very best they can

**Class teachers** are responsible for ensuring that:

* lessons and learning are relevant and engaging and are underpinned by the school’s curriculum drivers
* adaptive teaching allows all pupils to access the learning provided
* accurate provision is in place for pupils with different abilities and needs, including children with SEND so that they are able to achieve the very best they can
* there is clear progression of skills within and across the year and that knowledge is built upon and embedded and contextualised
* there are regular and pertinent opportunities for pupils to apply skills and knowledge within and across themes and topics
* they work with subject and phase leaders in order to monitor, track and analyse the quality of learning
* they identify any personal CPD and training and seek professional development so that they are confident and competent teaching the curriculum
* there is a high-quality learning environment, rich is books and literature, that supports learners in the subject
* the school curriculum is implemented in accordance with this policy.

**Inclusion** Teachers and supporting adults will have high expectations for *every* pupil. They should plan, deliver and assess learning for *all* pupils including this whose attainment is significantly above the expected standard and for pupils who have low levels of prior attainment, are making slower progress or have an identified special educational need. Teachers should use the appropriate and relevant assessment to set targets which are deliberately ambitious and then support and scaffold learners so that they are able to achieve these targets successfully; we refer to this as adaptive teaching.

A wide range of pupils have special educational needs, some of whom also have disabilities. Learning should be planned to ensure that there are no barriers to every pupil achieving. In many cases, such planning will mean that these pupils will be able to study the full national curriculum. The [special educational needs and disability code of practice](https://www.gov.uk/government/publications/send-code-of-practice-0-to-25) includes advice on approaches to identification of need which can support this. A minority of pupils will need access to specialist equipment and different approaches. The SEN and disability code of practice is clear about what should be done to meet their needs. Teachers are responsible for using SEND information to make necessary adjustments for individual pupils in individual learning sessions.

Teachers must also take account of the needs of pupils whose first language is not English. Monitoring of progress should take account of the pupil’s age, length of time in this country, previous educational experience and ability in other languages. The ability of pupils for whom English is an additional language to take part in the national curriculum may be in advance of their communication skills in English. Teachers should plan teaching opportunities to help pupils develop their English and should aim to provide the support pupils need to take part in all subjects.

Teachers should take account of their duties under equal opportunities legislation that covers race, disability, sex, religion or belief, sexual orientation and gender reassignment.

**Language, Literacy and Vocabulary**

All staff will support the development of pupils’ spoken language, reading, writing and vocabulary through the curriculum and as an integral aspects of the teaching of every subject. English is both a subject in its own right and the medium for teaching; for pupils, understanding the language provides access to the whole curriculum. Fluency in the English language is an essential foundation for success in all subjects.

Pupils will be taught to speak clearly and convey ideas confidently using Standard English. They will be supported to learn to justify ideas with reasons; ask questions to check understanding; develop vocabulary and build knowledge; negotiate; evaluate and build on the ideas of others; and select the appropriate register for effective communication. They will be supported to give well-structured descriptions and explanations and develop their understanding through speculating, hypothesising and exploring ideas. This will enable pupils to clarify their thinking as well as organise their ideas for writing.

All staff will support the development of pupils’ reading and writing through curriculum subjects. Pupils will be taught to read fluently, understand extended prose (both fiction and non-fiction) and be encouraged to read for pleasure. Our school will do everything it can and exploit all opportunities to promote wider reading.

Pupils will be supported to develop the stamina and skills to write at length, with accurate spelling and punctuation; and taught the correct use of grammar.

All staff will support the acquisition and development of vocabulary; actively building systematically on pupils’ current knowledge. We will increase pupils’ store of words and provide opportunities to make links between known and new vocabulary and discuss the shades of meaning in similar words. Staff will induct pupils into the language which defines each subject, such as accurate mathematical and scientific language.