

ASHGATE CROFT SCHOOL

SCIENCE POLICY



Approved by Curriculum & Progress Committee meeting: 30th March 2017

Minute No.: 19.2/17 (C/P)

To be reviewed by: V Bridge

Introduction

Science provides a way for pupils to look at the world and question and investigate what they see. It encourages enquiring and exploring the world around them.

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.

National Curriculum May 2014

Purpose

This policy is intended to ensure consistency of teaching and progression across the school for science.

Aims

- For students to achieve and progress in science.
- That pupils experience all aspects of science – How science works, Organisms, their Behaviour and the Environment, Materials, their Properties and the Earth and Energy, Forces and Space.
- Learn about ways of thinking, finding out and communicating ideas.
- For students to develop a curiosity and understanding of their environment and their place in the living, material and physical world.
- For students to develop thinking skills when working scientifically.
- To investigate using practical techniques.
- For students to recognise the impact the sciences make on their lives, the lives of others, the environment and on society.
- For students to express opinions and make decisions on social, moral, ethical, economic and environmental issues based upon sound understanding.

Procedures and Practice

Science at Ashgate Croft School offers pupils opportunities to think and learn and develop an interest in and a curiosity about the world around them, through exploratory and investigative experiences and activities.

The delivery of Science should in its simplest form be a stimulation of the senses and opportunity for exploration. Where possible this should be hands on, learning by exploration and by trial and error.

In response to these opportunities pupils can make progress in science by:

- Experiencing that personal actions have consequences, leading to the seeking of explanations, and an understanding of the links between cause and effects.
- Increasing the breadth and depth of their experience, knowledge and understanding.
- Linking and applying scientific knowledge and understanding of everyday life, *for example, to cooking, to their own health, in the use for functional purposes.*
- Investigating the familiar, and later developing a broader environmental and technological perspective.
- Developing an understanding of the more abstract as well as the concrete and practical.
- Moving from description to explanation of events and phenomena.

Science planning, teaching and assessing the curriculum for pupils with learning difficulties DfEE 2001.

Planning

Each department has a long term plan in place for science. Teachers are responsible for completing Medium Term Planning on the school format each term and Short Term Planning each week. Teachers use the EYFS curriculum, Astra Zenica units for PMLD classes or Learning Pathways based on the QCA units and Equals documents which fit the new National Curriculum. In some cases Learning pathways are supplied which provide teachers with some additional learning opportunities and have guidance on assessment. These are intended to be used as guides and teachers differentiate the learning outcomes appropriate to their class. All staff receive regular, concise termly feedback on Medium Term Planning from the subject leader responsible for science.

What/When is science taught?

EARLY YEARS FOUNDATION STAGE (EYFS):

What:

The EYFS pupils follow the Early Learning Goal of Understanding of the World. Pupils are encouraged to ask questions about why things happen and how they work.

Science in the EYFS is introduced indirectly through activities that encourage pupils to explore, problem solve, observe, predict, think, make decisions and talk about

the world around them. It's called 'knowledge and understanding of the world'. Pupils are guided 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. Children learn about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one to another. They make observations of animals and plants and explain why some things occur, and talk about changes.

When:

Students in the EYFS follow the same curriculum and timings as the primary department, with their learning objectives coming from the Early Learning Goals in Knowledge and Understanding of the World. (Please see the EYFS Curriculum policy). Assessments are undertaken every half term using the EYFS small steps profile devised by the Derbyshire Support service for Children with Special Educational Needs.

PRIMARY DEPARTMENT (Key Stages 1 & 2):

What:

Primary pupils follow topics within a 4 year rolling program, covering a topic each half term. The topics cover all aspects of science and include lots of practical elements of learning.

When:

Pupils are taught the equivalent of three science lessons a week across each term. Science will be included in other lessons and will be taught through cross-curricular links.

MIDDLE DEPARTMENT (Key Stage 3):

What:

Middle pupils follow topics within a 3 year rolling program, covering a topic each term. The topics cover all aspects of science and include lots of practical elements of learning.

When:

Pupils are taught two science lessons a week. Science will be included in other lessons and will be taught through cross-curricular links.

UPPER DEPARTMENT (Key Stages 4 & 5):

What:

Upper students follow topics within a 5 year rolling program, covering a topic each half term. The topics cover all aspects of science and include lots of practical elements of learning.

When:

Students are taught a discrete science lesson each week. Science will be included in other lessons such as Independent Living Skills (ILS) and will be taught through cross-curricular links.

SENSORY CURRICULUM:

Science in the Sensory Curriculum is taught for one afternoon per week. It comes under the 'Knowledge and Understanding of the World' heading and incorporates

the development of the senses of taste, smell, touch, vision, sound and bodily experience. It also covers the development of the integration of all these senses to form a multisensory approach for the child to use in learning situations.

It is assessed using B squared and the PMLD assessment.

Whole school teaching and learning

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand.

It is taught throughout all of the 4 areas of science and through many cross curricular links. Pupils are taught that it is important to collect evidence by any means when trying to answer a question. Pupils are taught about investigation and are encouraged to think and learn by answering questions throughout the lesson. Pupils are encouraged to ask and answer why/what and how questions. If they can't answer them verbally they will be encouraged to think about how they can find the answer out. PMLD students will experience science through using their senses and encouraged to problem solve.

Pupils are taught about everyday activities such as forces, light and dark, sound and electricity pushes and pulls. Students are encouraged to learn through observation and explore ways of finding things out. Pupils are encouraged to use all of their senses and explore similarities and differences between materials. Students look at properties of materials and their uses. Students look at how materials can be changed within formal science lesson and through cross curricular links within cookery and art. Pupils look at the differences between living and non-living things, exploring plants, humans and animals. They are taught about sensitivity when caring for a human or animal.

As much as possible science lessons are taught through practical activities. All classes are encouraged to use the sensory garden or in primary the EYFS outdoor learning area already set up for outside learning.

Cross curricular links including Computing

Computing is used in most subjects to engage and accelerate learning. Pupils may explore online software, play scientific based games, watch science clips or simply use technology such as cameras or Ipad to record their observations.

The activities and experiments are modified within the classes to take into account the individual needs of the pupils in that class. This may mean that pupils who cannot eat certain foods because of allergies or the way they are fed will experience these through sight, smell and texture. Wherever possible the curriculum will include multi-sensory experiences for the SLD and PMLD groups.

Assessment and Recording

For all pupils in Key Stages 1-5, assessment is with the B squared summative assessment tool. This is updated as per the attainment and progress guidelines. Individual lessons are assessed for all pupils to build up the knowledge of their achievements against the outcomes. Parents / carers are informed of student's progress via annual reviews and informally during Parents / carers' evenings.

Role of the Subject Leader

The subject leader tries to ensure sufficient equipment and resources are ready as each new topic approaches and this is regularly checked by them. Each year a survey is sent for requests from staff.

The subject leader is to revise the curriculum and ensure it is fit for purpose across the school and that all staff know where to find the information relating to the topic areas and are supported in their delivery. The subject leader links with other special schools to ensure there is consistency across the subject and that moderation is accurate. External moderation is an annual event.

The subject leader monitors teachers MTP each half term and gives support where necessary for advice or to share resources. This ensures that MTPs are completed for all classes and handed in on time; reflect curriculum coverage, include outdoor learning where possible, include continuity and progression in the subject for pupils of all abilities and promote the development of pupils' ICT skills.

Pupil achievement and progression in the subject is evaluated throughout the year and interventions set up where necessary. Regular meetings happen between the subject leader and co-ordinator to look at targets and how we can raise standards across the school.

Parental Involvement

Parents / carers are informed of Science work undertaken through the home school diaries and the curriculum coverage for the year.

Equal Opportunities

Pupils have differentiated work, are supported appropriately and are given equal opportunities through this support to explore and observe and experience and develop their scientific knowledge and skills.

All pupils in school, irrespective of age or ability have access to a curriculum which is differentiated to meet their individual needs.

See Equality Policy

Children's Rights

Article 12 - Children have the right to say what they think.

Article 23 - Children with disabilities are provided support to participate.

Article 28 - The Right to education.

Article 29 - Education must develop every child's personality, talents or abilities to the full.

Monitoring of the policy

Monitored by Vicky Bridge bi- annually.

References

- EYFS Curriculum Policy
- National Curriculum 2014
- Education Scotland.gov.uk
- Equals

Appendix 1

Learning pathway- Dinosaurs KS4/5

Objective	Info	Resources, experiments etc.
To know the events leading to the time of the dinosaurs	Please check out the videos before you show them. One of them is very long though	<p>Give pupils cut outs of South America and Africa. Discuss it like a jigsaw. Show modern map of the world. Discuss how the land was all joined together.</p> <ul style="list-style-type: none"> ➤ Fossil evidence supports this (B2 L3). (google it). Look at pictures of the development of the earth in terms of Pangea. <p>Early life- check these videos!! https://www.youtube.com/watch?v=RQm6N60bneo&safe=active Or https://www.youtube.com/watch?v=TSz71J84T9I&safe=active Recap volcanoes and that the world was covered in them and a dangerous place to be.</p>
To describe features of different dinosaurs		<p>Look at different dinosaurs. Identify key features with animals of today (legs, head, feathers, scales, carnivore, herbivore) Same and different games/ jigsaws made from dinosaur pics/ labelling the parts of the dinosaur Design a dinosaur that could live in the artic/ jungle/ desert. Describe conditions of the habitat and useful features/ adaptations that would help it to survive.</p>
To describe the world during the dinosaur era	Can tick B2 from different category. See bottom in red	<p>Predators and prey- discuss what they are Herbivores Carnivores Omnivores Dinosaur food chains- create</p>
To learn about how the dinosaur period may have ended		<p>Extinction theory- there are loads of videos which show what scientists think happened (asteroid of the Yucatan peninsula or massive volcanic eruptions in the Deccan flats (near India I think) Both of these would have had the same effect</p> <ul style="list-style-type: none"> • Massive clouds of ash obscuring the sun for ages • The plants dying due to lack of light • Herbivores starving • Carnivores starving <p>Some creatures survived this, find out which ones and look at why</p>
To know how we can find out about dinosaurs		<p>Looking at fossils- what parts are they? Find pictures on the internet Making fossils (fossil kits in resources) – bury some bones/shells in mud for pupils to excavate.</p> <ul style="list-style-type: none"> ➤ Fossil formation- pupils to make, describe process (B2 L1) ➤ Match fossils to dinosaurs they may be (B2 L1)

		<ul style="list-style-type: none"> ➤ Check out clip from Jurassic park where they find dinosaur DNA in amber (B2 L1) ➤ Compare fossils/ name common fossils/ examine fossils (B2 L2)
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Lesson starters

See attached sheets

Thinking scientifically

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

Resources

Please see the resources area for resources uploaded. If you use any please do not change them in the main folder, copy them and put into your own area.

Websites

Primary resources

Stem.org.uk – have to register but its free

BBC science clips

Education City

Topmarks

BBC bitesize

TES

Teaching ideas

www.sciencekids.co.nz

If you find any other websites please let Vicky know so they can be added onto this list. If you have any good lesson starters/experiments please let Vicky know so they can be added onto here for next time

Homework- to think of a question to ask the teacher about dinosaurs