CLOUGHWOOD ACADEMY

Science Policy

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1.0	01.02.2013	Mr B Monteith	TLCS	2 yearly	Approved by the TLCS Committee on 20.03.2013	19.03.2015
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1. Philosophy

"As humans we are curious about the environment we live in. Young children in particular show considerable curiosity, finding many ways to investigate their world. Scientists are curious, they will seek explanations." (National Curriculum Science)

1.1 All pupils can be described as scientists in that they are always asking questions about the world around them and more particularly their own locality. They instinctively want to explore, investigate and make sense of their surroundings.
1.2 At Cloughwood Academy we emphasize the development of enquiry skills, exploration, investigation and the use of a variety of recording methods throughout the curriculum. These skills are particularly relevant to our work in science. We believe school science should be a reflection of science in the 'real' world where scientists learn from each other and extend the boundaries of knowledge through a variety of research methods.
1.3 We believe that science is about knowledge and understanding, but that this needs foundation on which we can build increasingly more difficult facts. We also believe that these facts are best understood through experience and explanation. At Cloughwood Academy we recognise that the skills developed through scientific enquiry are of equal importance to the knowledge acquired.
1.4 At Cloughwood Academy, therefore, we emphasise the practical aspects of science. Teachers aim to provide stimulating environments and experiences to develop interest and exploration. In this way, pupils acquire some knowledge, but teachers through careful planning, will also provide additional experiences, opportunities and knowledge to extend the pupils learning and understanding.

2. Science Aims and Objectives

2.1 The Oxford English Dictionary describes Science as 'a branch of knowledge requiring systematic study and method, especially dealing with substances, life, and natural laws'. With this in mind we see science not only as a set of ideas but a method or process of finding out information, testing ideas and seeking explanations.
2.2 By applying this process to the differing sectors of our world. e.g. substances, life, and the natural world, we intend that the pupils will attain a grasp of the common root and core of the sciences, make better sense of the things around them and be prepared for decision-making and problem-solving in their lives.

3. Our curriculum aims to develop the following:-

3.1 Exploration and discovery to encourage awareness and interests in the environment (the natural and physical world).
3.2 Investigation - Initially using the senses and later using scientific instruments and materials.
3.3 Interest and curiosity through investigation and problem solving activities.
3.4 An ability to gather, organise, record, analyse and communicate information.
3.5 Hypothesis- ability to raise questions and testable ideas based on prior knowledge.
3.6 Application- Test hypotheses and apply findings to make sense of their new discoveries.
3.7 An understanding and a knowledge of how the world works. (To make sense of the world around them) through investigation and interactions in which they are involved.
3.8 Attitudes and awareness that will foster the care of living things.
3.9 Interest that will encourage the children to willingly select material for observations and investigations.
3.10 We aim to provide carefully planned experiences for pupils which promote the acquisition of these skills and also develop positive attitudes towards their scientific work.
3.11 As pupils explore and investigate, we also seek to provide them with the relevant facts and knowledge which helps them to interpret, formulate ideas and hypothesize.

4. Our Objectives

4.1 To be able to plan science investigations which take account of fair testing.
4.2 To observe, test, record, hypothesize and make comparisons.
4.3 To measure and collect relevant data and information.
4.4 To identify patterns when they occur and record findings using a variety of ways.
4.5 To reflect and make conclusions about outcomes to investigations.
4.6 To be able to persevere and discipline themselves to see an experiment through, and to be able to accept failure when it occurs.
4.7 To accept that re-testing is sometimes needed to confirm scientific findings.
4.8 To know and appreciate scientific language.
4.9 To work collaboratively with others and respect alternative points of view.

5. The content of our Science Curriculum includes:

5.1 Science Enquiry (SC 1) - the development of scientific skills, linked to experimental and investigative methods, will permeate all other attainment targets.
Life and Living Processes (SC 2) - an understanding of life processes and the organization of living things, plant, animal and human; variation and the mechanisms of inheritance and evolution: populations and human influences within ecosystems and energy flows and cycles of matter within ecosystems.
Materials and their Properties (SC 3) - An understanding of the properties, classification and structure of materials: explanations of the properties of materials: chemical changes and the earth and its atmosphere.
Physical Processes (SC4) - an understanding of electricity and magnetism; energy resources and energy transfer: forces and their effects: light and sound and the earth and its place in the universe.
5.2 KS4 topics such as Forensic Science are an example of the curriculum chosen as an area of interest which engages pupils.

6. Delivery

6.1 Years 7 and 8 pupils should be involved in science activity which has an appropriate interest value and which has the capacity to excite and provide enjoyment. At this stage the science curriculum is taught via cross-curricular topics fulfilling the requirements of the QCA.
6.2 In KS3 the science curriculum is taught following the Exploring Science Scheme of work, which is linked to QCA topics. Each unit is planned in detail and emphasis is placed upon a 'hands on' approach. Within these units, knowledge and skills are developed not only from direct teaching in the classroom but also via educational visits; classroom displays; guest speakers and exploration of our own environment.
Pupils are assessed formatively throughout each topic and complete an assessment at the end of each topic to assign each pupil's a level and sub level.
6.3 At KS4 (years 9 and 10) the BTEC Applied Science course is completed. The course is designed for all pupil levels of progress. Pupils are formatively assessed throughout each assignment and summatively assessed at the end of each assignment to monitor pupil progress. From 2015 pupils will complete an externally assessed exam which provides 25% of the course marks available.

6.4 Within the classroom teachers plan a range of science experiences for their pupils. Science learning tasks can be organised in a variety of ways.

- Whole class activities
- Individual work
- Group work

6.5 The style and delivery of science lessons take account of a range of learning styles. The practical nature of science investigation and exploration is particularly suited to pupils who prefer kinaesthetic and visual learning. Pupils are actively encouraged to raise questions and to be proactive in finding their own solutions through investigation or research using secondary resources.
6.6 Practical work plays a central role in science. The decision regarding organisation is dependent on the activity. It is possible to classify practical work into four categories.
1. Observation.
2. Basic skills
3. Illustrative work
4. Investigations
6.7 Most QCA topics include an activity that requires the child to plan, carry out and record a whole science investigation. These activities are a main focus of the science teaching, where the children develop important skills and concepts about scientific procedure.
6.8 Whenever possibly science teaching makes use of I.C.T to enhance pupil learning.
1. CDROM to research new areas of learning.
2. Computer linked microscope.
3. Internet searches and web sites.
4. Spreadsheets, databases, graphics and word processing programmes.

7. Equal Opportunities

7.1 Children with Special Educational Needs (SEN), which includes children at either end of the ability spectrum will have full access to the science curriculum, we recognize that:
1. Some children will work on the same content but at a different pace.
2. Some pupils will work on similar content, carefully planned so that it involves higher levels of science knowledge and skills.
3. Some pupils will work through open ended tasks, each child taking the investigations as far as he/she is able.
4. Some children will need tasks to be broken down into smaller steps which are achievable for them.
5. Children with reading and language difficulties may find access to certain science activities problematic. Consequently text and language need to be suited to their age, intellectual development and reading level.

8. Assessment

8.1 Assessment is undertaken for the benefit of the learner, to help future learning and for the teacher to plan for future progression and differentiation of tasks.
8.2 Formative assessments are continuous and undertaken by the class teacher.
1. By observation of children working.
2. By discussion with the child in the learning process.
3. Through the marking of children's written work.
8.3 Summative assessments are carried out at various stages.
Teachers formally level children's scientific understanding at the end of each topic.
Pupils have understanding above and below the expected progress are recorded on a topic record sheet. The assessment of pupil progress in monitored by Mr Monteith.

9. Attainment

9.1 The Science department aims to ensure that every pupil achieves or exceeds their end of year inspirational target.
9.2 KS4 pupils will achieve the minimum equivalent of 1 GCSE by completing the BTEC Applied Science level 2 course. Most pupils will achieve the equivalent of 2 GCSEs.

10. Safety

10.1 Teachers are aware that certain Science activities can be dangerous and this may determine the way a particular activity is taught.
10.2 A copy of **'CLEAPSS'** is available in school in the Science Resource Zone.
10.3 The school's Health and Safety Policy provides further guidance and should be consulted for general details regarding the use of scissors, wet areas etc.

11. Recording and Reporting

11.1 Teachers will keep planning records to be passed onto future teachers. These will include skills and knowledge, and themes taught, and comments on any child who has over achieved or under achieved in any subject areas covered.
11.2 Progress is reported annually to parents/carers.

12. Monitoring

12.1 Monitoring of the teaching and learning of the science curriculum will be done by members of the Senior Leadership Team.
12.2 This will carried out through the collection of teacher's planning, assessment tests and assessment record sheets.
12.3 Weekly book trawls are carried out to monitor pupil learning and to leave pupils constructive feedback.
12.4 Lesson observations are carried out to monitor the quality of science teaching and pupil learning by the Senior Leadership Team.

13. Literacy

13.1 At Cloughwood Academy, we believe that communication, both oral and written, is the key to educational progress, to social integration and to personal development and happiness.

13.2 We believe that it is the right of every child to become a competent and confident user of the English language; able to live, work and succeed in a literate world. We aim to equip our children with the skills, knowledge and experiences they need to use language effectively.

13.3 The Science department fully supports the introduction of the FFT Wave 3 literacy programme and withdrawal of pupils from lessons for 1 to 1 reading support.

13.4 The Science department ensures that the Cloughwood Literacy Policy is adhered to.

14. Writing

14.1 We believe it is important for pupils to develop as independent, enthusiastic and expressive writers, who are able to write in a meaningful way. They should be able to use a range of forms for a variety of purposes and audiences. They should be confident in their choice of genre and language style for a specific purpose. Pupils are encouraged to regard themselves as writers and value their own work and that of others. We aim for pupils to be able to:

1. use writing as a means to communicate ideas and information to the reader.
2. write in a grammatically accurate way.
3. develop an increasingly wide vocabulary
4. write in a particular genre with a good understanding of the features of that
5. understand the conventions of written language.
6. use teacher modelling as a means to understand the writing process.

7. understand how writers can have an effect on the reader.
8. incorporate ideas and skills of other authors into their own writing.
9. collaborate with others during the writing process.
10. 10.draft and re-draft, making significant revisions where necessary.
11. work collaboratively with other children to discuss the editing of writing.
12. use ICT as a tool for writing.
13. use spelling, punctuation and syntax accurately and with confidence.
14. the Science department fully supports the Cloughwood Academy Presentation Policy.

15. Spelling

15.1 Pupils are encouraged to develop as independent and accurate spellers who are confident to use an evolving and adventurous vocabulary in their own writing. They should have a range of spelling strategies that they can use to attempt unknown words and a sound knowledge of irregular high frequency words for use in their daily work. They are made aware of the differences between spoken dialect and written English in terms of spelling. We aim for pupils to be able to:

1. attempt words for themselves us
2. write an increasingly wide range of words from memory.
3. use a variety of resources to help with spelling e.g. dictionaries, word banks, classroom environment, computer spell-checks etc.
4. the Science department has taken the initiative at Cloughwood School and introduced a weekly whole school spelling competition. A raffle comprising of pupils who achieved spelling success in their subject areas being made during the Praise Ceremony. The winning raffle ticket receives a £10 Amazon voucher to choose a book as a reward for their spelling efforts.

16. Handwriting

16.1 It is important for pupils to be able to write clearly and develop a fluent and legible handwriting style. Presentation should be neat in published work. As a school we believe that the skills of handwriting and spelling are inter-dependent and consequently taught together. This is done in order to reinforce the visual and motor elements of both skills.

We aim for pupils to be able to:

1. form letters correctly
2. use upper and lower case letters appropriately
3. the Science department fully implements the Cloughwood Academy presentation of work policy.

17. Differentiation

17.1 We plan for differentiation so that pupil's interest is maintained, their individual needs are met and to ensure that all pupils are challenged and achieve success. This adaptation may be to record their work in a simpler form or to work on a selected aspect of a task. Children may require extra support, time or resources to enable them to access the English curriculum fully. Children who require extension will be asked to develop and transfer their skills through more open-ended tasks and cross-curricular activities.

18. Special Needs

18.1 Differentiated learning strategies based on individual needs supports pupils with special needs. This applies to children who need additional support and also those who are high

fliers. The level of support given to SEN pupils and their targets are detailed in Individual Education Plans (IEPs). These are used to inform differentiated planning.

19. Staffing

19.1 The Science department is staffed by experienced members of teaching and support staff who are more than familiar with the different areas of the Science curriculum and also cross curricular topics such as citizenship and PSHEE.

19.2 The role of the lead Science teacher is not only to lead the department and cover the Science curriculum content but to also show an enthusiasm within the subject and also across the whole school.

19.2 High levels of support staff enables pupils to have gain assistance and support with their differing learning and special educational needs.

20. Budget

20.1 The Science capitation bid for the 2014-15 year would enable the subject to continue to grow, and enthuse pupils with our ability to complete a full and varied curriculum which does captivate the imagination of pupils. The new equipment and resources will help pupils to achieve their full potential.