

Christ Church C of E School
Science Policy
January 2015



Christ Church
C of E Primary School
Regents Park
NW1 4BD

SCIENCE POLICY

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Mission Statement

The Christian Faith is at the heart of our school community. At Christ Church we care for each other and learn together.

Christ Church is a small, caring school which is committed to a broad, balanced curriculum and to a continual raising of standards. We aim to contribute to the spiritual, moral, cultural, mental and physical needs of every individual.

We are a Church of England school, with a strong commitment to the teaching of Christianity whilst supporting a multi-faith approach to the curriculum. We recognise value and celebrate the rich cultural diversity that exists in our school.

The Christian ethos of the school is reflected in our positive, disciplined and calm atmosphere. We believe that effective learning takes place when children work in a purposeful and stimulating environment that supports a wide range of learning styles. Mutual respect between adults and children promotes excellent behaviour and well developed social skills. With this approach we seek to achieve high academic standards.

We aim to cater for each individual, taking particular account of any specific needs or abilities. We endeavour to ensure that all our children fulfill their potential and, within this context, we emphasise health and safety, enjoyment and achievement and the beginnings of responsibility for themselves and others. These skills will be carried forward to the next phase of education and throughout life.

The whole school community is committed to a collective responsibility for the implementation of the values inherent in this statement.

Our School Aims - Every Child Matters

The Ethos of the School

The school aims to provide a positive, disciplined, purposeful environment, within a Christian context. We aim to teach children to be caring, to exhibit good behaviour and appropriate social skills and to begin to take responsibility for themselves and others.

The Values of the School

The School aims to value every child and to contribute to the Spiritual, Moral, Cultural, Mental and Physical well being of our whole school community. We value the diversity of our community and we aim to promote the health and safety of everyone.

The Standards of the School

The School aims to teach a balanced Curriculum and to ensure that each child fulfils his or her potential. We aim to provide teaching and learning of a high standard. We believe that this is achieved when pupils are highly motivated, enjoy coming to school and are appropriately challenged.

SCIENCE POLICY

Date of policy: January 2015

Review date: January 2017

Introduction

- This document is a statement of the aims, principles and teaching strategies for the teaching and learning of science at Christ Church Primary School.
- The policy needs to be read in conjunction with the 2014 National Curriculum.
- This policy will be submitted to the Governing Body. Review of the policy will take place once every three years.

Rationale and Equal Opportunities

Why have a Science Policy?

Our purposes in developing a written policy for Science are:

- To raise the standards of teaching and learning of Science throughout the school.
- To enable us to have a unified and consistent approach to the teaching of Science throughout the school.
- To help teachers in planning and implementing activities for the children appropriate to their stage of development throughout the school.
- To provide a framework for monitoring, evaluating and targeting children's progress in science and for developing, reviewing and revising our work as a staff.

- To have a joint statement and explanation of our policy available for parents, governors and teachers.

Aims and Objectives for the teaching and learning of science

Science is a core subject within the new National Curriculum. The aims of science are to enable children to:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

(Taken from the 2014 Science National Curriculum)

Key Skills

The teaching of science should help develop the key scientific skills of:

- Hypothesising and predicting.
- Planning and carrying out investigations.
- Recognising the need for and devising a fair test.
- Using equipment correctly.
- Observing and measuring.
- Communicating ideas, verbally and through a variety of written and recorded means.
- Presenting and recording results in a variety of ways including the use of ICT.

- Data handling.
- Evaluating results and drawing conclusions.

Through developing science skills pupils should acquire knowledge and understanding of:

- Life processes and living things.
- Materials and their properties.
- Physical processes.

Science also provides opportunities for children to develop key skills of

- Communication in a variety of contexts through promoting the skills of reading, writing, speaking and listening.
- Application of number through the use of weights and measures, handling data, estimating and predicting.
- Use of ICT and Computing to measure, record, present and interpret Data where appropriate, use of the internet and CD Roms.
- Working cooperatively with others.
- Problem solving.

Teaching and learning styles

A variety of teaching styles are used to teach science. The main focus is to provide practical and investigative activities that enable the children to develop their knowledge, understanding and skills through first hand experience.

This will involve:

- Whole class teaching and teach teaching.
- Enquiry based research activity.
- Discussion between pupils and teacher.
- The opportunity to use a variety of data such as statistics, graphs, pictures and photographs, etc.
- Use of ICT and Computing to enhance learning.

- Role play.
- Presenting reports to the rest of the class.
- A wide range of problem solving activities.
- Carrying out practical experiments and analysing the results.

Because children have widely different scientific abilities we ensure that we provide suitable learning opportunities for all children by:

- Setting common tasks which are open ended and can have a variety of responses.
- Setting tasks of increasing difficulty.
- Grouping children by ability and setting different tasks for each ability group.
- Providing resources of different complexity, matched to the ability of the child.
- Using teaching assistants to support and extend the work of individual children or groups of children.
- Where appropriate, planning lessons with support teachers to support children with special educational needs or who speak English as an additional language.

Curriculum Planning

At Christ Church CE School we currently use the 2014 Science National Curriculum as a basis for planning. We also use the QCA schemes of work and the Hamilton Trust to supplement our resources, to support the new curriculum. The Internet also provides a number of safe educational sites which support the delivery of science teaching. We aim for the following weekly provision for each class (cross curricular links/topics are in addition to these allocated slots):

EYFS: Adult led activities take place at least once every half term in EYFS whilst "Understanding the world" sessions take place each week.

Science in the foundation stage forms part of the broader curriculum area of; "Understanding the world " with three strands of:

- People and Communities

- The world
- Technology

YEAR 1: 1 hour and 15 minutes weekly

YEAR 2: 1 hour and 15 minutes weekly

Requirements will be met in KS2 by:

YEAR 3: 1 hour and 30 minutes weekly

YEAR 4: 1 hour and 30 minutes weekly

YEAR 5: 1 hour and 30 minutes weekly

YEAR 6: 1 hour and 45 minutes weekly

The topics in science build on prior learning. Children are given the opportunities to develop their skills and knowledge in each unit. Progression is built into the science units of work to ensure that children are increasingly challenged as they move through the school.

Long Term Planning

- The Long term curriculum overview maps for each year group outline the units to be covered during each term. These are created from the 2014 Science National Curriculum. Units are arranged to ensure breadth and balance of the content areas across both key stages. These plans are reviewed and updated yearly.

Medium Term Planning

- Medium term plans include key objectives for each unit.
- They also include opportunities for using 'working scientifically', investigations, assessment activities and links to previous work when applicable.

Short Term Planning

- Weekly Science plans provide more detail about the lesson and include an outline of the introduction, main activity, plenary, suggestions for differentiation and resources.

The Foundation Stage

Science is covered in the EYFS by the "Understanding the world. Children may explore science independently, for example; by playing with magnetic materials, observing how objects float or sink in water or by creating simple electrical circuits and a typical week would provide opportunities to do so, both inside and outside of the classroom. Adult-led science based activities could include discussing the changes that take place during cooking and longer term projects such as growing plants and observing the life cycle of a butterfly.

We teach science in Nursery and Reception classes as an integral part of the topic work covered during the year. As these classes are part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, for example through investigating what floats and what sinks when placed in water.

Cross-curricular links

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Furthermore it also increases our children's vocabulary. Some of the texts that the children study in English are of a scientific nature. The children develop oral skills in science lessons through discussions (for example about the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information in a variety of ways.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. When the children use weights and measures, they are learning to use and apply number. Through working on investigations they learn to estimate, make predictions and recognise trends and patterns. They develop accuracy in their observation and recording of events. This also incorporates data handling through the use of tables and charts. Many of their answers and conclusions include numbers and this provides good foundations for formulae work later in life.

Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of PSHE and citizenship. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children learn factual information about legal and illegal drugs, and can also discuss the impact that they have on individual lives and wider society. Secondly, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them, such as helping the poor or homeless. Science thus promotes the concept of positive citizenship.

Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example; the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example; the effects of smoking, and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet, and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people. We will also be teaching the children about dinosaurs, evolution and inheritance. This is directed by the curriculum and in accordance with LDBS guidance.

Science and Computing

ICT and Computing enhances the teaching of science in our school significantly, because there are some tasks for which ICT and Computing is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software and the internet are used to animate and model scientific concepts, and to allow children to investigate processes which it would be impractical to do directly in the classroom. Data loggers are used at the CLC to assist in the collection of data and in producing tables and graphs. Children use ICT and Computing to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyse information on the Internet and can use this to enhance their learning.

Science and Inclusion

At Christ Church we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors - classroom organisation, teaching materials, teaching style, and differentiation - so that we can take some additional or different action to enable the child to learn more effectively. Current assessment against the National Curriculum allows us to consider each child's attainment and progress. This ensures that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to science.

We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom (a trip to a science museum, for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Resources

Science resources can be located in the following places:

- Science topic boxes/general resources - stored in the resource room behind Cedar class.
- Published teacher material, including resource packs and teacher guides, are kept on the top shelves in the science resource room.

- (Although not a specific place) the Internet provides us with many resources e.g. the Curriculum requirements, activities and experiments that we may carry out.

The science subject leader has an inventory of all equipment held in the school and this can be found in the subject leader file. Teachers should inform the science subject leader if equipment is damaged, depleted or needs replacing. They can also request additional topic resources should they intend to embark on a special project and the science budget is managed to enable this.

Please refer to the appendices for examples of investigation questions and planning sheets for each key stage.

Health and Safety

Children need to be taught to approach all investigations in a safe way. They need to learn how to handle equipment safely and sensibly and need to realise the potential dangers involved. They need to be able to follow instructions so that risks can be controlled.

Health and safety issues will be considered in planning science work. Teacher's plans are annotated to identify areas where particular care is needed.

Assessment, recording and reporting

Our assessment is currently under review and we are waiting for guidance from the DfE.

For the 2014-2015 academic year, Years 2 and 6 will be assessed against the previous National curriculum, using levels for science that are submitted to the LA.

We are the in the process of trialing Rising Stars Science tests in Year 3 as well as developing our own assessment. This will assess the children using the units of

work and the 'working scientifically' information provided in the 2014 National Curriculum.

While we wait for this guidance, science will be assessed using a 'best fit' approach. We will continue to assess on a termly basis using the previous level descriptions devised by Camden and then recorded in the relevant class assessment file. Scientific investigative skills will continue to be assessed termly against specific criteria relating to each level of attainment. This data will be monitored by the science subject leader, SLT and passed on to the next class teacher at the end of the academic year.

Science attainment and progression will be reported to parents in Spring and again in the end of year written report in Summer.

Ongoing assessment to inform day to day teaching and learning will be undertaken by the teacher in the following ways:

Observations

Observations can be made and recorded on weekly plans to form a basis for teacher assessment. Teachers should make a note of any significant progress that is made; observe how a child's attitudes are developing, or how they have approached an investigation.

Marking

Marking should be specific to the learning intention. This may explain how a child approached the task and if they have displayed any specific skills or progress. They also act as a teaching device to inform the teacher where the gaps are in each child's progress and to assess where a child is in relation to local/ national averages. (We are waiting for further guidance from the DfE on this.)

Responsibilities

The responsibility for drawing up the policy is with the science subject leader. Whole staff involvement in drawing up the policy is essential to ensure a shared approach to developing good practice in teaching and learning throughout the school.

The science subject leader has specific duties that are undertaken.

1. The science subject leader will act as a consultant for the other members of staff. They will be expected to advise and support in all aspects of science planning, delivery and assessment.
2. The science subject leader has a responsibility to monitor the delivery of science across the school. They will work with the SLT to sample a range of science work from each year group. From this sampling the science subject leader will set targets in order to raise the standard of science and scientific inquiry.
3. The science subject leader will monitor each class regularly, against set criteria. Feedback will be given to staff on an informal basis and the Head teacher will be given a copy of the feedback.

Monitoring and review

The Head teacher, Deputy Head teacher and the science subject leader will monitor the effectiveness of the policy.

Appendix

1. Proposed New Science curriculum assessment template
2. KS1 and 2 Science yearly map

Appendix 1

Christ Church CE Primary School NW1 - Working Scientifically Assessment

Name of Pupil _____

At the end of each term please assess your class. 10 chn will be assessed each term. Please highlight the topics covered and if they are working below, expected or above for each topic.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Animals, including humans (identify and naming animals) Below Expected Above	Light and dark (optional) Below Expected Above	Seasonal changes Below Expected Above	Plants Below Expected Above	Animals, including humans (identifying structures of animals and humans) Below Expected Above	Everyday materials Below Expected Above
Year 2	Living things and their habitats Below Expected Above	Use of everyday materials Below Expected Above	Animals, including humans (life cycles and requirements) Below Expected Above	Animals, including humans (healthy eating) Below Expected Above	Plants Below Expected Above	Using electricity (optional) Below Expected Above
Year 3	Light Below Expected Above	Animals, including humans Below Expected Above	Rocks Below Expected Above	Plants Below Expected Above	Forces and Magnets Below Expected Above	Characteristics of materials (optional) Below Expected Above
Year 4	Animals, including humans (digestion and teeth) Below Expected Above	Electricity Below Expected Above	Living things and their habitats Below Expected Above	States of matter Below Expected Above	Sound Below Expected Above	Animals, including humans (food chains) Below Expected Above
Year 5	Properties of and changes of materials Below Expected Above	Keeping healthy (optional) Below Expected Above	Forces Below Expected Above	Living things and their habitats Below Expected Above	Earth and Space Below Expected Above	Animals, including humans Below Expected Above
Year 6	Animals, including humans Below Expected Above	Light Below Expected Above	Electricity Below Expected Above	Evolution and inheritance Below Expected Above	Living things and their habitats Below Expected Above	More about dissolving (optional) Below Expected Above

Please highlight where chn have met each working scientifically objective.

Year 1	Asking simple questions and recognising that they can be answered in different ways (With support)	Observing closely, using simple equipment (With support)	Performing simple tests (With support)	Identifying and classifying (With support)	Using their observations and ideas to suggest answers to questions (With support)	Gathering and recording data to help in answering questions (With support)			
Year 2	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			
Year 3	Asking relevant questions and using different types of scientific enquiries to answer them (With support)	Setting up simple practical enquiries, comparative and fair tests (With support)	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (With support)	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions (With support)	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (With support)	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (With support)	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (With support)	Identifying differences, similarities or changes related to simple scientific ideas and processes (With support)	Using straightforward scientific evidence to answer questions or to support their findings. (With support)
Year 4	Asking relevant questions and using different types of scientific enquiries to answer them	Setting up simple practical enquiries, comparative and fair tests	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Identifying differences, similarities or changes related to simple scientific ideas and processes	Using straightforward scientific evidence to answer questions or to support their findings.
Year 5	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (With support)	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (With support)	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (With support)	Using test results to make predictions to set up further comparative and fair tests (With support)	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations (With support)	Identifying scientific evidence that has been used to support or refute ideas or arguments. (With support)			
Year 6	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	Using test results to make predictions to set up further comparative and fair tests	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	Identifying scientific evidence that has been used to support or refute ideas or arguments.			

Appendix 2

Christ Church CE Primary School NW1
Whole School Science Long term plan 2014-2015

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Working Scientifically throughout the year					
Year 1	Animals, including humans (identify and name animals)	Light and dark (optional)	Seasonal changes	Plants	Animals, including humans (identify structures of animals and humans)	Everyday materials
Year 2	Living things and their habitats	Use of everyday materials	Animals, including humans (life cycles and requirements)	Animals, including humans (healthy eating)	Plants	Using electricity (optional)
Year 3	Light	Animals, including humans	Rocks	Plants	Forces and Magnets	Characteristics of materials (optional)
Year 4	Animals, including humans (digestion and teeth)	Electricity	Living things and their habitats	States of matter	Sound	Animals, including humans (food chains)
Year 5	Animals, including humans	Keeping healthy (optional)	Properties and changes of materials	Living things and their habitats	Forces	Earth and Space
Year 6	Animals, including humans	Light	Electricity	Evolution and inheritance	Living things and their habitats	More about dissolving (optional)

