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## INTRODUCTION

### The importance of Science at Hawthorn Tree School

We believe that children should be learning new concepts and developing those intellectual and practical skills which will allow them to explore and investigate the world of Science around them and which will eventually, as they mature, give them access to further areas of knowledge.

#### 1. AIMS AND OBJECTIVES

1.1. Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

1.2. The aims of science are to enable children to:

- a) Ask and answer scientific questions;
- b) Plan and carry out scientific investigations, using equipment, including computers, correctly;
- c) Know and understand the life processes of living things including the understand of seasonal changes;
- d) Know and understand the physical processes of materials, electricity, light, sound and natural forces;
- e) Know about the nature of the solar system, including the earth;
- f) Evaluate evidence and present their conclusions clearly and accurately.

#### 2. SATUTORY ENTITLEMENT AND TIME ALLOCATION

2.1. The programmes of study for science are set out year by year for KS1 and KS2. We are however, only required to teach the relevant programme of study by the end of the Key Stage. Science is to be taught for at least 1 hour weekly, a total of 6 hours a term.

#### 3. TEACHING AND LEARNING STYLES

3.1. We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. They use ICT in science lessons where it enhances their learning e.g. the use of I-pads and computers and Interactive Whiteboard activities. They take part in role-play and discussions and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities.

3.2. We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- a) Setting common tasks which are open-ended and can have a variety of responses;
- b) Grouping children by ability in the room and setting different tasks for each ability group;
- c) Providing resources of different complexity, matched to the ability of the child;
- d) Using classroom assistants (when/if available) to support the work of individual children or groups of children.
- e) Group activities by mixed ability.

#### **4. SCIENCE CURRICULUM PLANNING**

##### **4.1. Foundation Stage**

- a) We teach science in reception classes as an integral part of the topic work covered during the year. As the reception class is 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 the objective in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

##### **4.2. WHOLE SCHOOL**

- a) We carry out our curriculum planning in science in three phases – long-term, medium-term and short-term. The long-term plan maps the scientific topics studied in each term during the key stage. In some cases we combine the scientific study with work in other subject areas, at other times the children study science as a discrete subject.
- b) Our medium-term plans, which we have based on the Scholastic scheme of work in science, give details of each unit of work for each term. However, teachers are encouraged to use other suitable age related activities from other recognised sites. E.g. Twinkl. The science subject leaders keep and review these plans.
- c) The class teacher is responsible for writing the daily lesson plans for each lessons (short-term plans). These plans list the specific learning objectives of each lesson. The class teacher keeps these individual plans within their planning folder.
- d) We teach the topics in science – building upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit. E.g. Light and Shadow is taught in Year 3 and then explored in greater depth in Year 6. All children are therefore able to build upon their prior knowledge throughout the key stages.

#### **5.0. THE CONTRIBUTION OF SCIENCE TO TEACHING IN OTHER CURRICULM AREAS**

##### **5.1. English**

- a) Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in English are of a scientific nature, e.g. the North Pole unit taught in Year 5. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

##### **5.2. Mathematics**

- a) Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on

investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions. The children are also able to use statistics within science, by collecting data and displaying this through graphs and bar charts etc.

### **5.3. INFORMATION COMMUNICATION TECHNOLOGY (ICT)**

- a) Children use ICT in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the Internet. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation, through the use of Interactive whiteboards and I-Pads.

### **5.4. PERSONAL, SOCIAL AND HEALTH EDUCATION (PSHE) AND CITIZENSHIP**

- a) Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. They organise campaigns on matters of concern to them, for example supporting the UNICEF scheme where this allows each child to have certain rights within their childhood. Science promotes the concept of positive citizenship.

### **5.5. SPIRITUAL, MORAL, SOCIAL AND CULTURAL DEVELOPMENT**

- a) 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 (Year 6). 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 (Year 6 – workshops). 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.

## **6.0. Health and Safety**

- 6.1. Teachers should ensure that children and adults are trained in the correct use of equipment. This should be modelled correctly and safely by the teacher first. Teachers should take the upmost care when preparing investigations and activities. Risk assessment to be included in planning – i.e. consideration of children's allergies e.g. food tasting.

## **7.0. SEND and Equality**

- 7.1. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Our work in science takes into account the targets e.g. in the children's Educational Healthcare Plans (SEND plans).

- 7.2. The Equality Act, 2010, states that the responsible body of a school must not discriminate against, harass or victimise a pupil or young person because of one of the protected characteristics;
- disability;
  - gender reassignment;
  - pregnancy and maternity;
  - race;
  - religion or belief;
  - sex;
  - sexual orientation.
- As such, we teach Science to all pupils within school.

## **8.0. Assessment and Monitoring**

- 8.1. We assess children's work in science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. At the end of a unit of work s/he makes a summary judgement about the work of each pupil in relation to the National Curriculum age related expectations.
- 8.2. Teachers make an assessment of the children's work in science –
- a) At the end of Key Stage 1
  - b) Y6 Children could be selected to sit the national tests in science at the end of Key Stage 2
  - c) We use practice science tests in both key stages to assess children's progress- this is completed termly and to be kept in either children's books or the teacher's assessment folder.
- 8.3. The science subject leader is responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader gives the Head teacher an annual summary report in which s/he evaluated strengths and weaknesses in the subject and indicates areas for further improvement (Governors Report annually). S/he has the responsibility to ensure that planning is appropriate for each year group and available to give advice on the continuity and progression of teaching science within the school.

## **9.0. Background Information**

- 9.1. This document was informed from the National Curriculum Handbook, LEA guidelines and from material prepared jointly by Scholastic and the Standards and Effectiveness unit of the Department for Education and Employment.

## **10.0 UNICEF**

- 10.1 As a UNICEF Rights respecting school, this Hawthorn Tree Policy recognises the following articles: 2, 3, 4, 5, 7, 8, 12, 13, 14, 15, 16, 17, 19, 24, 28, 29, 30, 31, 39, 42. Please visit <https://www.unicef.org/rightsite/files/uncrcchildfriendlylanguage.pdf> for more detail.

**Appendices:**

Whole School Overview

**2. Resources**

Year	Autumn	Spring	Summer
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We have resources for science teaching kept in the main KS2 corridor  
The library contains a supply of science topic books.

<b>1</b>	1. Seasons  2. Materials	1. Seasons (Continued)  2. Plants	1. Animals Inc. Humans  2. Our Bodies
<b>2</b>	1. Animals Inc. Humans  2. Animals Inc. Human (Continued)	1. Materials  2. Materials (Continued)	1. Plants  2. Living Things and their Habitats
<b>3</b>	1. Forces  2. Rocks and Soils	1. Animals Inc. Humans- The Body (Skeleton)  2. Animals Inc. Humans- The Body (Continuation)	1. Plants  2. Light and Shadow
<b>4</b>	1. Living Things  2. Electricity	1. States of Matter  2. Animals Inc. Humans	1. Animals Inc. Humans (Continued)  2. Sound
<b>5</b>	1. Reversible and Irreversible changes  2. Forces	1. Earth and Space  2. Earth and Space (Continued)	1. Living Things- Life Cycles (Reproduction)  2. Animals Inc. Humans- Growth
<b>6</b>	1. Light  2. Electricity	1. Animals Inc. Humans- Circulatory System  2. Animals Inc. Humans (Continued)	1. Living Things – Micro-organisms  2. Evolution

**Appendix 1 -**

**Science Curriculum Overview (Updated November 2018)**

