

SCIENCE SYLLABUS

Year 3

Aims

The aims of the Junior Branch Science Department for this year are that:

- The children are stimulated and excited by science and that they become curious about the world around them.
- The children gain scientific knowledge (in line with the National Curriculum Key Stage 2 statutory orders), which also satisfies their curiosity.
- The children co-operate with the teacher and each other in planning and designing experiments, decision-making, investigating and communicating results.
- The children develop the skills of observing, classifying, recording, making and testing hypotheses, designing experiments and drawing valid and interesting conclusions from their evidence.

By the end of their time at the Junior Branch, it is the overall aim of the Science Department that the children:

- Are enthusiastic about science.
- Can think scientifically and conduct experiments in a safe and orderly manner.
- Have learnt a great deal of scientific fact and understand many scientific concepts.

Skills

Sc1, Scientific Enquiry, is the programme of study which details the sorts of skills that Year 3 pupils will learn, use and develop *throughout* the year in their studies in science. For example, pupils are taught that it is important to collect evidence by making observations and measurements when trying to answer questions and are encouraged to plan their own experiments, applying the concept of 'fair testing' from an early stage. They are also taught how to record their results and measurements and draw valid conclusions, reflecting on how what actually happened compared to what they predicted would happen.

Finally, pupils are taught how to follow safety instructions and work in a responsible manner in the laboratory.

Content

The National Curriculum Key Stage 2 programmes of study provide the basic framework for the syllabus covered by Year 3 although reference is paid to the QCA Scheme of Work and the Common Entrance 11+ syllabus.

Science in the National Curriculum is divided into four main programmes of study:

- **Sc1 Scientific enquiry**
- **Sc2 Life processes and living things**
- **Sc3 Materials and their properties**
- **Sc4 Physical processes**

SCIENCE SYLLABUS

Year 3

Autumn Term

Pupils will establish and agree a simple set of rules for conduct and safety in the laboratory. They will then be given an introduction to magnetism and light as physical processes.

Spring Term

Pupils will learn about the structure of the Earth and how its surface has changed over time. They will then look at the differences between metamorphic, igneous and sedimentary rocks. They will then move on to study materials and their properties. Pupils then look at the heart and measure their pulse rates at rest and after exercise and are taught to understand the benefits of regular exercise.

Summer Term

Pupils will be taught about food and digestion and the importance of a healthy balanced diet. They will then look at teeth and dental hygiene. Pupils will move on to learn the names of the bones and major organs of the body. Pupils will then look at the heart and measure their pulse rate at rest and after exercise. The final unit of work will look at the difference between vertebrates and invertebrates. Finally pupils will undertake an end of year project on an animal of their choice.

Methods

Science is, with English and Mathematics, one of the important National Curriculum core subjects. Science teachers at the school agree with the widely held view about the nature of science learning as represented in this quote:

The essence of science activity, and usually its starting point, is the encounter between the child and some phenomenon; some face to face interaction of children and things around them from which they can learn directly through their own physical and mental activity.

(Harlen and Jelly, 1989)

As learning is both tentative and provisional, we believe that that which children discover for themselves is very important and so children in all year groups are provided with as many opportunities as possible to undertake practical investigations. Indeed, science teachers at the school believe that what children hear they forget, what they see, they remember, but what they *do*, they understand. All lessons are taught in the laboratory.

Pupils in Year 3 will be tested at the end of each module in order to break up the revision and to provide regular teacher assessment and pupil self-assessment opportunities given the great volume of detailed and demanding work that will be covered.

SCIENCE SYLLABUS

Year 4

Aims

The aims of the Junior Branch Science Department for this year are that:

- The children are stimulated and excited by science and that they become curious about the world around them.
- The children gain scientific knowledge (in line with the National Curriculum Key Stage 2 statutory orders), which also satisfies their curiosity.
- The children co-operate with the teacher and each other in planning and designing experiments, decision-making, investigating and communicating results.
- The children develop the skills of observing, classifying, recording, making and testing hypotheses, designing experiments and drawing valid and interesting conclusions from their evidence.

By the end of their time at the Junior Branch, it is the overall aim of the Science Department that the children:

- Are enthusiastic about science.
- Can think scientifically and conduct experiments in a safe and orderly manner.
- Have learnt a great deal of scientific fact and understand many scientific concepts.

Skills

Sc 1 - scientific enquiry is the programme of study which details the sorts of skills that Year 4 pupils will learn, utilise and develop *throughout* the year in their studies in science. Pupils are taught that it is important to collect evidence by making observations and measurements when trying to answer questions and are encouraged to plan their own experiments, applying the concept of “fair testing” from an early stage. They are also taught how to record their results and measurements and draw valid conclusions, reflecting on how what actually happened compared to what they predicted would happen. Pupils are also taught how to work responsibly and safely.

Content

The National Curriculum key stage 2 programmes of study provide the basic framework for the syllabus covered by Year 4 although reference is paid to the QCA Scheme of Work and the Common Entrance 11+ syllabus.

Science in the National Curriculum is divided into four main programmes of study:

- **Sc1 Scientific enquiry**
- **Sc2 Life processes and living things**
- **Sc3 Materials and their properties**
- **Sc4 Physical processes**

SCIENCE SYLLABUS

Year 4

Autumn Term

Pupils will learn about the Earth and beyond including why there are days, nights and seasons. They will then move on to study and build simple electric circuits.

Spring Term

Pupils will look at forces, focusing specifically on the force of friction and undertaking investigations to look at what influences the amount of friction. They will move on to study solids, liquids and gases before ending the term investigating solutions.

Summer Term

Pupils will be taught about habitats, adaptation, food chains and food webs. They will visit an outside study centre to gain practical experience of different habitats. They will move on to look at plants, their basic structure and life cycle.

Methods

Science is, with English and Mathematics, one of the important National Curriculum core subjects. Science teachers at the school agree with the widely held view about the nature of science learning as represented in this quote:

The essence of science activity, and usually its starting point, is the encounter between the child and some phenomenon; some face to face interaction of children and things around them from which they can learn directly through their own physical and mental activity.

(Harlen and Jelly, 1989)

As learning is both tentative and provisional, we believe that that which children discover for themselves is very important and so children are provided with as many opportunities as possible to undertake practical investigations. Indeed, science teachers at the school believe that what we hear, we forget, what we see, we remember but what we *do*, we understand.

Pupils in all year groups will be tested at the end of each module in order to break up the revision and to provide regular teacher assessment and pupil self-assessment opportunities given the great volume of detailed and demanding work that will be covered.

SCIENCE SYLLABUS

Year 5

Aims

The aims of the Junior Branch Science Department for this year are that:

- The children are stimulated and excited by science and that they become curious about the world around them.
- The children gain scientific knowledge (in line with the National Curriculum Key Stage 2 statutory orders), which also satisfies their curiosity.
- The children co-operate with the teacher and each other in planning and designing experiments, decision-making, investigating and communicating results.
- The children develop the skills of observing, classifying, recording, making and testing hypotheses, designing experiments and drawing valid and interesting conclusions from their evidence.

By the end of their time at the Junior Branch, it is the overall aim of the Science Department that the children:

- Are enthusiastic about science.
- Can think scientifically and conduct experiments in a safe and orderly manner.
- Have learnt a great deal of scientific fact and understand many scientific concepts.

Skills

Year 5 pupils cover Sc 1, scientific enquiry, in great depth throughout this year. For example, pupils are taught that it is important to collect **evidence** and test **ideas** by making **observations** and measurements when trying to answer questions and are encouraged to **plan** their own experiments, applying the concept of 'fair testing' from an early stage. They are also taught how to make and record observations and measurements, including the use of ICT for data logging.

Pupils are then taught how to make **evaluations** and draw valid **conclusions**, reflecting on how what actually happened compared to what they predicted would happen. Pupils are taught how to follow safety instructions and work in a responsible manner in the laboratory. Indeed, in Year 5, pupils are expected to become far more independent in their studies and organisation.

Content

The National Curriculum Key Stage 2 programmes of study provide the basic framework for the syllabus covered by Year 5 pupils. Reference is paid to the QCA Scheme of Work and the Common Entrance 11+ syllabus and, given the ability of pupils at this school, opportunities for extension and enrichment are frequently pursued.

Science in the National Curriculum is divided into four main programmes of study:

- **Sc1 Scientific enquiry**
- **Sc2 Life processes and living things**
- **Sc3 Materials and their properties**
- **Sc4 Physical processes**

SCIENCE SYLLABUS

Year 5

Autumn Term

Pupils will learn how to use a Bunsen burner for the first time and will undertake a series of experiments to use Bunsen burners safely and effectively. During these practical activities, they will learn about the three states of matter, heat exchange, boiling point, insulation, energy and the expansion and contraction of solids, liquids and gases. Pupils will be taught this work and will undertake their practical investigations with reference to a range of domestic and environmental contexts that are familiar and of interest to them.

Spring Term

Pupils will study reversible (physical) changes and irreversible (chemical) changes that occur when materials are heated or cooled. Pupils will then be given an introduction to sexual reproduction in animals before building on their knowledge of the physical process of magnetism.

Summer Term

Pupils will study forces by undertaking a series of investigations using friction ramps, parachutes and magnets. Pupils will study in much greater detail green plants. They will undertake a short research project on a tree of their own choice and undertake studies to prepare them for the Kingswood Study Centre week.

Methods

Science is, with English and Mathematics, one of the important National Curriculum core subjects. Science teachers at the school agree with the widely held view about the nature of science learning as represented in this quote:

The essence of science activity, and usually its starting point, is the encounter between the child and some phenomenon; some face to face interaction of children and things around them from which they can learn directly through their own physical and mental activity.

(Harlen and Jelly, 1989)

As learning is both tentative and provisional, we believe that that which children discover for themselves is very important and so children in all year groups are provided with as many opportunities as possible to undertake practical investigations. Indeed, science teachers at the school believe that what children hear they forget, what they see they remember, but what they do, they understand. Pupils will undertake a small number of research projects, which may involve some practical work at home or the need to use the Internet.

Pupils in Year 5 will be tested at the end of each module in order to break up the revision and to provide regular teacher and pupil self-assessment opportunities given the great volume of detailed and demanding work that will be covered.

SCIENCE SYLLABUS

Year 6

Aims

The aims of the Junior Branch Science Department for this year are that:

- The children are stimulated and excited by science and that they become curious about the world around them.
- The children gain scientific knowledge (in line with the National Curriculum Key Stage 2 statutory orders), which also satisfies their curiosity.
- The children co-operate with the teacher and each other in planning and designing experiments, decision-making, investigating and communicating results.
- The children develop the skills of observing, classifying, recording, making and testing hypotheses, designing experiments and drawing valid and interesting conclusions from their evidence.

By the end of their time at the Junior Branch, it is the overall aim of the Science Department that the children:

- Are enthusiastic about science.
- Can think scientifically and conduct experiments in a safe and orderly manner.
- Have learnt a great deal of scientific fact and understand many scientific concepts.

Skills

Sc 1, scientific enquiry, is covered in great detail throughout this year in science.

For example, pupils are taught that it is important to collect **evidence** and test **ideas** by making **observations** and measurements when trying to answer questions and are encouraged to **plan** their own experiments, applying the concept of 'fair testing'. They are also taught how to make and record observations and measurements, including the use of ICT for data logging. Pupils are then taught how to make **evaluations** and draw valid **conclusions**, reflecting on how what actually happened compared to what they predicted would happen.

Pupils are taught how to follow safety instructions and work in a responsible manner in the laboratory. Indeed, in Year 6, pupils are expected to work independently in their studies and be efficient in their organisation.

Content

The National Curriculum Key Stage 2 programmes of study provide the basic framework for the syllabus covered by Year 6 pupils. Reference is also made to the QCA Scheme of Work and the Common Entrance 11+ and 13+ syllabi. Given the nature of pupils at this school, opportunities for extension enrichment and independent research are pursued in each module of study. Links with other subjects are also made.

Science in the National Curriculum is divided into four main programmes of study:

- **Sc1 Scientific enquiry**
- **Sc2 Life processes and living things**
- **Sc3 Materials and their properties**

- **Sc4 Physical processes**
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SCIENCE SYLLABUS

Year 6

Autumn Term

Year 6 pupils will spend the first full week of term at the Kingswood Centre in Norfolk where they will undertake field studies such as zonation on West Runton Beach. Once back at UCS, pupils will be taught a great deal of different topics in two large units, starting with the purification of rock salt, solubility, chromatography and distillation. Pupils will then undertake studies in **physics** where they will learn about the properties of light.

Spring Term

Pupils will complete a detailed study of dental health and hygiene, life processes, classification, cell structure and human and flowering plant reproduction. In the second half of term, the pupils will undertake a wide range of practical investigations in order to revisit and revise in preparation for the SATs examinations in May.

Summer Term

After sitting the SATs, pupils will receive sex education – as outlined to parents at the presentation in April by Lee Trinnaman and Kevin Douglas. Pupils will move on to undertake some investigation work about acids and alkalis. Time permitting they will also get to design and launch their own water rockets.

Methods

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(Harlen and Jelly, 1989)

As learning is both tentative and provisional, we believe that that which children discover for themselves is very important and so children in all year groups are provided with as many opportunities as possible to undertake practical investigations. Indeed, science teachers at the school believe that what children hear they forget, what they see they remember, but what they **do**, they understand. Pupils will be tested at the end of each module.