

Susi Earnshaw Theatre School

Science Curriculum Policy



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Department Aims and Objectives

Aims:

- Understanding of key concepts to help solve problems in unfamiliar situations
- Using scientific methods of investigation to solve problems in a disciplined way
- Appreciating the contribution science makes to society and realise that applying science can lead to moral and ethical issues having to be addressed
- Understanding that learning in science contributes to personal development because the interest and curiosity shown need to be balanced by an awareness of health and safety matters and respect for living things and the environment
- Appreciating the powerful, but provisional nature of scientific knowledge and explanation and understanding that science is always developing
- Giving students access to careers in science and technology at a variety of levels
- To encourage and foster an interest in Science
- To encourage pupils to question, analyse and formulate appropriate (and testable) hypotheses to explain observations i.e. to develop skills of scientific methodology
- To help pupils achieve their best whilst at the same time enjoying the subject
- To inform pupils of career opportunities by forging links with scientific bodies and establishments
- To support the School's thinking and implementation of PSHE.

Objectives:

- To give pupils the adequate opportunity to achieve their best through interesting lessons that consist of varied learning approaches and associated homework.
- To provide plenty of scope for practical work so that pupils can be exposed to a wide range of scientific methods.
- To illustrate scientific processes and phenomena with the help of practical demonstrations and videos.
- To run support classes/sessions in the morning for those finding the work difficult and to provide extension sessions, generally within the timetabled lessons, for the more able.

Resources

Books

KS3

Y7

EXPLORING SCIENCE

HOW SCIENCE WORKS YEAR 7

STUDENT BOOK WITH ACTIVE BOOK

MARK LEVESLEY, PENNY JOHNSON, STEVE GRAY

PEARSON LONGMAN

Y8

EXPLORING SCIENCE

HOW SCIENCE WORKS YEAR 8

STUDENT BOOK WITH ACTIVE BOOK

MARK LEVESLEY, PENNY JOHNSON, STEVE GRAY

PEARSON LONGMAN

KS4

Y9-Y11

AQA Science

[New AQA GCSE Science B Science in Context](#)

[James Hayward](#), Jo Locke, Nicky Thomas and Lawrie Ryan

NELSON THORNES

Y11 pupils will also be able to purchase revision guides from Sep 2014,

Equipment

A brand new small laboratory with limited access to chemicals with standard lab equipment such as equipment for heating, beakers, measuring cylinders etc.

Pupils are expected to come equipped to lessons with the following:

- Pencils
- Pens
- Colouring pens
- Sharpener
- Rubber
- Glue stick
- Ruler
- Protractor
- Compass
- Calculator
- rough/note book

ICT

ICT is currently used as a teaching resource for staff in a variety of ways including animations, power point presentation's, with access to Brainpop and Twig. A set of laptops are available for use in lessons. The portacabin, which is used as the Science teaching room has an interactive whiteboard which is linked to a networked laptop. Pupils are often asked to bring their own devices such as phones, tablets and laptops to conduct research, interactive group sessions, use of Edmodo and other tasks.

Electronic copies of worksheets and other teaching resources are stored in appropriate folders on the teacher's laptop

Curriculum Syllabi

Exploring Science Years 7 and 8

Why chose Exploring Science?

It is the most widely used key stage three course in the UK

- *ENABLES LOWER ATTAINING PUPILS TO BE TAUGHT IN MIXED ABILITY CLASSES, WITH EDITABLE WORKSHEETS TO SUPPORT THE PUPILS' BOOKS.*
- *GIVES PUPILS A RECORD FOR THE LESSON WITH YOU SHOULD KNOW... SUMMARY SHEETS.*
- *IMPROVES THEIR ASSESSMENT TECHNIQUE AND PERFORMANCE THROUGH UNIT TESTS DESIGNED FOR PUPILS BELOW LEVEL 4, UP TO LEVEL 8*
- *ENABLES YOU TO TRACK THE PROGRESS OF LOWER ATTAINING PUPILS WITH WORKSHEETS AVAILABLE FROM AN ONLINE RESOURCE WEBSITE*
- *PROVIDES COMPLETE SUPPORT FOR SPECIAL NEEDS DEPARTMENTS, INCLUDING THE WHOLE FILE ON CD-ROM IN PRINTABLE PDF OR EDITABLE WORD FORMAT.*

TEACHING WIDE ABILITY CLASSES: EXPLORING SCIENCE HAS BEEN WRITTEN SPECIFICALLY FOR TEACHING WIDE-ABILITY CLASSES THROUGH INTEGRAL DIFFERENTIATION, HELPING PUPILS TO ACHIEVE THEIR BEST.

- ← *THE PUPIL'S BOOKS AND WORKSHEETS ARE PRESENTED AT ONE OF THREE LEVELS - MUST KNOW, SHOULD KNOW AND COULD KNOW.*
- ← *WORK AT EACH LEVEL IS TAILORED TO THE RESPECTIVE ABILITY LEVEL, WITH APPROPRIATE LEVELS OF INFORMATION, PRACTICE AND LANGUAGE.*
- ← *EVERY TOPIC IS ACCOMPANIED BY WORKSHEETS AND END OF UNIT TESTS IN THE COPYMASTER FILES AND ACCESS PACK AT ALL LEVELS, WHICH IS ON FILE ON THE TEACHERS LAPTOP.*

DIFFRENTIATED MATERIAL: THROUGHOUT THE TEXT, QUESTIONS TEST PUPILS' UNDERSTANDING AND BREAK UP THE TEXT INTO MANAGEABLE CHUNKS.

- ← *QUESTIONS ARE ALSO INCLUDED AT THE END OF EACH TOPIC TO CONSOLIDATE KNOWLEDGE AND UNDERSTANDING.*
- ← *THE INCREASING LENGTH OF THE TEXT BETWEEN QUESTIONS ON THE COULD KNOW PAGES HELPS INCREASE LITERACY LEVELS.*

Please see the link below to access sample materials from Exploring Science:

<https://www.pearsonschoolsandfecolleges.co.uk/AssetsLibrary/SECTORS/Secondary/PDFs/Science/LongmanScience/ExploringScience>

The Exploring Science course fully supports and lays the foundations for the AQA GCSE course.

KS3 teaching:

The course of each year is split into 12 units which cover each of the four attainment targets.

In Y7 and Y8 each class studies 2 units per half term. During each half term students complete one piece of formative assessment in the form of a level-assessed task. Each class will sit a summative assessment for each unit, with an end of academic year test in May/June, 2015.

Key timeline for secondary science

KS3 Science Curriculum has been updated for 2014, these changes will be implemented at SETS from September 2015.

The table below shows how state schools are implementing the changes

Current Year Groups	2013/14	2014/15	2015/16	2016/17	2017/18
Year 7	Current KS3 science disappplied				
Year 8	Current KS3 science disappplied	New KS3 science			
Year 9	Current KS3 science disappplied	New KS3 science	New KS3 science		
Year 10	Current GCSE science	Current GCSE science	Current GCSE science	New GCSE science	
Year 11	Current GCSE science	Current GCSE science	Current GCSE science	Current GCSE science	New GCSE science

AQA B Science in context

Y9-11

Why chose AQA B?

- ← SCIENCE A ALLOWS BIOLOGY, CHEMISTRY AND PHYSICS TO BE TAUGHT AND ASSESSED SEPARATELY WITH A PURE SCIENCE APPROACH. IT LOOKS AT THEORY AND APPLICATION.
- ← SCIENCE B INTEGRATES THE THREE DISCIPLINES TO SHOW HOW SCIENCE CAN BE SEEN EVERYWHERE IN REAL-WORLD SITUATIONS AND PUTS SCIENCE IN CONTEXT, THEN LOOKS AT THE THEORIES.
BOTH COURSES ENCOURAGE PRACTICAL WORK AND HAVE THE 'HOW SCIENCE WORKS' ASPECTS OF THE CURRICULUM INTEGRATED THROUGH ALL THE UNITS.

SCIENCE B COULD ALSO BE FOLLOWED BY GCSE ADDITIONAL SCIENCE OR GCSE ADDITIONAL APPLIED SCIENCE TO LEAD ON TO RESPECTIVELY AS SCIENCE COURSES OR VOCATIONALLY ORIENTED SCIENCE COURSES.

- THE COURSE LOOKS AT SCIENCE WIDELY BUT ALLOWS SUBJECT SPECIALISTS TO CONCENTRATE ON THEIR AREA OF EXPERTISE
- IT CAN BE TAUGHT BY ANY SCIENCE TEACHERS
- IT INSPIRES AND CHALLENGES STUDENTS, ESPECIALLY WITH THE PRACTICAL ELEMENTS AS IT IS BASED ON REAL EVIDENCE

- *THE SKILLS THE STUDENTS LEARN (EG CREATING A HYPOTHESIS AND PROVING IT WITH EVIDENCE) HAVE A WIDER VALUE*
- *STUDENTS TAKING ONLY ONE SCIENCE GCSE GET EXPOSED TO ELEMENTS OF THE THREE CORE SCIENCE SUBJECTS RATHER THAN HAVING TO PICK JUST ONE*
- *IT FOLLOWS ON NICELY FROM KEY STAGE 3 AND CREATES A FIRM BRIDGE TO AS AND A-LEVELS*
- *ITS FLEXIBILITY, BECAUSE OF THE OVERLAPS WITH THE SINGLE SCIENCE SUBJECTS.*

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THE INTERESTING MOTIVATING PRACTICAL WORK AND LEARNING ABOUT THE CORE SCIENCE SUBJECTS SEPARATELY AS THIS HELPS THEM UNDERSTAND THE KEY ASPECTS OF THE DIFFERENT SUBJECTS. THE BROAD RANGE AND VARIETY OF TOPICS COVERED, ESPECIALLY AS THEY CAN RELATE SOME ASPECTS TO THE WORLD THEY LIVE IN.

KNOWLEDGE/SKILLS GAINED:

- *USING KNOWLEDGE AND UNDERSTANDING TO POSE SCIENTIFIC QUESTIONS AND DEFINE SCIENTIFIC PROBLEMS*
- *PLANNING AND CARRYING OUT INVESTIGATIVE ACTIVITIES, INCLUDING APPROPRIATE RISK MANAGEMENT, IN A RANGE OF CONTEXTS*
- *COLLECTING, SELECTING, PROCESSING, ANALYSING AND INTERPRETING PRIMARY AND SECONDARY DATA TO PROVIDE EVIDENCE*
- *EVALUATING METHODOLOGY, EVIDENCE AND DATA*
- *UNDERSTANDING THE RELATIONSHIP BETWEEN SCIENCE AND SOCIETY*
- *DEVELOPING COMMUNICATIONS SKILLS IN SCIENTIFIC CONTEXTS.*

AT SETS IT IS INTENDED THAT PUPILS TAKE ROUTE 2, WHICH ENABLES BIOLOGY, CHEMISTRY AND PHYSICS TO BE TAUGHT CONCURRENTLY THROUGHOUT KS4 TO LEARNERS PREPARING FOR TWO SCIENCE GCSEs. Science B is a single GCSE award and can be followed by Additional Science or Additional Applied Science

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ASSESSMENT

STUDENTS HAVE TO ENTER ALL THE ASSESSMENT UNITS AT THE END OF THE COURSE, AT THE SAME TIME AS THEY ENTER FOR THE SUBJECT AWARD. IF STUDENTS WISH TO RE-SIT EXAMS THEY MUST RE-SIT ALL OF THE WRITTEN PAPERS IN THE NEXT SERIES.

AS A CONSEQUENCE OF THE MOVE TO LINEAR ASSESSMENT, STUDENTS WILL BE ALLOWED TO CARRY FORWARD THEIR CONTROLLED ASSESSMENT UNIT RESULT(S) FOLLOWING THE INITIAL MODERATION AND AGGREGATION DURING THE LIFETIME OF THE SPECIFICATION.

Exam dates 2014/2015:

SCB1	Unit 1: My World	5 June 2015
SCB2	Unit 2: My family and home	9 June 2015
SCB3	Unit 3: Making my world a better place	12 June 2015

More detailed information regarding the specification is available from the link below:

<http://filestore.aqa.org.uk/subjects/AQA-4500-W-SP-14.PDF>

Structure of the course

UNIT 1: MY WORLD

WRITTEN PAPER – 1 HOUR

60 MARKS – 25%

STRUCTURED AND CLOSED QUESTIONS ASSESSING THE CONTENT OF UNIT 1

AT LEAST ONE QUESTION ASSESSING QUALITY OF WRITTEN COMMUNICATION

UNIT 2: MY FAMILY AND HOME

WRITTEN PAPER – 1 HOUR

60 MARKS – 25%

STRUCTURED AND CLOSED QUESTIONS ASSESSING THE CONTENT OF UNIT 2

AT LEAST ONE QUESTION ASSESSING QUALITY OF WRITTEN COMMUNICATION

UNIT 3: MAKING MY WORLD A BETTER PLACE

WRITTEN PAPER – 1 HOUR

60 MARKS – 25%

STRUCTURED AND CLOSED QUESTIONS ASSESSING THE CONTENT OF UNIT 3

AT LEAST ONE QUESTION ASSESSING QUALITY OF WRITTEN COMMUNICATION

UNIT 4: USING PRACTICAL AND INVESTIGATIVE SKILLS

CONTROLLED ASSESSMENT

48 MARKS – 25%

Controlled assessments:

This coursework unit is worth 25% of the final mark and consists of one practical investigation, based on themes from the specification. One task from three options are available. Each task assesses How Science Works skills and the pupil's ability to research an application of the science in context.

Pupil's are assessed on the following skills:

- Research
- Planning an investigation
- Assessing and managing risks
- Collecting and processing primary data
- Analysis of primary and secondary data
- Evaluating the practical activity
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Final date for submission for Y11 is May 7, 2015

Y9

AQA course starts in September 2014, and should be completed as a two year course, pupils should gain two GCSE's in Core Science and in Additional or Additional Applied Science, linear course ending in June 2017.

Y10

Pupils should complete one GCSE's in Core Science and possibly a second in Additional science, dependent on ability. Linear course ending in Y11, June 2016.

Y11

Pupils should complete one GCSE's in Core Science in June 2015

Teaching

Learning outcomes should be identified and made clear at the start of each lesson and where possible lessons should be set in the context of previous work and what is to follow.

Lessons should have a clear beginning (introducing the lesson content & an impact starter), middle (in which the purpose of the lesson is achieved) and an end (plenary which provides a summary).

Lessons should contain a variety of activities, and ICT should be used where it enhances learning

Differentiation

Classes have a range of abilities and learning styles, and therefore it is important that teachers incorporate differentiation into lessons. This is achieved through a range of activities, including: the use of extension tasks, setting an open-ended activity (i.e. differentiation by outcome), pupil based learning tasks, projects and presentations, practical activities and discussion and debate. The SOW for AQA B includes a wide range of activities for teachers to choose from for each lesson and the department will be working on developing further resources.

Assisting pupils with SEN

Teachers should be aware of those pupils in their classes with SEN (recorded in the register) and take their specific needs into account when planning lessons. Pupils should be encouraged to use laptops and writing frames when appropriate. Mrs Paula Dickinson is available to assist in some of the science lessons

Departmental Policies

Homework Policy

Homework is given in line with the SETS school homework policy.

Homework should be appropriate for the level of ability and the time required. The work set should be relevant and useful to pupils and the teacher setting it, and should aim to build upon & reinforce lesson objectives but ideally should not simply be to complete class work.

A range of activities can be set to encourage all types of learning (posters, leaflets etc). It may encourage pupils to explore a topic more widely and broaden experience of and interest in Science, or it may reinforce skills such as data analysis & graph drawing. If 'revision' is given as a homework, pupils should be given guidelines on how to revise effectively.

Marking Policy

Marking should be done promptly and returned to the pupils in within the following two lessons immediately after. Time should be spent in the lesson going over common problems and praise given. Marking should take place once every two weeks or weekly if necessary.

Marking should be done according to the Science department policy with a clear mark for scientific content as well as an effort grade. Teachers should include a written comment including positive feedback as well as targets for improvement.

Assessment criteria should be made clear to the pupils either in advance of the prep being set, or included in the marking. Pupils should be encouraged to reflect upon their work and to set themselves targets where appropriate. Feedback may include summative assessment, indicating the standard reached by pupil at that stage (e.g. in an end of topic test) or formative assessment which gives guidance about errors/difficulties and targets for improvement. Assessment of pupils' effort is dependent on knowledge of individual pupils and may take into account a pupil who has shown significant improvement.

Reporting

Guidelines for writing internal and external reports are given in the SETS reporting school's policy.

Safety

Remedial measures for science staff

IMMEDIATE REMEDIAL MEASURES

What Staff should do while waiting for first aid

The First Aid Regulations do not necessarily require there to be a qualified first aider among science staff, yet this is clearly desirable. Nevertheless, all staff have a duty to carry out remedial measures immediately while waiting for first aid or professional medical treatment. The following advice covers common laboratory accidents and is intended as a supplement to any local guidance on dealing with non-laboratory events, e.g., epileptic fits.

Chemical splashes in the eye

Immediately wash the eye under running water from a tap for at least 10 minutes and for much longer in the case of alkalis. The flow should be slow and eyelids should be held back. Afterwards, the casualty should be taken to hospital (with irrigation continuing during the journey for an alkali in the eye).

Chemical splashes on the skin

Wash the skin for 5 minutes or until all traces of the chemical have disappeared. Remove clothing as necessary. If the chemical adheres to the skin, wash gently with soap.

Chemicals in the mouth, perhaps swallowed

Do no more than wash out the casualty's mouth. After any treatment by the first aider, the casualty should be taken to hospital.

Burns

Cool under gently running water until first aid arrives.

Toxic gas

Sit the casualty down in the fresh air.

Hair on fire

Smother with a cloth.

Clothing on fire

Smother by pushing the casualty to the ground, flames on top. Spread a thick cloth or garment on top if necessary. A fire blanket is ideal but use only if very close by.

Electric shock

Taking care for your own safety, break contact by switching off or pulling out the plug. If it is necessary to move the casualty clear, use a broom handle or wooden window pole or wear rubber gloves. If casualty is unconscious, check that airways are clear and begin artificial ventilation if necessary.

Severe cuts

Lower the casualty to the floor and raise the wound as high as possible. Apply pressure on or as close to the cut as possible, using fingers or a pad of cloth. Protect yourself from contamination by blood. Leave any embedded large bodies and press round them.

If in doubt, contact one of the many members of staff who is first aid trained, including Samantha Harding (Head of Science).

All teachers, technicians and support staff

1. Teachers and technicians have a general duty to take reasonable care for the health and safety of themselves, of other members of staff and of pupils. They have specific duties: to be familiar with this health and safety policy, its updates, appendices and the safety texts it refers to. They must observe the requirements of this policy and fulfil any special responsibilities it gives them. They must cooperate with colleagues in their specific safety duties. They have a duty to report to local management any failure of equipment, which has a safety function.
2. Staff practice must set a good example to pupils and be consistent with pupil laboratory rules, e.g., over the wearing of eye protection.
3. Staff must be familiar with emergency drills and familiar with the location in each science room of: the escape route; fire-fighting equipment; the nearest first-aid box, eye wash station; the main gas cock; the main electricity switch, the main water stop cock, the broken glass disposal bin and the spill kit.
4. Laboratories must be left safe. Special arrangements must be made for equipment which has to be left running overnight and hazardous equipment, which has to be left out. In general, all gas taps or mobile gas units should be completely turned off and all mains-operated apparatus switched off. At the end of the day, if practicable, gas should also be turned off at the laboratory main gas cock and electricity at the laboratory main switch.
5. Eating, drinking, smoking and the application of cosmetics should not take place in laboratories, preparation rooms or storage areas.
6. A teacher or technician must assess the risks very carefully before conducting any practical operation in the laboratory when alone in the science department. Nothing should be done which could lead to an accident needing a remedial measure.
7. In general, pupils must not be left unsupervised in a laboratory or Science building. Staff needing to leave a class briefly must assess the risks of doing so, perhaps arranging for

temporary supervision by a neighbouring member of staff. Special arrangements may be needed for senior students doing project work depending on the hazards involved.

8. Science laboratories, preparation rooms and stores should be locked by the staff when not in use, unless so doing hinders an essential fire escape route. They should be available for teacher-supervised club activities only by special arrangement.

Teacher responsibility

1. At the beginning of each school year, teachers must make sure that their classes have copies of the pupil rules and issue them if necessary. They should be stuck in an exercise book, work folder or similar place.
 2. Teachers must enforce the pupil laboratory rules, reminding pupils of them often enough for them to be familiar. With new pupils, time should be spent explaining them, with appropriate demonstrations.
 3. Lesson preparation should be adequate and include checking on risk assessments and, where necessary, the safety precautions required. Time should be allowed for consulting more senior colleagues where there is any doubt and to try out experiments, particularly those involving hazard. Teachers should explain precautions to pupils as part of their health and safety education.
 4. Open-ended investigations must be so organised that the teacher can assess any risks and lay down precautions before any hazards are met.
 5. If safety cannot be maintained during certain practical work, the work should be modified or abandoned, or an unruly student removed from the lesson. This decision should be reported to the Head of Science so that appropriate measures can be taken to inform the student's parents and so that suitable work may be given in place of practical work.
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1. **Any accident to a person, which happens within the Science lessons or on a science task, must be reported. This includes any incident whether it is self-inflicted or not, AND whether it is a pupil, teacher, any other staff. Accidents are reported to the head of the school**

Rules for pupils during science practical lessons

1. You must not do anything with equipment or materials unless told to do so by a teacher. You must follow instructions precisely.
2. You must wear eye protection when told to do so and keep it on until told to take it off when all practical work, including clearing away, is finished.
3. When instructed to use a Bunsen burner, make sure that hair, scarves, ties etc are tied back or tucked in to keep them well away from the flame.
4. When working with liquids, normally stand up; then you can move out of the way quickly if there is a spill.
5. Never taste anything or put anything in your mouth when in the laboratory unless your teacher tells you to do so. This includes sweets, fingers and pencils, which might have picked up dangerous chemicals from the bench.
6. If small amounts of chemicals or microbiological cultures get on your hands or any other part of the body, wash them off. Wash your hands after work with chemicals or with animal or vegetable matter.
7. Put waste solids in the correct bin, never in the sink.
8. Report any accident to the teacher. This includes burns or cuts and chemicals in the mouth, the eyes or on the skin.

Samantha Harding (Head of Science) must keep a written record of the incident (a photocopy is sufficient). Any action taken following the incident should be noted, as well as a note of changes of procedure taken to prevent any future problem recurring.

Discipline

There are high expectations for behaviour in the classroom. Pupils should be in the habit of being quiet, and listening when you are talking - without this simple discipline, practical lessons become less effective and safety instructions may not be heard.

Pupils must arrive to lessons on time and be released on time. Punctuality is a personal priority.

A pupil who is causing disruption to a class should not be asked to stand outside of a classroom for long periods of time. With cooperation between teachers, the pupil should be seated at the back of the lesson and given work to do on their own or dealt with outside of lesson time.

Pupils should behave in line with SETS behaviour policy.

Code of conduct for Science lessons:

1. Arrival promptly to lessons.
2. Follow instructions for all activities.
3. Homework must be handed in on time.
4. Have respect for teachers and other pupils around you. Rudeness to the teacher or towards each other will not be tolerated.
5. Hands up when answering and asking questions.
6. Do not talk when the teacher is talking or other members of the class are talking as part of whole class discussions.
7. Complete all tasks to the best of your ability.
8. Ensure that all work handed in, as part of class work and homework, is your own.

Prizes

The following prizes are awarded at the end of the academic year. Individuals in each year group are given prizes in the following categories:

- Effort
- Homework
- Academic
- Progress

Pupils receive an award in the form of a certificate.

