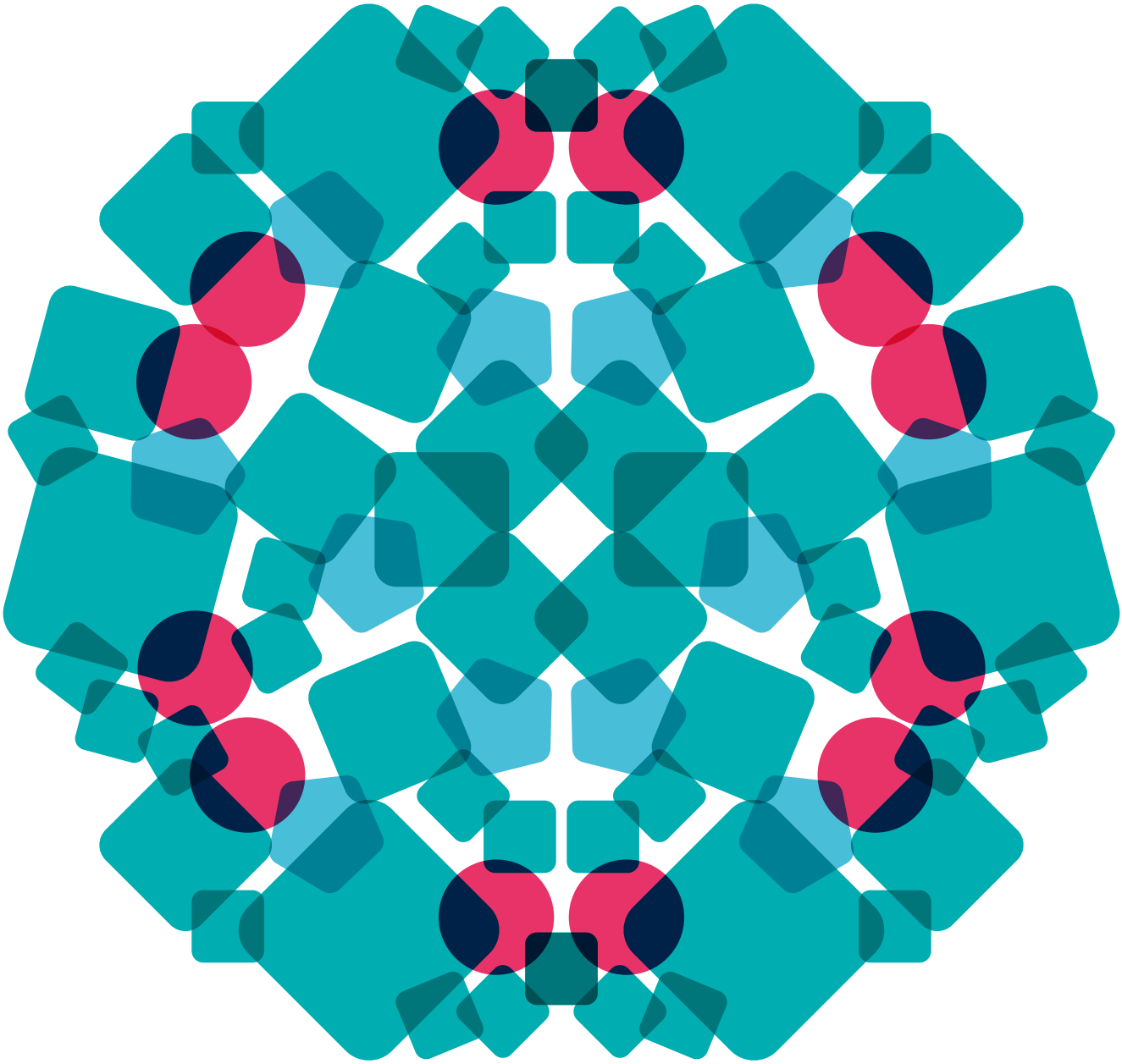
Oxford
International
Curriculum

Primary & Lower Secondary

Science



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I see students who question the world around them with a sense of excitement and curiosity

The joy of learning

Oxford University Press is a department of the university, publishing to further the university's objectives of excellence in scholarship, research, and education.

Nurturing creativity, inspiring curiosity, shaping the future

At Oxford University Press, we are committed to enriching the lives of learners across the world through education by developing the highest quality academic and educational resources and services. That's why we invest 100% of the money we make back into education and research.

As part of the University of Oxford, we combine a deep knowledge and understanding of pedagogy to provide quality resources that impact positively on learning. We are trusted by leaders and practitioners to raise levels of attainment all over the world – this is our passion and motivation.

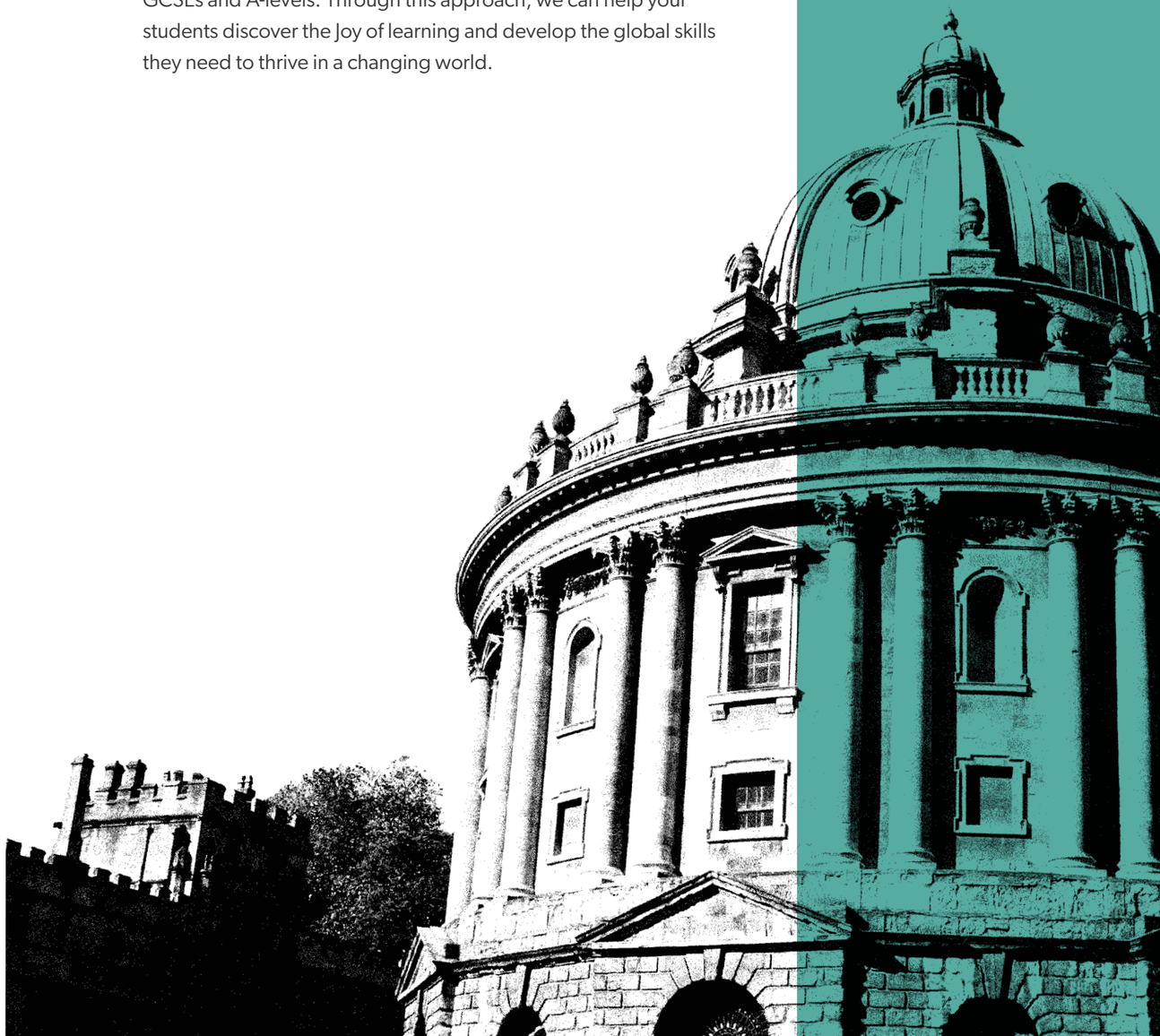
At Oxford University Press, we recognize that we are living in an ever-changing world, where the way we work, live, learn, communicate and relate to one another is constantly shifting. In this climate, we need to instil in our learners the skills to equip them for every eventuality so they are able to overcome challenges, adapt to change and have the best chance of success. To do this, we need to evolve beyond traditional teaching approaches and foster an environment where students can start to build lifelong learning skills for success. Students need to learn how to learn, how to problem solve, be agile and work flexibly. Going hand in hand with this is the development of self-awareness and mindfulness through the promotion of wellbeing to ensure students learn the socio-emotional skills to succeed.

What's more, a focus on cultivating a growth mindset, where students learn to thrive on challenge and see failure as a way to stretch themselves, will act as a foundation to improve their performance.

That's why we have developed the Oxford International Curriculum. The curriculum offers a new approach to teaching and learning focused on wellbeing, which places joy at the heart of the curriculum and develops the global skills your learners need for their future academic, personal and career success.

Through six subjects – English, Maths, Science, Computing, Wellbeing and Global Skills Projects – the Oxford International Curriculum offers your school a coherent and holistic approach to ensure continuity and progression across every student's educational journey, equipping them with the skills to shape their own future and progress seamlessly to studying for International GCSEs and A-levels. Through this approach, we can help your students discover the Joy of learning and develop the global skills they need to thrive in a changing world.

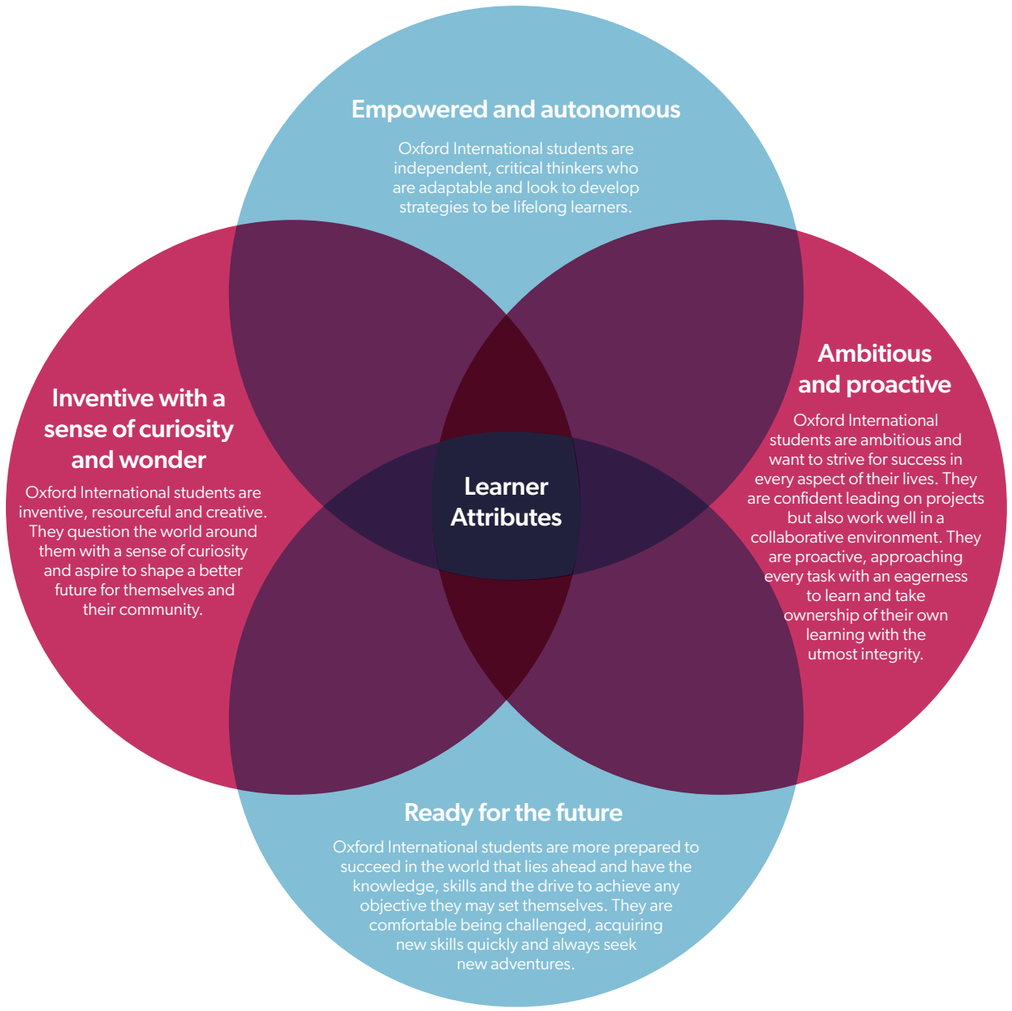
> **Thinking together so we can act together to make the futures we want.**
>
> UNESCO Futures of Education initiative



Challenge seekers, problem solvers, next leaders

The Oxford International Curriculum aims to deliver the wellbeing and global skills that will be needed in future, to the learners of today, providing them with a firm foundation for future employment and participation in society.

The Oxford International Curriculum helps to develop:



A classroom culture that fosters lifelong learning and wellbeing

The Oxford International Curriculum enables students to succeed by recognizing that lasting success is contingent on both academic performance and emotional wellbeing. The curriculum aims to foster a classroom environment where students develop the skills for success:

Creativity and critical thinking	Real-world skills	Communication and collaboration	Self-development skills
problem solving, curiosity and wonder, critical thinking	project management, functional literacy, research	communication, leadership, relationship building	risk taking, ethics, motivation

The Oxford International Curriculum also promotes teachers' and learners' resilience, agency and self-regulation to cope in the world of tomorrow. This focus on wellbeing aims to promote good mental health to enhance students' lives inside and outside of the classroom. Key themes of wellbeing include:

Taking care of the body	Taking care of the mind	Taking care of relationships	Taking care of self and the world
learning how to keep active and eating healthily can directly impact on positive mental health	promoting mindfulness to train learners to be more optimistic and manage stress	how to build and maintain friendships and relationships with family, how to communicate with others more effectively and how to connect through acts of kindness	encouraging students to have a focus and find purpose in the world around them, helping them to aspire to be better citizens

The Oxford International Curriculum offers a practical, robust and effective continuous professional development programme specifically designed for international schools to support the implementation of its pedagogy.

By promoting wellbeing and developing global life-skills, the Oxford International Curriculum will prepare your students for success in an ever changing world, giving them the springboard to achieve academically and nurturing them to shape a better future.

Contents

Our curriculum developer:

Deborah Roberts

Deborah Roberts is teacher, author, facilitator and education consultant. With teaching experience as Director of Learning in Science, and as Director of English as a Second Language, she has authored over 80 books on science education. She is also an international lead in enquiry-based learning, and an accredited CPD senior facilitator, and has delivered training and presented research papers on the subject of enquiry-based learning globally.

Our curriculum consultants:

Lawrie Ryan

Sunetra Berry

Preface

The Oxford International Curriculum for Science is an enquiry-based curriculum designed to lay the foundations for further scientific learning, preparing students to be the scientists of the future, and equipping them with the skills they need to succeed. A practical framework which supports both teachers and learners, it is organised around the three main scientific disciplines, with a strong investigative strand, as well as links to other curricula, including Maths, Global Skills Projects and Wellbeing.

The key features of Oxford International Curriculum for Science are that it is:

- Relevant: Children are encouraged to question the world around them, engage with topical environmental and scientific issues, and be encouraged to use science to make predictions, test their understanding and use observations and measurements to arrive at sound conclusions which can be analysed.
- Realistic and deliverable: Learning outcomes can be achieved with the resources that exist right now in schools throughout the world, by the educators who are already in place.
- Flexible: Both supportive and adaptable, so that it can be customized to the needs and context of individual learners, schools and regions.
- Enquiry-based: The approach to learning is one which invites students to actively shape their learning journeys, placing problem-solving and real-world applications at the heart of the curriculum, and with a strong emphasis on research skills.
- Measurable: The curriculum is linked to an assessment framework that will enable teachers to evaluate, measure and record individual students' progress.

Our approach to Science

This curriculum is structured as a simple matrix with an associated assessment framework and supporting schemes of work and lesson plans.

The curriculum matrix has learning outcomes for every year from Year 1 (ages 5–6 years) to Year 9 (ages 13–14 years). The learning outcomes are organized into four themes:

- Biological science
- Chemical science
- Physical science
- Investigative science

The assessment framework provides measurable and unambiguous criteria against each learning outcome. These criteria describe how teachers can confirm that learners have achieved the outcomes set out in the curriculum.

Curriculum at a glance (page 12)

The four strands

The four strands encompass the full spectrum of scientific skills and understanding that students need to develop at primary and lower secondary level.

1

Biological science:
Students learn about biological science by investigating and linking this to everyday experiences and phenomena. The content is selected to introduce areas of biological science related to plants and animals, including humans. The primary curriculum forms the foundation of further learning, with areas such as food chains and interdependence leading into the study of genetics, animals systems and photosynthesis at lower secondary level.

2

Chemical science:
The distinction between an object and the material it is made from initiates learning in Chemistry. Students are encouraged to recognize the application of their study of the physical properties of materials in their everyday lives, and to consider the industries dependent on the study of materials and their properties. There are many opportunities to develop and practise investigative skills, including techniques for separation.

3

Physical science:
The early stages of this strand lay the foundations for students to engage fully with physical science in the middle years of this curriculum. Topics such as light, forces and electricity are explored through investigative study at the primary level, laying a solid foundation for more in-depth theoretical and practical investigation in the lower secondary years.

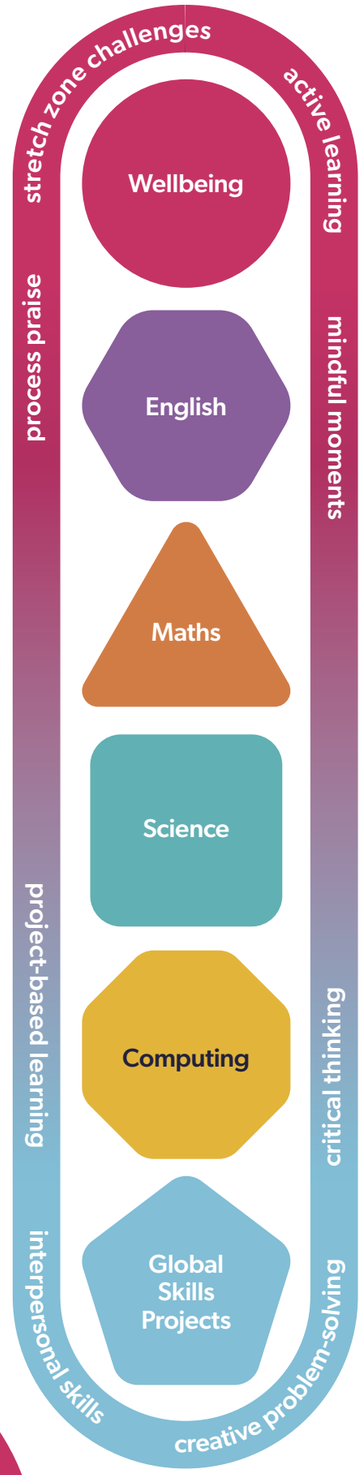
4

Investigative science:
These skills are entwined throughout the learning of the three scientific disciplines, and enable students to develop a sense of curiosity and inquisitiveness about the subject. This supports students in their enquiry-based learning, developing their ability to question and find their answers to the world around them, assess risk, and become confident scientific practitioners.

How the curriculum works

Six subjects, one approach

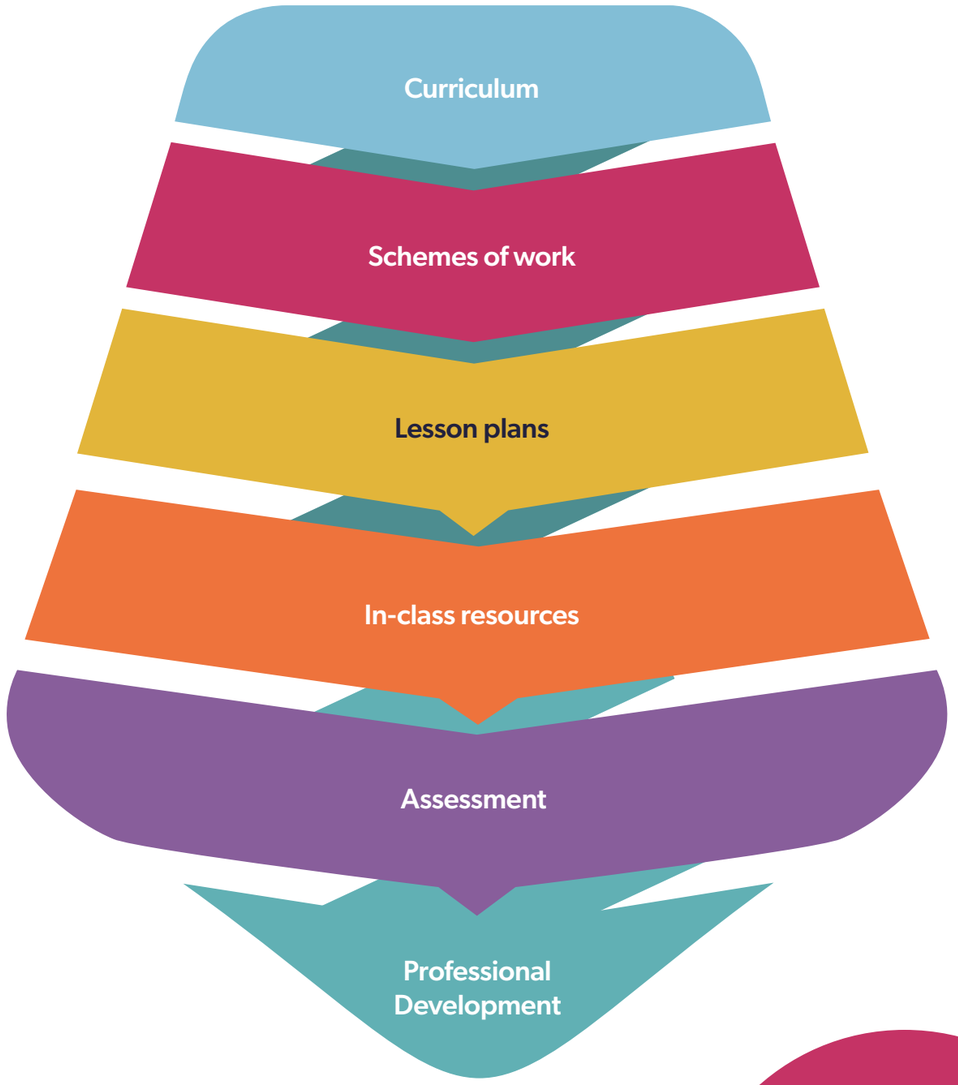
The Oxford International Curriculum spans six subjects, which all have the same approach to the 'Joy of learning'. Wellbeing and Global Skills Projects are at the heart of the four core subjects of English, Maths, Science and Computing, and the development of the Oxford International Curriculum for Science has been guided by the wellbeing and global skills philosophy. Lesson plans highlight points at which the Global Skills Projects and Wellbeing curricula can be integrated into the teaching of core subjects. The curriculum takes a spiral approach, revisiting key topics to consolidate and support progression in learning.



Building the curriculum

The Oxford International Curriculum for Science offers end-to-end teaching and learning support, and is composed of:

- Curriculum at a glance: a year-on-year progression of learning outcomes for every year group
- Schemes of work: overview and detailed schemes of work provide timetabling options by year group, and week-by-week teaching suggestions
- Lesson plans: provide a blueprint for each lesson, ensuring coverage of specific learning outcomes; the plans link to recommended resources and worksheets where relevant
- Assessment framework: assessment criteria linked to every learning outcome in the curriculum.



Curriculum at a glance

Strand	Year 1	Year 2	Year 3	Year 4
	Students can:	Students can:	Students can:	Students can:
1 Biological science	**1.1a:** Find out about the basic parts of flowering plants and trees **1.1b:** Name and compare common animals, including vertebrates **1.1c:** Name the basic parts of the human body	**2.1a:** Find out about habitats and how they support the animals and plants that live there **2.1b:** Explore how seeds and bulbs grow into plants **2.1c:** Know that animals have young that grow into adults **2.1d:** Describe simple food chains using the terms carnivores, herbivores and omnivores#	**3.1a:** Explore what plants need for life and growth and investigate how water is transported in plants **3.1b:** Investigate the part flowers have in the life cycle of flowering plants **3.1c:** Identify how humans obtain the right types and amounts of nutrition, and use exercise and hygiene to be healthy **3.1d:** Describe how skeletons and muscles give humans and some animals support, protection and movement	**4.1a:** Use classification keys to help group, identify and name a variety of living things in the environment **4.1b:** Find what happens to living things when environments change **4.1c:** Learn about teeth and the digestive system in humans **4.1d:** Make food chains showing the producer, consumer and predator/ prey relationships
2 Chemical science	**1.2a:** Explore the materials that objects are made from **1.2b:** Name some everyday materials, including wood, plastic, glass, metal, water and rock **1.2c:** Explore the simple physical properties of some materials **1.2d:** Sort materials into groups	**2.2a:** Make an object to suit a particular use **2.2b:** Investigate how the shapes of solid objects made from some materials can be changed	**3.2a:** Compare and group together different kinds of rocks using observations and simple physical properties **3.2b:** Describe how fossils are formed when things that have lived are trapped in rock **3.2c:** Explore how soils are made from rocks and organic matter	**4.2a:** Compare and explore solids, liquids and gases **4.2b:** Explore how some materials change state when they are heated or cooled **4.2c:** Investigate the temperature at which changes of state occur **4.2d:** Explore evaporation and condensation in the water cycle
3 Physical scienc	**1.3a:** Describe and investigate the weather **1.3b:** Look closely at changes in the four seasons	**2.3a:** Explore how forces can make things move **2.3b:** Learn what makes things speed up, slow down or change direction	**3.3a:** Describe how light is needed to see things **3.3b:** Investigate the formation of shadows **3.3c:** Investigate magnetic materials and the force of magnetis	**4.3a:** Investigate how sounds are made and can travel to the ear **4.3b:** Explore the pitch and volume of sound **4.3c:** Construct simple circuits **4.3d:** Investigate how conductors and insulators affect how electrical current flows
4 Investigative science	**1.4a:** Carry out simple comparative tests **1.4b:** Observe and record changes over time **1.4c:** Group and classify given specific criteria (for example the properties of a material) **1.4d:** Use models to support scientific explanations	**2.4a:** Use simple equipment to test questions **2.4b:** Identify patterns in data **2.4c:** Communicate ideas in a variety of ways **2.4d:** Record results and data to help answer questions	**3.4a:** Set up simple practical enquiries, comparative and fair tests **3.4b:** Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables **3.4c:** Use oral and written reports to present findings from enquiries, including displays of results and conclusions	**4.4a:** Use a range of equipment to make careful observations and take accurate measurements using standard units **4.4b:** Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions **4.4c:** Use scientific evidence to answer questions or to support findings

Year 5	Year 6	Year 7	Year 8	Year 9
Students can:	Students can:	Students can:	Students can:	Students can:
5.1a: Compare the life cycles of a mammal, an amphibian, an insect and a bird **5.1b:** Describe different methods by which plants reproduce and disperse their seeds **5.1c:** Research the changes in humans as they age	**6.1a:** Use classification keys to group animals and plants **6.1b:** Explore the circulatory system and describe how nutrients are transported in animals **6.1c:** Find out why offspring are not identical to their parents	**7.1a:** Explain how cells are organized in multicellular plants and animals **7.1b:** Explain how the human skeleton provides support, protection and movement **7.1c:** Describe the main steps that take place during plant reproduction	**8.1a:** Explain the role and function of the lungs **8.1b:** Explore the interdependence of organisms in ecosystems, including the impact humans can have **8.1c:** Explore the roles of nutrition and the process of digestion **8.1d:** Describe the processes of aerobic and anaerobic respiration	**9.1a:** Explain the process and role of photosynthesis **9.1b:** Explain how specific traits are inherited, leading to variation and natural selection **9.1c:** Explore the causes of extinction **9.1d:** Explain the process of reproduction in animals and humans
5.2a: Investigate solutions **5.2b:** Discover how mixtures can be separated using ideas of solids, liquids and gases **5.2c:** Explore how some substances dissolve in water to form solutions **5.2d:** Explain how dissolving, mixing and changes of state are reversible changes **5.2e:** Explain how some changes are not reversible and form new materials	**6.2a:** Research how fossils can give information about living things that inhabited the Earth millions of years ago	**7.2a:** Use the particle model to explain the properties of materials and changes of state and diffusion **7.2b:** Investigate techniques to separate mixtures **7.2c:** Describe the Earth's structure and the processes leading to rock formation **7.2d:** Describe the properties and reactions of acids	**8.2a:** Describe the arrangement of elements on the periodic table, including their symbols **8.2b:** Compare the properties and reactions of elements and their compounds **8.2c:** Construct simples chemical equations to describe reactions **8.2d:** Investigate chemical energy in exothermic and endothermic reactions	**9.2a:** Describe the basic structure of the atom and the subatomic particles **9.2b:** Explore different types of reaction, for example combustion and thermal decomposition **9.2c:** Describe the carbon cycle and how it affects climate change **9.2d:** Explain the importance of protecting the Earth's resources **9.2e:** Describe and explain the reactivity series of metals
5.3a: Explore the movement of the Earth, moon and other planets **5.3b:** Find out about day and night and the apparent movement of the sun **5.3c:** Describe the effects of air resistance, water resistance and friction **5.3d:** Explore how levers, pulleys and gears help us to move objects using less force	**6.3a:** Explain how we see things and how shadows are formed **6.3b:** Investigate simple circuits **6.3c:** Draw circuit diagrams using symbols	**7.3a:** Explore and measure a range of balanced and unbalanced forces **7.3b:** Research a range of sources of energy and future possibilities **7.3c:** Explain energy transfers between energy stores **7.3d:** Explain how sound travels in waves **7.3e:** Explain how thermal energy is transferred **7.3f:** Use the particle model to explain conduction and convection of thermal energy	**8.3a:** Explain the effects of non-contact forces **8.3b:** Describe changes to current and potential difference in series and parallel circuits **8.3c:** Use ray diagrams to explain how light behave	**9.3a:** Explain and explore pressure **9.3b:** Explain how forces cause motion **9.3c:** Describe factors affecting and uses of electromagnets **9.3d:** Calculate and compare energy values in different situations **9.3e:** Describe and compare different bodies in the universe
5.4a: Plan different types of scientific enquiries, including investigations that involve recognizing and controlling variables **5.4b:** Take accurate and precise measurements, using different scientific equipment, taking repeat readings if needed **5.4c:** Record more complex data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	**6.4a:** Use test results to make predictions to set up further comparative and fair tests **6.4b:** Identify scientific evidence that has been used to support or refute ideas or arguments **6.4c:** Draw conclusions from results, including causal relationships and an awareness of the level of trust in them	**7.4a:** Estimate the risks to themselves and others **7.4b:** Suggest a hypothesis for an observation **7.4c:** Identify patterns in data **7.4d:** Draw and communicate valid conclusions from investigations	**8.4a:** Suggest relationships between variables **8.4b:** Use different methods to present data and findings **8.4c:** Carry out fieldwork and laboratory work **8.4d:** Identify risks and hazards and suggest how to control them **8.4e:** Analyse strengths and weaknesses in an inquiry and suggest improvements	**9.4a:** Plan an investigation, manipulating variables independently **9.4b:** Suggest an experiment to test a hypothesis **9.4c:** Construct explanations using evidence and creative thinking to develop new scientific ideas and explanations **9.4d:** List evidence and conclusions that support your opinion **9.4e:** Evaluate the repeatability of methods and suggest improvements

Schemes of work

Schemes of work provide a clear structure for the delivery of the curriculum in each academic year, mapping out scope and sequence, and providing a teaching route which students can follow. They are available at both an overview (week-by-week) and detailed (lesson-by-lesson) level.

Oxford International Curriculum — Science

SCHEME OF WORK: YEAR 2

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Biological science: Habitats							Physical science: Forces				
Week 13	**Week 14**	**Week 15**	**Week 16**	**Week 17**	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Chemical science: Materials							Physical science: Speeding things up				
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**	**Week 33**	**Week 34**	**Week 35**	**Week 36**
Biological science: Plants			Biological science: Families				Chemical science: Changing the shape of materials				

Oxford International Curriculum — Science

SCHEME OF WORK: YEAR 7

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Biology: Cells					Chemistry: The particle model				Physics: Forces		
Week 13	**Week 14**	**Week 15**	**Week 16**	**Week 17**	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Chemistry: Separation techniques			Physics: Energy stores						Biology: Plant reproduction		
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**	**Week 33**	**Week 34**	**Week 35**	**Week 36**
Chemistry: Acids			Physics: Sound waves				Chemistry: The Earth's structure				

Curriculum aligned
Every learning objective mapped on to a week-by-week, lesson-by-lesson teaching plan

Multiple views
Schemes of work provided at both weekly and lesson-by-lesson level, for ease of planning

Lesson plans
Lesson titles link in to individual lesson plans

Oxford International Curriculum — Scienc

SCHEME OF WORK: YEAR 7

Week		Lesson title	Learning outcomes
		Biology: Cells	
1	1.1	Introduction	7.1a: Explain how cells are organized in multicellular plants and animals
	1.2	Using microscopes	7.4a: Estimate the risks to themselves and others
	1.3	Comparing animal and plant cells	7.1a: Explain how cells are organized in multicellular plants and animals
2	2.1	Investigating animal and plant cells	7.4c: Identify patterns in data
	2.2	Specialised cells	7.1a: Explain how cells are organized in multicellular plants and animals
	2.3	Can substances move out of cells?	7.4d: Draw and communicate valid conclusions from investigations
3	3.1	Unicellular organisms	7.1a: Explain how cells are organized in multicellular plants and animals
	3.2	Multicellular organisms	7.1a: Explain how cells are organized in multicellular plants and animals
	3.3	What we have learned cells	7.1a: Explain how cells are organized in multicellular plants and animals
4	4.1	Cells, tissues and organs	7.1b: Explain how the human skeleton provides support, protection and movement
	4.2	Structure of the skeleton	7.1b: Explain how the human skeleton provides support, protection and movement
	4.3	Function of the skeleton	7.1b: Explain how the human skeleton provides support, protection and movement 7.4c: Identify patterns in data
5	5.1	Joints and movement	7.1b: Explain how the human skeleton provides support, protection and movement 7.4a: Estimate the risks to themselves and others
	5.2	Muscles and movement	7.1b: Explain how the human skeleton provides support, protection and movement 7.4a: Estimate the risks to themselves and others
	5.3	What we have learned	
		Chemistry: The particle model	
6	6.1	Introduction	7.2a: Use the particle model to explain the properties of materials and changes of state
	6.2	The particle model	7.2a: Use the particle model to explain the properties of materials and changes of state
	6.3	States of matter	7.2a: Use the particle model to explain the properties of materials and changes of state

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Lesson plans

YEAR 2 Introduction to habitats
Week 1 Lesson 1: Introduction to habitats
Learning outcomes: 2.1a; 2.4d

Context

- This is an introductory lesson to the first unit in year 2. This is also the first unit in the year to cover biological sciences.
- In this unit children will be encouraged to find out about what a habitat is and how it supports the animals and plants that live there. They will use simple equipment to explore and investigate habitats and communicate results that they record with others. They should be able to name examples of some plants and animals and group together some that live in a similar place which they will learn to be their habitat in this unit.
- This lesson should take around 45 minutes to an hour, although the timing is flexible to suit different timetables. You can extend the lesson using the additional activities.

Materials

access to an outdoor space if possible; pictures or video clips of different habitats and the living things in them; large sheets of paper; coloured pens

Resources

Oxford International Primary Science Student Book 2, 2nd ed.
Oxford International Primary Science Workbook 2, 2nd ed.

Lesson summary

This lesson introduces the key language and content of what children will learn in the unit.

Joy of Learning

GSP Global Skills Projects

- **2.1b** Develop interests to explore
- **Global outlook:** Living things live in different places.

WB Wellbeing

- **2.4b:** Use teamwork in group activities
- **Big question:** What is a habitat?

Vocabulary

adapted, animals, environment, food chain, habitat, living, micro-habitat, minibeast, non-living, plants, pollution

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Curriculum aligned
Every lesson highlights the learning outcomes it covers, linking back to the curriculum-at-a-glance document

Flexible
Indicative timings are given, but additional activities allow for customization, and differentiation suggestions are provided

Step-by-step
Guidance structured to navigate through the delivery of the lesson

Joy of learning
Opportunities to link to the Global Skills Projects and Wellbeing curricula are highlighted

Oxford International Curriculum
Science

Introductory activity

- Children work with a partner or in a small group to discuss the objectives for this unit on pp.44-45 of *Student Book 2*. Encourage them to share their ideas in a group discussion. Ask them what they think the unit will be about and what they might learn. Ask the children if they have heard the word habitat before. Can they give any examples of a habitat?
- Ask children to discuss the key words in the vocabulary box above. If they recognise any can they use the word in a sensible sentence. Discuss the meanings of the words and give examples of them.

Main activity

- GSP WB Children work together in small groups to share their ideas. If possible take the children to an outdoor area, if not, provide them with a video or image of a habitat. They should use this as a model or example of a habitat. Give each group a large sheet of paper and coloured pens. Ask them to make a list or draw a picture of all of the animals that they can see or have seen in the area. They might need reminding to include insects, for example. Then ask children to list and draw all of the plants in the area. Explain that plants and animals are part of a habitat.
- Ask the children how the animals live together. They might recognise that some insects might live on the leaves or the roots of a plant or that some animals might eat parts of a plant for food.
- Ask children to discuss in their group if they think the animals and plants need each other to survive. Ask them to justify or back up their ideas. Ask them what makes them think this? What evidence is there to back this up?
- Go through the questions on pp.62-63 of *Student Book 2* with the class and discuss how they will be reviewed at the end of the unit to measure how much they have learned and the progress they have made.

Additional tasks

- The groups of children could carry out a research task to find out how animals and plants live together in a given habitat for example marine or woodland. This is an introductory lesson to habitats and how living things live together. They will learn about this throughout the unit.
- Ask children if their research has led them to think of any questions. Children could write these questions on a piece of paper or a post it. Attach these to a notice board or central area. Use these questions to inform the planning of this unit.

Learning review

- Children have an insight into what they will learn in this unit.

Differentiation

- Some children could begin to write definitions for the key words.
- Children begin to construct a word wall with the word written and a visual aid to help them understand and remember what the word means in this unit.

Extension tasks

- Children start a glossary by writing down all of the key words for this unit and adding definitions to it as they become confident with their meaning.

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Assessment information

Our assessment framework provides a structured way for teachers and students to measure their progress against the learning outcomes, through projects, observations, written work and group work. Year-end tests serve to help teachers assess the student's achievement over the course of any full year of study.

Formative assessment: Assessment for learning is signposted within lesson plans, and teachers are provided with the tools to deliver ongoing, flexible formative assessment through quizzes and question items that can be customized by both level and topic.

Summative assessment: Achievement tests at the end of Year 6, 7, 8, 9.

We envisage that progress will be assessed using a range of tools and settings, including group projects, observations and activities. Learning may be integrated with other subject areas, including the Global Skills Projects and Wellbeing curricula.

The spiral model

The underlying structure of the curriculum has a spiral development model. This means that each learning theme is analyzed into skills areas. These are revisited each year at higher levels of complexity and depth.

The spiral development model reinforces learning and builds on previous achievement. It makes it easier for students to develop and gives coherence and structure to the learning journey.

Preparation for external exams

The curriculum has been designed to enable a smooth progression to the study of international GCSE science. Students will be well prepared to study either the Combined Science or Separate Science route, having covered the foundations of all three scientific disciplines in the lower secondary years, become comfortable using scientific and technical terminology vocabulary from the early stages in the learning of science, mastered a range of practical skills, and honed an enquiring mindset.

Science assessment framework

The assessment framework provides assessment criteria linked to every learning outcome in the curriculum. Teachers will assess students against these criteria, to monitor and confirm students' progress.

In this curriculum, the strands are divided into biological, chemical, physical and investigative science to encourage students from an early age to appreciate the different disciplines in science. Students should be enthused and inquisitive about the content of science and develop the habits of scientific thinking that will inspire them to study into the next stage of learning and beyond. The syllabus is designed to introduce concepts and skills to provide a sound foundation for the further study of science. It also develops extensive cross-curricular links to maths, literacy and geography.

This framework can be used as the basis of formal and informal observations of students as their learning progresses through each year, and has been developed to assist teachers in the monitoring of progress. It is organized into statements of developing, secure and extending learning. The statements are intended to be 'can do' statements, where the teacher considers if a student is developing, secure or extending each learning outcome; whether they are working towards, meeting or exceeding each learning outcome.

Judgement should not be based on one observation or a test but arrived at from day-to-day observations. Students should be able to demonstrate their understanding in discussions with their peers and teachers using verbal communication and appropriate scientific language. They should also communicate their understanding in writing, using pictures and diagrams in addition to actions and play. Evidence should be analysed to decide whether students can achieve the 'can do' statements, or have broadened and deepened their knowledge beyond a given statement.

Students can be assessed at one of three levels:

- **Developing:** The student has made some progress but has not yet achieved the specified learning outcome.
- **Secure:** The student has fully achieved the learning outcome.
- **Extending:** The student has exceeded the learning outcome and achieved additional skills or deeper understanding beyond those specified.

These criteria allow the teacher to acknowledge the achievement of all students including those with additional learning needs. They provide a sound framework to confirm that the class as a whole has reached mastery of the universal learning outcomes and a route to exceptional achievement for students who wish to move more quickly and extend their skills and understanding.

YEAR **ONE**

Introduction

In Year 1, students begin to explore and engage with key scientific concepts and skills.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 1.
During the year, every student will:

1.1a: Find out about the basic parts of flowering plants and trees

1.1b: Name and compare common animals, including vertebrates

1.1c: Name the basic parts of the human body

1.2a: Explore the materials that objects are made from

1.2b: Name some everyday materials, including wood, plastic, glass, metal, water and rock

1.2c: Explore the simple physical properties of some materials

1.2d: Sort materials into groups

1.3a: Describe and investigate the weather

1.3b: Look closely at changes in the four seasons

1.4a: Carry out simple comparative tests

1.4b: Observe and record changes over time

1.4c: Group and classify given specific criteria (for example, the properties of a material)

1.4d: Use models to support scientific explanations

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student and inform future planning to ensure that all students are prepared for the next key stage of learning science.

1.1a: *Find out about the basic parts of flowering plants and trees*

Developing: Point to the stem, flower and petals.

Secure: Point to some plant structures, including leaves, flowers (blossom), petals, fruit, seeds, branches and stem.

Extending: Identify the main structures of named examples of plants and trees in the environment.

1.1b: *Name and compare common animals, including vertebrates*

Developing: Observe and care for animals and plants in the environment, including pets.

Secure: Name some fish, amphibians, reptiles, birds and mammals.

Extending: Group animals according to what they eat.

1.1c: *Name the basic parts of the human body*

Developing: Name the head, arms, legs, ears, eyes, hair, neck, elbows, knees, face, teeth and mouth.

Secure: Name and locate the parts of the body related to the senses.

Extending: Name and compare the parts of a range of animals.

1.2a: *Explore the materials that objects are made from*

Developing: Know the difference between an object and the material it is made from.

Secure: Identify the materials that some objects are made from.

Extending: Suggest appropriate materials to use for objects.

1.2b: *Name some everyday materials, including wood, plastic, glass, metal, water and rock*

Developing: Identify samples of materials, including wood, plastic, metal, rock or glass.

Secure: Name the materials used to make given objects.

Extending: Name the materials used in objects around them.

1.2c: *Explore the simple physical properties of some materials*

Developing: Understand that the property of a material describes how it behaves or looks.

Secure: Describe properties as hard, soft, rough, smooth, shiny and dull.

Extending: Name and describe more properties, for example waterproof, absorbent, opaque, transparent and translucent.

1.2d: *Sort materials into groups*

Developing: Group together materials that are hard or soft, shiny or dull.

Secure: Group objects according to the property of the material they are made from.

Extending: Group unknown materials according to their properties, such as brick, paper, fabrics, elastic and foil.

1.3a: *Describe and investigate the weather*

Developing: Name different types of weather, for example rain and wind.

Secure: Observe how weather changes during the day.

Extending: Record the weather for a week or more.

1.3b: *Look closely at changes in the four seasons*

Developing: Identify the four seasons through pictures.

Secure: Identify the four seasons through observations.

Extending: Link weather changes to the four seasons.

1.4a: *Carry out simple comparative tests*

Developing: Ask simple questions to be tested.

Secure: Follow instructions in simple tests and record results.

Extending: Communicate findings using simple scientific language.

1.4b: *Observe and record changes over time*

Developing: Observe changes over time.

Secure: Communicate observations verbally and in diagrams or drawings.

Extending: Compare observations with others.

1.4c: *Group and classify given specific criteria (for example, the properties of a material)*

Developing: Group objects into different categories.

Secure: Classify objects and living things.

Extending: Sort a range of materials and living things into suitable categories.

1.4d: *Use models to support scientific explanations*

Developing: Understand that models explain concepts in science

Secure: Describe how models use familiar objects to represent unfamiliar objects

Extending: Use models to communicate ideas

YEAR **TWO**

Introduction

In Year 2, children develop their understanding of living things and their habitats, plants and animals. They also extend their learning of how a wider variety of materials are used in everyday life. Children are encouraged to develop their investigative skills through developing questions and carrying out simple tests to find the answers to them. Investigative skills should be developed in every lesson alongside the content.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 2.
During the year, every student will:

- **2.1a:** Find out about habitats and how they support the animals and plants that live there
- **2.1b:** Explore how seeds and bulbs grow into plants
- **2.1c:** Know that animals have young that grow into adults
- **2.1d:** Describe simple food chains using the terms carnivores, herbivores and omnivores
- **2.2a:** Make an object to suit a particular use
- **2.2b:** Investigate how the shapes of solid objects made from some materials can be changed
- **2.3a:** Explore how forces can make things move
- **2.3b:** Learn what makes things speed up, slow down or change direction
- **2.4a:** Use simple equipment to test questions
- **2.4b:** Identify patterns in data
- **2.4c:** Communicate ideas in a variety of ways
- **2.4d:** Record results and data to help answer questions

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student and inform future planning to ensure that all students are prepared for the next key stage of learning science.

2.1a: *Find out about habitats and how they support the animals and plants that live there*

Developing:	Understand that a habitat is a home for living things.
Secure:	Identify a variety of plants and animals in their habitat.
Extending:	Recognize different habitats, including seashore, woodland or rainforest.

2.1b: *Explore how seeds and bulbs grow into plants*

Developing:	Identify flowers, seeds and bulbs.
Secure:	Understand that plants reproduce to produce new plants.
Extending:	Describe what plants need for germination and reproduction.

2.1c: *Know that animals have young that grow into adults*

Developing:	Understand that animals grow from birth.
Secure:	Observe the growth in examples such as eggs, caterpillars and frogs.
Extending:	Compare human growth and development with other animals.

2.1d: *Describe simple food chains using the terms carnivores, herbivores and omnivores*

Developing:	Know that humans need food to grow.
Secure:	Understand that animals and plants depend on each other for survival.
Extending:	Draw a simple food chain with the sun at the start.

2.2a: *Make an object to suit a particular use*

Developing:	Know that materials have different physical properties.
Secure:	Recognize that some properties of materials are useful.
Extending:	Design an object and select the most appropriate materials.

2.2b: *Investigate how the shapes of solid objects made from some materials can be changed*

Developing:	Identify a solid object.
Secure:	Understand that some solid objects can change shape.
Extending:	Change the shape of some solid materials by squashing, bending and stretching, for example.

2.3a: *Explore how forces can make things move*

Developing:	Know that pushes and pulls are forces.
Secure:	Demonstrate how to make an object move.
Extending:	Name the force that makes different objects move.

2.3b: *Learn what makes things speed up, slow down or change direction*

Developing:	Demonstrate how to make an object move faster.
Secure:	Demonstrate how to slow down a moving object.
Extending:	Name the forces used to change the direction of a moving object.

2.4a: *Use simple equipment to test questions*

Developing:	Use equipment to test questions asked.
Secure:	Use equipment to make measurements.
Extending:	Use different pieces of equipment accurately to make measurements and observations.

2.4b: *Identify patterns in data*

Developing: Identify patterns on graphs and charts.

Secure: Find patterns between variables, for example as one goes up the other goes down.

Extending: Begin to identify results that don't fit the pattern.

2.4c: *Communicate ideas in a variety of ways*

Developing: Record results verbally.

Secure: Collect and record results using tables.

Extending: Present results in simple charts.

2.4d: *Record results and data to help answer questions*

Developing: Record results verbally, and using photographs or pictures.

Secure: Collect and record results using tables, and presents results in simple charts.

Extending: Use a range of methods to record results and data.

YEAR **THREE**

Introduction

In Year 3, children extend their learning of the scientific world that they live in. Children are encouraged to formulate their own questions and use their knowledge to find the answers through observations and investigations. The investigative science skills should be taught throughout the learning of the main content. Children should now use a growing scientific vocabulary, both written and verbalized.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 3.
During the year, every student will:

3.1a: Explore what plants need for life and growth and investigate how water is transported in plants

3.1b: Investigate the part flowers have in the life cycle of flowering plants

3.1c: Identify how humans obtain the right types and amounts of nutrition, and use exercise and hygiene to be healthy

3.1d: Describe how skeletons and muscles give humans and some animals support, protection and movement

3.2a: Compare and group together different kinds of rocks using observations and simple physical properties

3.2b: Describe how fossils are formed when things that have lived are trapped in rock

3.2c: Explore how soils are made from rocks and organic matter

3.3a: Describe how light is needed to see things

3.3b: Investigate the formation of shadows

3.3c: Investigate magnetic materials and the force of magnetism

3.4a: Set up simple practical enquiries, comparative and fair tests

3.4b: Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables

3.4c: Use oral and written reports to present findings from enquiries, including displays of results and conclusions

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student and inform future planning to ensure that all students are prepared for the next key stage of learning science.

3.1a: *Explore what plants need for life and growth and investigate how water is transported in plants*

Developing: Understand that plants need water and light to grow.

Secure: Describe the function of the roots and stem.

Extending: Use dyes to explain how water is transported in plants.

3.1b: *Investigate the part flowers have in the life cycle of flowering plants*

Developing: Describe the life cycle of a flowering plant.

Secure: Explain how seeds are dispersed.

Extending: Observe how plants are pollinated.

3.1c: *Identify how humans obtain the right types and amounts of nutrition, and use exercise and hygiene to be healthy*

Developing: Understand that animals cannot make their own food.

Secure: Explain the importance of exercise.

Extending: Design a healthy diet.

3.1d: *Describe how skeletons and muscles give humans and some animals support, protection and movement*

Developing: Explain how muscles and the skeleton give support.

Secure: Describe how muscles and the skeleton help movement.

Extending: Describe how the skeleton gives protection.

3.2a: *Compare and group together different kinds of rocks using observations and simple physical properties*

Developing: Use a microscope or hand lens to make observations of the structure of rocks.

Secure: Classify different types of rocks according to their physical properties.

Extending: Describe how different rocks are formed.

3.2b: *Describe how fossils are formed when things that have lived are trapped in rock*

Developing: Identify fossils in rocks.

Secure: Describe how fossils are formed.

Extending: Explain how fossils can give us information about things that once lived on Earth.

3.2c: *Explore how soils are made from rocks and organic matter*

Developing: Make observations of soils in the environment.

Secure: Describe different soil samples from investigations.

Extending: Explain how soils are formed.

3.3a: *Describe how light is needed to see things*

Developing: Compare and describe areas in dark and light.

Secure: Describe that dark is the absence of light.

Extending: Explain simple properties of light.

3.3b: *Investigate the formation of shadows*

Developing: Identify shadows.

Secure: Describe and investigate the formation of shadows.

Extending: Discuss the factors that change a shadow.

3.3c: *Investigate magnetic materials and the force of magnetism*

Developing: Describe how magnets attract some materials.

Secure: Explain that magnetism is a force.

Extending: Explain different uses of magnets.

3.4a: *Set up simple practical enquiries, comparative and fair tests*

Developing: Set up simple equipment to collect observations.

Secure: Set up equipment to allow observations to be compared with others.

Extending: Discuss the importance of a fair test.

3.4b: *Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables*

Developing: Report observations using some scientific language.

Secure: Use key words to label drawings and diagrams.

Extending: Record observations in appropriate tables and charts.

3.4c: *Use oral and written reports to present findings from enquiries, including displays of results and conclusions*

Developing: Report their findings orally using scientific vocabulary.

Secure: Present findings using photographs and videos.

Extending: Present findings and conclusions using a range of methods.

YEAR **FOUR**

Introduction

In Year 4, children expand further their understanding of the world around them. They explore and investigate local habitats. This builds on prior learning and now children should be both familiar with their immediate environment and aware of wider ones. Children continue to make links and identify patterns and trends in data collected. They are introduced to sound and how this changes as features of the source of sound change. Children investigate the states of matter and measure the temperature when this happens accurately. The scientific vocabulary and investigative skills are Extending further in Year 4 and children make their own decisions about investigations and draw simple conclusions.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 4.
During the year, every student will:

- **4.1a:** Use classification keys to help group, identify and name a variety of living things in the environment
- **4.1b:** Find what happens to living things when environments change
- **4.1c:** Learn about teeth and the digestive system in humans
- **4.1d:** Make food chains showing the producer, consumer and predator/prey relationships
- **4.2a:** Compare and explore solids, liquids and gases
- **4.2b:** Explore how some materials change state when they are heated or cooled
- **4.2c:** Investigate the temperature at which changes of state occur
- **4.2d:** Explore evaporation and condensation in the water cycle
- **4.3a:** Investigate how sounds are made and can travel to the ear
- **4.3b:** Explore the pitch and volume of sound
- **4.3c:** Construct simple circuits
- **4.3d:** Investigate how conductors and insulators affect how electric current flows
- **4.4a:** Use a range of equipment to make careful observations and take accurate measurements using standard units
- **4.4b:** Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions
- **4.4c:** Use scientific evidence to answer questions or to support findings

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student and implement interventions in a timely manner to fully support all learners.

4.1a: *Use classification keys to help group, identify and name a variety of living things in the environment*

Developing:	Group living things according to the way they look or the food they eat.
Secure:	Group vertebrate animals, including fish, birds, amphibians, reptiles and mammals.
Extending:	Begin to use classification keys to help group living things.

4.1b: *Find what happens to living things when environments change*

Developing:	Observe the changes in the local environment.
Secure:	Observe and record the changes to plants and animals in their environment over a year.
Extending:	Observe and record changes to the environment and the impact this has on living things.

4.1c: *Learn about teeth and the digestive system in humans*

Developing:	Identify the teeth of carnivores and herbivores.
Secure:	Identify the major parts of the digestive system.
Extending:	Understand the special functions of the parts of the digestive system.

4.1d: *Make food chains showing the producer, consumer and predator/prey relationships*

Developing:	Use arrows to show the dependence of living things.
Secure:	Construct simple food chains.
Extending:	Identify producers, predators and prey from simple food chains.

4.2a: *Compare and explore solids, liquids and gases*

Developing:	Give examples of solids, liquids and gases from observations.
Secure:	Describe the basic states of matter of solids, liquids and gases.
Extending:	Use diagrams to compare the particle arrangement in solids, liquids and gases.

4.2b: *Explore how some materials change state when they are heated or cooled*

Developing:	Investigate the impact of heating solids.
Secure:	Investigate and record the effect of cooling liquids.
Extending:	Use particle models to explain the changes of state.

4.2c: *Investigate the temperature at which changes of state occur*

Developing: Observe examples of materials changing state.

Secure: Investigate the changes of state of water.

Extending: Measure the temperature when a material changes state.

4.2d: *Explore evaporation and condensation in the water cycle*

Developing: Observe and identify evaporation and condensation.

Secure: Investigate and associate the rate of evaporation with temperature.

Extending: Describe the part evaporation and condensation has in the water cycle.

4.3a: *Investigate how sounds are made and can travel to the ear*

Developing: Recognize that sound is made through vibrations.

Secure: Investigate the sounds made by different instruments and objects.

Extending: Describe how sound vibrations travel to the ear through a medium.

4.3b: *Explore the pitch and volume of sound*

Developing: Understand that the pitch of a sound is how low or high it is.

Secure: Investigate patterns between the volume of a sound and the vibrations made.

Extending: Investigate how sounds get louder as the distance from the source is reduced.

4.3c: *Construct simple circuits*

Developing: Construct a simple circuit.

Secure: Draw and follow simple circuit diagrams.

Extending: Predict whether components will work in simple circuits.

4.3d: *Investigate how conductors and insulators affect how electric current flows*

Developing: Investigate how a conductor and an insulator affects a circuit.

Secure: Predict which materials are insulators or conductors.

Extending: Recognize that metals are good conductors of electricity.

4.4a: *Use a range of equipment to make careful observations and take accurate measurements using standard units*

Developing: Use measuring equipment accurately.

Secure: Select appropriate equipment to take measurements and make observations.

Extending: Use standard units of measurement.

4.4b: *Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.*

Developing: Make realistic predictions that can be observed.

Secure: Draw conclusions from data collected.

Extending: Make suggestions to improve investigations carried out.

4.4c: *Use scientific evidence to answer questions or to support findings*

Developing: Compare results that others have collected.

Secure: Use results as evidence to support their ideas.

Extending: Research the evidence from other scientists to answer their questions.

YEAR **FIVE**

Introduction

In Year 5, children develop a deeper understanding of more challenging scientific skills and knowledge. Children are encouraged to question scientific ideas and investigate increasingly abstract phenomena. They should begin to analyse and evaluate information that is first and second hand. Children begin to choose methods of finding information to solve their questions. They make predictions and conclusions in a systematic manner, including observing changes over time, following scientific protocol. The confident use of extensive scientific vocabulary enhances their ability to communicate scientifically.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 5.
During the year, every student will:

- **5.1a:** Compare the life cycles of a mammal, an amphibian, an insect and a bird
- **5.1b:** Describe different methods by which plants reproduce and disperse their seeds
- **5.1c:** Research the changes in humans as they age
- **5.2a:** Investigate solutions
- **5.2b:** Discover how mixtures can be separated using ideas of solids, liquids and gases
- **5.2c:** Explore how some substances dissolve in water to form solutions
- **5.2d:** Explore how dissolving, mixing and changes of state are reversible changes
- **5.2e:** Explain how some changes are not reversible and form new materials
- **5.3a:** Explore the movement of the Earth, moon and other planets
- **5.3b:** Find out about day and night and the apparent movement of the sun
- **5.3c:** Describe the effects of air resistance, water resistance and friction
- **5.3d:** Explore how levers, pulleys and gears help us to move objects using less force
- **5.4a:** Plan different types of scientific enquiries including investigations that involve recognizing and controlling variables
- **5.4b:** Take accurate and precise measurements, using different scientific equipment, taking repeat readings if needed
- **5.4c:** Record more complex data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student. Students should respond confidently to the objective criteria with little support. They should be able to communicate scientifically in numerous formats, including writing and orally.

5.1a: *Compare the life cycles of a mammal, an amphibian, an insect and a bird*

Developing:	Identify physical changes in animals in the local environment.
Secure:	Compare the life cycle changes in a variety of animals.
Extending:	Observe and compare life cycle changes of a mammal, an insect and a bird.

5.1b: *Describe different methods by which plants reproduce and disperse their seeds*

Developing:	Understand the basic need for living things to reproduce.
Secure:	Describe pollination, fertilization and germination.
Extending:	Explain various methods of seed dispersal.

5.1c: *Research the changes in humans as they age*

Developing:	Identify the changes as humans age.
Secure:	Describe the stages of growth, including birth and teenage years.
Extending:	Explain the process and importance of puberty in humans.

5.2a: *Investigate solutions*

Developing:	Investigate materials that dissolve.
Secure:	Investigate and prepare a range of solutions.
Extending:	Compare mixtures and solutions.

5.2b: *Discover how mixtures can be separated using ideas of solids, liquids and gases*

Developing:	Recognize that a mixture can be separated.
Secure:	Use more than one separation technique.
Extending:	Select and carry out the most suitable separation technique.

5.2c: *Explore how some substances dissolve in water to form solutions*

Developing:	Predict which materials will dissolve in water.
Secure:	Identify the solvent, solute and solution.
Extending:	Observe solutions used in everyday life.

5.2d: *Explain how dissolving, mixing and changes of state are reversible changes*

Developing:	Describe how to reverse examples of dissolving.
Secure:	Explain examples of mixing and how these can be reversed.
Extending:	Explain the changes of state in water.

5.2e: *Explain how some changes are not reversible and form new materials*

Developing:	Recognize irreversible changes, including burning.
Secure:	Describe that some changes form new materials.
Extending:	Explain some irreversible changes, including rusting and decay.

5.3a: *Explore the movement of the Earth, moon and other planets*

Developing: Use models to explain how the Earth spins on its own axis.

Secure: Explain how the moon orbits the Earth.

Extending: Explain how the Earth moves around the sun.

5.3b: *Find out about day and night and the apparent movement of the sun*

Developing: Understand that the sun does not move across the sky.

Secure: Model the movement of the Earth around the sun.

Extending: Explain how the movement of the Earth gives us day and night.

5.3c: *Describe the effects of air resistance, water resistance and friction*

Developing: Investigate the effect of friction on moving objects.

Secure: Describe the effect of air resistance on a parachute.

Extending: Explain how streamlining affects water resistance.

5.3d: *Explore how levers, pulleys and gears help us to move objects using less force*

Developing: Give examples of simple machines.

Secure: Investigate how simple machines work.

Extending: Investigate how simple machines result in less effort being needed to carry out a task.

5.4a: *Plan different types of scientific enquiries including investigations that involve recognizing and controlling variables*

Developing: Plan an investigation to answer a question.

Secure: Identify the dependent and independent variables in an investigation.

Extending: Identify variables that should be controlled to be a fair test.

5.4b: *Take accurate and precise measurements, using different scientific equipment, taking repeat readings if needed*

Developing: Use basic equipment to make accurate measurements.

Secure: Describe the importance of planning tests that are repeatable.

Extending: Recognize when to take repeated readings and begin to identify anomalies.

5.4c: *Record more complex data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs*

Developing: Describe the importance of using tables to record results.

Secure: Construct and draw diagrams, charts and graphs.

Extending: Use and begin to design classification keys.

YEAR **SIX**

Introduction

In Year 6, children extend their understanding of science and scientific phenomena. They use this to question the world around them. They are now expected to design investigations, tests and research to find answers to their questions. Children recognize that variables must be controlled in investigations to result in a fair test. They begin to recognize the need for accuracy and precision to allow them to make sound conclusions based on their results. Children are then encouraged to evaluate their investigations and suggest improvements. In this year, children prepare for the next stage in their learning by reading, spelling and pronouncing scientific vocabulary correctly.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 6.
During the year, every student will:

6.1a: Use classification keys to group animals and plants

6.1b: Explore the circulatory system and describe how nutrients are transported in animals

6.1c: Find out why offspring are not identical to their parents

6.2a: Research how fossils can give information about living things that inhabited the Earth millions of years ago

6.3a: Explain how we see things and how shadows are formed

6.3b: Investigate simple circuits

6.3c: Draw circuit diagrams using symbols

6.4a: Use test results to make predictions to set up further comparative and fair tests

6.4b: Identify scientific evidence that has been used to support or refute ideas or arguments

6.4c: Draw conclusions from results, including causal relationships and an awareness of the level of trust in them

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student. Students should respond to the objectives in these criteria confidently. It is not essential to collect evidence for each statement but this method is useful in making judgements about the knowledge and understanding that students have gained. It is also useful in conversations between upper primary and lower secondary teachers, at this key transition. This will allow them to plan the individual learning for all students in science.

6.1a: *Use classification keys to group animals and plants*

Developing: Identify key characteristics of animals and plants.

Secure: Use classification keys to group living things in their immediate environment.

Extending: Research living things outside their environment and group them using classification keys.

6.1b: *Explore the circulatory system and describe how nutrients are transported in animals*

Developing: Identify the main parts of the human circulatory system on a diagram.

Secure: Describe the function of the heart, blood vessels and blood.

Extending: Begin to explain the role of the circulatory system to transport nutrients and water around animals.

6.1c: *Find out why offspring are not identical to their parents*

Developing: Understand how some characteristics are passed from parent to offspring.

Secure: Explain how variation in offspring over time can affect survival.

Extending: Research variation in some animals, for example giraffes.

6.2a: *Research how fossils can give information about living things that inhabited the Earth millions of years ago*

Developing: Understand that fossils are the remains of living things.

Secure: Explain how the study of fossils informs about the characteristics of living things from the past.

Extending: Research and report on the work of palaeontologists.

6.3a: *Explain how we see things and how shadows are formed*

Developing: Describe and investigate how light travels in a straight line to the eye.

Secure: Explain how shadows are formed when light meets an opaque object.

Extending: Predict the shape and size of a shadow by the object used.

6.3b: *Investigate simple circuits*

Developing: Name and describe the function of a range of basic electrical components.

Secure: Construct and use a simple series circuit to test components.

Extending: Predict the performance of a component to the number of batteries used in the circuit.

6.3c: *Draw simple circuit diagrams using symbols*

Developing: Identify the symbol used for a battery, bulb, switch and buzzer.

Secure: Use simple diagrams to represent a circuit.

Extending: Construct simple circuits from circuit diagrams.

6.4a: *Use test results to make predictions to set up further comparative and fair tests*

Developing: Predict the outcome of a fair test.

Secure: Control variables in a test to result in a fair test.

Extending: Suggest further tests to answer their questions and compare to others.

6.4b: *Identify scientific evidence that has been used to support or refute ideas or arguments*

Developing: Understand how scientists use evidence to support or refute their ideas.

Secure: Compare the results from other students to their own.

Extending: Research and use the evidence of other scientists as evidence to support or refute their own predictions.

6.4c: *Draw conclusions from results, including causal relationships and an awareness of the level of trust in them*

Developing: Describe how to use results to answer their questions.

Secure: Explain how to draw conclusions from results.

Extending: Identify causal relationships in data and suggest improvements.

YEAR **SEVEN**

Introduction

This curriculum builds on the learning at Primary level. The content is developed and Extending in engaging and inspiring lessons. The objectives are designed to progress the learning of students in preparation for further scientific study and terminal assessments. Investigative skills are Extending to introduce the importance of theories and identifying and controlling risks in investigations.

Students should be assessed on a day-to-day basis where the teacher uses a range of evidence as justification. This could be via one-to-one or group discussions, or written work in books or worksheets, including labelled diagrams, charts, tables and graphs. Evidence of the understanding of the statements could also be in the form of project work and video or sound recordings. There are opportunities to record the evidence against each of the statements but this is to be used at the teacher's discretion; it is not essential for the successful use of this framework. Any form of evidence can be used to make sound judgements. Students should be able to address the statements clearly at the specified level to formulate a decision made.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 7.
During the year, every student will:

7.1a: Explain how cells are organiszd in multicellular plants and animals

7.1b: Explain how the human skeleton provides support, protection and movement

7.1c: Describe the main steps that take place during plant reproduction

7.2a: Use the particle model to explain the properties of materials and changes of state and diffusion

7.2b: Investigate techniques to separate mixtures

7.2c: Describe the Earth's structure and the processes leading to rock formation

7.2d: Describe the properties and reactions of acids

7.3a: Explore and measure a range of balanced and unbalanced forces

7.3b: Research a range of sources of energy and future energy possibilities

7.3c: Explain energy transfers between energy stores

7.3d: Explain how sound travels in waves

7.3e: Explain how thermal energy is transferred

7.3f: Use the particle model to explain conduction and convection of thermal energy

7.4a: Estimate the risks to themselves and others

7.4b: Suggest an hypothesis for the observation

7.4c: Identify patterns in data

7.4d: Draw and communicate valid conclusions from investigations

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student. They follow the logical order of progressive objectives. These are assessed in line with the criteria of developing, secure and Extending understanding of each objective. This can be used to identify areas requiring further learning and teaching and as a result inform effective and personalized interventions.

7.1a: *Explain how cells are organized in multicellular plants and animals*

Developing:	Use a microscope to observe different cells.
Secure:	Describe the organization of multicellular plants and animals.
Extending:	Explain the function of specialized cells.

7.1b: *Explain how the human skeleton provides support, protection and movement.*

Developing:	Relate the properties of the skeleton to its function.
Secure:	Explain the importance of the human skeleton in the production of blood cells.
Extending:	Explain the role of antagonistic muscles and movement.

7.1c: *Describe the main steps that take place during plant reproduction*

Developing:	Explain the function of parts of a flower.
Secure:	Describe the stages of plant reproduction.
Extending:	Explain the importance of seed dispersal in plants.

7.2a: *Use the particle model to explain the properties of materials and changes of state and diffusion*

Developing:	Use the particle model to describe the three states of matter.
Secure:	Explain the properties of matter based on the particle model.
Extending:	Explain the process of diffusion using the particle model.

7.2b: *Investigate techniques to separate mixtures*

Developing:	Describe how some materials dissolve.
Secure:	Explain different separation techniques.
Extending:	Identify unknown substances using chromatography data.

7.2c: *Describe the Earth's structure and the processes leading to rock formation*

Developing:	Explain the properties of rocks based on how they were formed.
Secure:	Explain the process of weathering and erosion.
Extending:	Describe and explain the rock cycle using diagrams.

7.2d: *Describe the properties and reactions of acids*

Developing: Use the pH scale to determine the strength of acids.

Secure: Describe how to neutralize an acid.

Extending: Predict the salt produced given the name of the acid and alkali used.

7.3a: *Explore and measure a range of balanced and unbalanced forces*

Developing: Identify the forces acting on an object.

Secure: Explain that the overall force acting on the object is the resultant force.

Extending: Predict the outcome of unbalanced forces acting on objects.

7.3b: *Research a range of sources of energy and future energy possibilities*

Developing: Name the main sources of energy.

Secure: Define renewable and non-renewable energy sources.

Extending: Describe future sources of energy, including nuclear.

7.3c: *Explain energy transfers between energy stores*

Developing: Interpret energy transfer models.

Secure: Explain how some energy is dissipated when energy is transferred.

Extending: Explain why a bouncing ball will stop eventually.

7.3d: *Explain how sound travels in waves*

Developing: Describe how sound travels in waves.

Secure: Explain how sound can be absorbed, transmitted or reflected from media.

Extending: Interpret an oscilloscope diagram to show amplitude and frequency.

7.3e: *Explain how thermal energy is transferred*

Developing: Describe how energy transfers from the hotter to the cooler object.

Secure: Compare the three ways energy can be moved from place to place by heating.

Extending: Sketch a graph to show temperature change against time.

7.3f: *Use the particle model to explain conduction and convection of thermal energy*

Developing: Describe the energy transfers in conduction and convection.

Secure: Compare the processes of conduction and convection.

Extending: Explain the uses of conduction and convection in everyday settings.

7.4a: *Estimate the risks to themselves and others*

Developing: Identify risks and hazards in an investigation.

Secure: Suggest ways of reducing risk.

Extending: Suggest how to carry out the investigation in the school laboratory safely.

7.4b: *Suggest an hypothesis for the observation*

Developing: Suggest a hypothesis for an investigation.

Secure: Design an investigation to test a hypothesis.

Extending: Suggest further action if the conclusion does not agree with the prediction.

7.4c: *Identify patterns in data*

Developing: Identify anomalies in data.

Secure: Identify relationships between variables.

Extending: Interpret a sloping line on a graph.

7.4d: *Draw and communicate valid conclusions from investigations*

Developing: Use data to draw conclusions.

Secure: Suggest a scientific reason for findings.

Extending: Judge whether the data supports the conclusion.

YEAR **EIGHT**

Introduction

The content is Extending further to prepare students for the next year. This year builds on the content from Year 7 and combines to produce a firm foundation of knowledge and skills. The investigative skills are Extending to introduce the importance of theories and identifying and controlling risks in investigations. New scientific vocabulary is introduced, particularly in investigative science.

The content is developed and Extending in engaging and inspiring lessons. The objectives are designed to progress the learning of students in preparation for further scientific study.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 8.
During the year, every student will:

8.1a: Explain the role and function of the lungs
8.1b: Explore the interdependence of organisms in ecosystems, including the impact humans have
8.1c: Explore the roles of nutrition and the process of digestion
8.1d: Describe the processes of aerobic and anaerobic respiration
8.2a: Describe the arrangement of the periodic table including their symbols
8.2b: Compare the properties and reactions of elements and their compounds
8.2c: Construct simples chemical equations to describe reactions
8.2d: Investigate chemical energy in exothermic and endothermic reactions
8.3a: Explain the effects of non-contact forces
8.3b: Describe changes to current and potential difference in series and parallel circuits
8.3c: Use ray diagrams to explain how light behaves
8.4a: Suggest relationships between variables
8.4b: Use different methods to present data and findings
8.4c: Carry out fieldwork and laboratory work
8.4d: Identify risks and hazards and suggest how to control them
8.4e: Analyse strengths and weaknesses in an inquiry and suggest improvements

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student. They follow the logical order of progressive objectives. These are assessed in line with the criteria of developing, secure and Extending understanding of each objective. This can be used to identify areas requiring further learning and teaching and as a result inform effective and personalized interventions.

8.1a: *Explain the role and function of the lungs*

Developing:	Understand oxygen is used by cells in aerobic respiration and carbon dioxide is a waste product.
Secure:	Investigate changes of breathing rate and volume.
Extending:	Explain the effect of smoking and asthma on the gas exchange system.

8.1b: *Explore the interdependence of organisms in ecosystems, including the impact humans have*

Developing:	Describe how organisms in a food web are dependent on each other.
Secure:	Explain how the population of a species is affected by predators, prey and disease.
Extending:	Explain other effects on a population, including competition for resources and human activity.

8.1c: *Explore the roles of nutrition and the process of digestion*

Developing:	Describe how an unbalanced diet can have negative health effects.
Secure:	Describe the function of some organs and tissues of the digestive system.
Extending:	Explain how food is converted to simple molecules during digestion.

8.1d: *Describe the processes of aerobic and anaerobic respiration*

Developing:	Understand that respiration is the breaking down of glucose to provide energy.
Secure:	Use word equations to describe aerobic and anaerobic respiration.
Extending:	Explain the differences in aerobic and anaerobic respiration.

8.2a: *Describe the arrangement of the periodic table including their symbols*

Developing:	Identify elements using the name and symbols on the periodic table.
Secure:	Describe trends and patterns in properties of elements.
Extending:	Make predictions about the properties of elements of a group.

8.2b: *Compare the properties and reactions of elements and their compounds*

Developing:	Describe how compounds and mixtures contain atoms of different elements.
Secure:	Describe the properties of compounds and mixtures.
Extending:	Name compounds from their chemical formulae.

8.2c: *Construct simples chemical equations to describe reactions*

Developing:	Write word equations to describe reactions.
Secure:	Write symbol equations to describe reactions.
Extending:	Understand the principle of balancing equations.

8.2d: *Investigate chemical energy in exothermic and endothermic reactions*

Developing:	Explain how energy is released when chemical bonds are formed.
Secure:	Explain that if more energy is released than required the reaction is exothermic and the reverse is endothermic.
Extending:	Predict if a reaction will be endothermic or exothermic.

8.3a: *Explain the effects of non-contact forces*

Developing: Describe the impact of forces on an object.

Secure: Give examples and compare contact forces and non-contact forces.

Extending: Explain with examples how non-contact forces affect objects.

8.3b: *Describe changes to current and potential difference in series and parallel circuits*

Developing: Observe electric current in series and parallel circuits.

Secure: Describe potential difference and observe this in parallel circuits.

Extending: Explain the difference in voltage in a series and parallel circuit.

8.3c: *Use ray diagrams to explain how light behaves*

Developing: Use a ray box to investigate the properties of light; investigate how light behaves at the boundary of different media.

Secure: Draw ray diagrams indicating the angles of incidence and reflection and the normal.

Extending: Investigate refraction using lenses and prisms.

8.4a: *Suggest relationships between variables*

Developing: Identify the relationship between variables in an investigation.

Secure: Identify patterns and trends in data.

Extending: Draw conclusions from the relationship of variables.

8.4b: *Use different methods to present data and findings*

Developing: Design suitable tables to record data from an investigation.

Secure: Explain why they have selected charts or graphs to present data.

Extending: Explain the use of a straight line or curve of best fit.

8.4c: *Carry out fieldwork and laboratory work*

Developing: Develop questions to be answered through an investigation.

Secure: Plan appropriate fieldwork to answer a question.

Extending: Explain why a question can be investigated scientifically.

8.4d: *Identify risks and hazards and suggest how to control them*

Developing: Identify the risk in a situation.

Secure: Identify the hazards in a situation.

Extending: Suggest how to manage risk in a situation.

8.4e: *Analyse strengths and weaknesses in an inquiry and suggest improvements*

Developing: Describe the strengths in a plan or investigation.

Secure: Describe the weaknesses in a plan or investigation.

Extending: Suggest improvements to an investigation.

YEAR **NINE**

Introduction

The content in Year 9 continues to develop scientific knowledge and skills. Students encounter more complex content and terminology in all strands of science. Students are now expected to use their skills and work independently to formulate questions, design methods of testing these and formulate hypotheses. They should collect repeatable data to support or refute their hypothesis and draw sound conclusions. Further questions should then be arrived at as a result of their investigations. Students should recognize the value of comparing their data with others and as a result the need to plan investigations thoroughly that are repeatable. The objectives are designed to progress the learning of students in preparation of for further scientific study and terminal assessments.

Learning outcomes

These learning outcomes set out a programme of study in science for Year 9.
During the year, every student will:

9.1a: Explain the process and role of photosynthesis

9.1b: Explain how specific traits are inherited, leading to variation and natural selection

9.1c: Explore the causes of extinction

9.1d: Explain the process of reproduction in animals and humans

9.2a: Describe the basic structure of the atom and the sub-atomic particles

9.2b: Explore the different types of reaction, for example combustion and thermal decomposition

9.2c: Describe the carbon cycle and how it affects climate change

9.2d: Explain the importance of protecting the Earth's resources

9.2e: Describe and explain the reactivity series of metals

9.3a: Explain and explore pressure

9.3b: Explain how forces cause motion

9.3c: Describe factors affecting and uses of electromagnets

9.3d: Calculate and compare energy values in different situations

9.3e: Describe and compare different bodies in the universe

9.4a: Plan an investigation, manipulating variables independently

9.4b: Suggest an experiment to test a hypothesis

9.4c: Construct explanations using evidence and creative thinking to develop new scientific ideas and explanations

9.4d: List evidence and conclusions that support their opinion

9.4e: Evaluate the repeatability and reproducibility of methods and suggest improvements

Assessment criteria

The assessment criteria allow the teacher to assess the level of achievement of each student. These are assessed in line with the criteria of developing, secure and Extending understanding of each objective. They can also be used to encourage students to take responsibility of their own learning and evaluate their own understanding. This should then generate the next steps in learning journeys, filling the gaps in knowledge and challenging understanding further.

9.1a: *Explain the process and role of photosynthesis*

Developing: Describe why organisms depend on plants to photosynthesize.

Secure: Explain how the changes in conditions affect the rate of photosynthesis.

Extending: Use a word equation to describe photosynthesis.

9.1b: *Explain how specific traits are inherited, leading to variation and natural selection*

Developing: Describe the relationship between DNA, chromosomes and genes.

Secure: Explain how mutations might affect future offspring.

Extending: Predict and explain the changes in a population due to natural selection.

9.1c: *Explore the causes of extinction*

Developing: Describe the importance of biodiversity in a population.

Secure: Describe how the theory of natural selection can explain extinction of a species.

Extending: Suggest explanations about why a species became extinct.

9.1d: *Explain the process of reproduction in animals and humans*

Developing: Describe the function of the menstrual cycle.

Secure: Describe the role of the mother on the developing foetus.

Extending: Interpret diagrams to show the different stages of development of the foetus.

9.2a: *Describe the basic structure of the atom and the sub-atomic particles*

Developing: Draw a diagram to show the model of an atom.

Secure: Identify the sub-atomic particles in an atom.

Extending: Describe the energy stored in sub-atomic particles.

9.2b: *Explore different types of reaction, for example combustion and thermal decomposition*

Developing: Describe how combustion reactions require oxygen to produce heat and light.

Secure: Explain how thermal decomposition requires heat.

Extending: Balance symbol equations to show reactions.

9.2c: *Describe the carbon cycle and how it affects climate change*

Developing: Label parts of the carbon cycle on a diagram.

Secure: Explain how greenhouse gases are linked to increased temperatures on Earth.

Extending: Evaluate the evidence that human activity is causing climate change.

9.2d: *Explain the importance of protecting the Earth's resources*

Developing: Describe how we use Earth's limited resources.

Secure: Explain the importance of recycling some materials.

Extending: Explain the importance of protecting limited resources.

9.2e: *Describe and explain the reactivity series of metals*

Developing: Recognize that some metals are more reactive than others.

Secure: Describe the reactivity series as the most reactive at the top to the least at the bottom.

Extending: Explain how more reactive metals have a greater tendency to lose electrons and form positive ions.

9.3a: *Explain and explore pressure*

Developing: Demonstrate that pressure acts in all directions in a liquid; explain how the weight and upthrust affect whether the object will float.

Secure: Investigate how pressure changes with depth.

Extending: Use formulae to calculate fluid pressure or stress on a surface.

9.3b: *Explain how forces cause motion*

Developing: Describe the forces acting on a moving object.

Secure: Use a distance–time graph to represent a journey.

Extending: Explain the impact of a non-zero resultant force on an object.

9.3c: *Describe factors affecting and uses of electromagnets*

Developing: Construct and test a simple electromagnet.

Secure: Explain how to change the strength of an electromagnet.

Extending: Describe the uses of electromagnets in everyday life.

9.3d: *Calculate and compare energy values in different situations*

Developing: Identify the energy stored in different foods.

Secure: Calculate the cost of energy usage for different devices.

Extending: Evaluate the use of different energy resources.

9.3e: *Describe and compare different bodies in the universe*

Developing: Describe the position of planets and moons in relation to the Earth and sun.

Secure: Explain daylight hours and the amount of sunlight each year.

Extending: Explain the light year and why this is used.

9.4a: *Plan an investigation, manipulating variables independently*

Developing: Identify the variables.

Secure: Describe how to vary the independent variable and observe the dependent variable.

Extending: Identify control variables and those that cannot be controlled.

9.4b: *Suggest an experiment to test a hypothesis*

Developing: Design an investigation to test the hypothesis.

Secure: Conclude if the observations support the hypothesis.

Extending: Suggest further investigations if the results refute the hypothesis.

9.4c: *Construct explanations using evidence and creative thinking to develop new scientific ideas and explanations*

Developing: Record the observations to be explained.

Secure: Explain why the evidence supports the idea.

Extending: Suggest scientific research that might explain the observations made.

9.4d: *List evidence and conclusions that support their opinion*

Developing: Select the most important and relevant evidence.

Secure: Present the evidence.

Extending: Explain the reasoning behind the evidence.

9.4e: *Evaluate the repeatability and reproducibility of methods and suggest improvements*

Developing: Describe how to achieve a fair test.

Secure: Explain if the results are repeatable and reproducable.

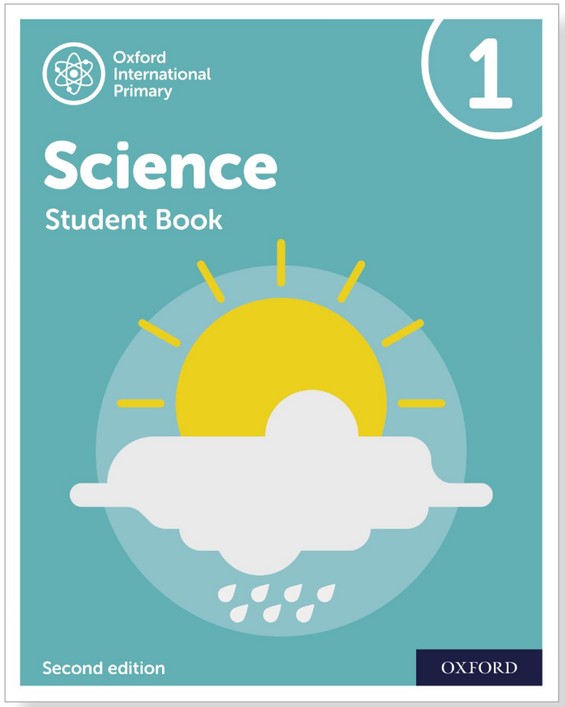
Extending: Suggest improvements to the method.

Resources

The Oxford International Curriculum for Science has been devised to complement specific Oxford University Press resources. We recommend that schools following the Oxford International Curriculum for Science use the *Oxford International Primary Science* series at primary level. We recommend *Activate KS3 Science* at lower secondary level.

Oxford International Primary Science
Activate KS3 Science

Together, these series provide a complete and integrated nine year (Years 1–9) Science course.



Oxford International Primary Science

- Takes an enquiry-based approach to learning, engaging students in the topics through asking questions that make them think and activities that encourage them to explore and practise.
- Contains activities specifically designed to make content accessible for EAL students.
- Supports the delivery of a UK-aligned curriculum, preparing students to study at lower secondary level supported by Activate KS3 Science.

Activate KS3 Science

- Provides ideal preparation for further scientific study with comprehensive and flexible assessment and progression.
- Maths, literacy and working scientifically are embedded throughout to develop key skills.

Using the resources with the Oxford International Curriculum

The recommended student books can be used alongside the Oxford International Curriculum for Science schemes of work and lesson plans. Lesson plans signpost relevant pages in the student book, as well as directing teachers towards appropriate activities in the workbooks, where relevant.

To learn more about these resources, please see:
www.oxfordprimary.com/international-science
www.oxfordsecondary.com/activate

Glossary

Assessment framework: a conceptual map indicating how learning outcomes will be assessed, with every learning outcome broken down into ‘developing’, ‘secure’ and ‘extended’ statements

Creative skills: skills that foster students' innate curiosity and creativity

Curriculum at a glance: a table-format overview providing a snapshot of learning outcomes for every year group

Developing: one of the three assessment statements that make up the assessment framework, this indicates that students are working towards the learning outcome

Differentiation: the creation of varied learning pathways through the curriculum, to enable teaching that caters to the needs of all learners

Emotional intelligence: the ability to understand one's own feelings and emotions, and also those of others, and regulate them skilfully

End-of-year assessment: tests developed to determine student progress and attainment at the end of each academic year

Enquiry-based learning: an approach to learning which invites students to actively shape their learning journeys, placing problem-solving and real-world applications at the heart of the curriculum

Extended: one of the three assessment statements that make up the assessment framework, this indicates that students are working beyond the learning outcome

Formative assessment: low stakes, continuous assessment for learning, which helps to guide future learning and interventions

Functional literacies: the numerical, digital, and language literacy our students need to succeed in the 21st century

Global Skills Projects: a project-based, interdisciplinary course that seeks to develop thoughtful, innovative change-makers who are equipped with the skills to succeed in a changing world

Growth mindset: a belief that your intelligence and abilities can be developed by embracing challenges, sustaining effort, and trying new strategies – a growth mindset leads to greater motivation and achievement

Interpersonal skills: skills which support lifelong learning, through developing communication, relationship-building and leadership skills

Joy of learning: an approach to teaching and learning focused on wellbeing, which places joy at the heart of the curriculum and develops global skills needed by learners to thrive throughout their lives

Learning outcomes: clear statements which describe what a student is expected to be able to do or understand after a specific period of study

Lesson plans: a programme of study for any given lesson, aligned to specific outcomes within the curriculum

Mindful moments: opportunities for students to refocus their attention on the present moment

Pedagogy: the approach to teaching and learning, guiding the way in which the curriculum is taught to students

Positive education: a combination of academics, character and wellbeing

Process praise: praising how students work, rather than only praising the outcome, for example, praising effort, perseverance, resilience, teamwork and strategies

Project-based learning: an active, enquiry-based pedagogy that allows rich interdisciplinary learning as students engage with real-life scenarios that demonstrate the relevance of skills and theories

Real-life skills: skills which support lifelong learning, including project management, functional literacies and research

Resilience: possessing the inner resources and the ability to withstand and overcome adversity and difficulties

Scheme of work: a week-by-week, lesson-by-lesson plan which details how to deliver the learning outcomes within the curriculum

Secure: one of the three assessment statements that make up the assessment framework – this indicates that students are secure in the learning outcome

Self-development skills: skills which support lifelong learning, including critical thinking, ethics and self-motivation

Spiral approach: the model by which underlying learning themes of the curriculum are revisited each year at higher levels of complexity and depth – the spiral development model reinforces learning and builds on previous achievement

Stretch zone: a visual metaphor to help explain that we learn the most when we do challenging work

Summative assessment: assessment of learning provided to evaluate student progress at the end of a given topic/unit/year

Wellbeing: both a curriculum subject and guiding principle, which supports the practice of healthy habits of body and mind to enhance the lives of teachers and learners, giving them skills that can apply in their lives today and in the future

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