Unlock the power of learning science in English

max science primary

PRIMARY • GRADES 1 – 6

DISCOVERING THROUGH ENQUIRY
"The Max Science primary: Discovering through Enquiry learning materials have been written by a skilled group of international science educators who have been guided by best practice in modern science pedagogy. Our guiding philosophy has been to design a course enabling a deeper understanding of science, building confidence in key conceptual areas through a set of thinking, talking and practical tasks where learners work together, are encouraged to share their own thinking and are aware of their own progress in the journey towards understanding. All our supporting text has been written with particular sensitivity and guidance for learners whose first language may not be English."

Bob Kibble, Series Editor
Max Science primary: Discovering through Enquiry is a highly engaging and effective print and digital scheme based on the most successful teaching methodologies used in world science today. Over 6 stages (Grades 1–6) Max Science primary introduces pupils to the key concepts and topics of primary Biology, Chemistry and Physics with carefully scaffolded resources that build knowledge and confidence throughout the course. The materials take the form of engaging Learner Books, Workbooks, Journals and Teacher’s Guides. The aim? To encourage curiosity, critical thinking and discussion through a vibrant and stimulating approach to science.

All the content has been written by a highly experienced and knowledgeable author team who share a philosophy of learning grounded in science education research and best practice.

- For Grades 1–6, divided into six units of work per year
- Supports the development of key scientific skills such as enquiry based learning and critical thinking
- Language support for teachers and learners whose first language may not be English
- Is part of the Macmillan Education International Curriculum ‘Promise’, meaning that the course includes ongoing assessment, school-home journals, digital resources, tools for independent learning and professional development support for teachers
- 100% match to the Cambridge Primary Science Curriculum Framework
# The Science behind the Science

Max Science: Discovering through Enquiry is underpinned by four concepts grounded in science education research and best practice. The four concepts are:

| Social Constructivism | Encouraging the conceptual understanding of really big ideas.  
Recognising that learners will have already formed ideas about why things happen. 
Listening to one another’s ideas. 
Sharing knowledge. 
Thinking creatively and working out new and better explanations. |
|------------------------|--------------------------------------------------------------------|
| Formative Assessment    | Used throughout lessons and topics.  
Feedback helps learners know how to improve. Uses many methods to assess what learners know, understand and can do e.g. listening to what learners say, looking at drawings, watching learners during activities.  
Often interactive between learner and teacher e.g. “what do you think if...”  
Can be very open-ended, meaning learners can go into lots of extra detail.  
Can have a huge benefit to learning – not just in science! |
| Cognitive Acceleration  | Making neural connections and understanding ideas and concepts, which lead to the ‘aha’ moment.  
Getting learners to think rather than just learn information.  
Sharply focuses on a particular skill or concept.  
Uses exploration, discussion and challenges. Scaffolds learning so that learners can make rapid progress e.g. provide key words for learners to use when they explain a scientific idea.  
Provides cognitive conflict e.g. learners believe that plants need sunlight so how do some plants grow under trees in a forest? |
| The nature of science (scientific enquiry) | Science is just as much a way of working as a body of knowledge.  
Scientific understanding is based on a collection of **big ideas**.  
Scientific knowledge and understanding is just our best current explanation of the universe and everything in it. |
Lessons are structured around three main components – orientation, exploration and accommodation - to ensure that the time in the classroom is one that is inspiring, accessible and engaging.

**Orientation:** The ‘why’ behind activities. This phase gives direction to our learning journey by activating and then building on prior knowledge. What is being found out? Why is it important?

**Exploration:** The ‘hands-on’ aspect of the lesson. Exploring, experimenting, investigating and finding out.

**Accommodation:** The review. A consolidation of the lesson through the acts of explaining and discussing, writing of notes and a questioning of what has been learnt.

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**ORIENTATION**
- What sort of learning does this orientation task encourage?
- What will learners be doing?
- What might they be saying?

**EXPLORATION**
- Guided group activity
- Clear structure
- Short, simple task

**SCAFFOLDING**
Illustration and hint to support learning.

**DISCOURSE ACTIVITY**
- Clear images
- Shared ideas
- Formative assessment to close.

**ACCOMMODATION**
Directs learners to workbook task for this activity.
Written and designed by leading science educators, these books form the basis for active, enquiry-based classroom learning. They are in full colour throughout and match the requirements for the Cambridge Primary Science curriculum framework. Each topic is introduced through engaging activities designed to stimulate creative scientific thinking. Whole class teaching is focused on firmly embedding the concepts through active individual, pair and group activities and carefully scaffolded learning. Units end with checklists and consolidation sections to ensure learners understand the key concepts.
1 Skeleton and muscles

1.1 Skeletons

2 Reversible and irreversible changes

4 Examples of reversible changes

Laying a new road with hot, sticky tarmac
Defrosting (not cooking) a frozen meal
Using chocolate to ice a cake
Making gold rings

I need more time to understand this.
I understand a bit.
I understand.

Look again at the checklist below. How are you doing now? Circle one face for each statement.

• I can name things that give off their own light.
• I know some objects only pass on light from elsewhere.
• I can describe what “dark” means.
• I can describe the difference between bright light, dim light and darkness.

Ask an adult at home to read and sign this.
I have checked learning on this topic.
We have shared some understanding at home.
Signed: ______________________
Date: ______________________
Teacher comment: ______________________
Date: ______________________

Introducing the Max Science primary Journal
The Max Science primary Journal complements the Max Science primary series by providing a link between learning at school and learning at home. It matches the topics from the course and the Cambridge Primary Science Curriculum framework with a topic-by-topic series of structured activities for learners to complete with an adult.

As a parent or carer, it is sometimes difficult to know what is being taught in school and how your child is really doing in a subject. Do they enjoy it? Do they understand the concepts and the vocabulary? This Journal lets you spend time with your learner at home in a supportive way and find out how they are doing in science.

Check my science
Each topic allows learners to check their understanding through this activity.

Check my science
Each topic allows learners to check their understanding through this activity.

Journals 1 – 6
The Journals provide a unique way to engage parents and caregivers in the child’s learning as well as providing the opportunity to consolidate their classroom learning at home through reflective practice. They are packed full of engaging practical activities that not only back up the scientific concepts introduced in the classroom but also show how science is all around us all the time.

Introducing the topic
A cartoon image and question introduce every science topic in a fun and engaging way.

Check my science
Each topic allows learners to check their understanding through this activity.

From school to home
This feature provides language practice of key words to improve scientific vocabulary and to make it easier to learn science in English.

Practising my science language
Each topic allows learners to check their understanding through this activity.

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Workbooks

Workbooks 1 – 6

Workbooks are designed for extended practice and consolidation in class or at home, where the learners are able to express and record the development of their scientific thinking through carefully thought out games, quizzes, questions and activities. The workbook pages are clearly cross-referenced with the corresponding stage in the learner books.

Glossary

Fill in the meaning of these words in your own language.

- dark
- shadow

- light
- Sun

- shade
- torch

Practising my science language

1.1 Living things can sense their surroundings

2

Cup 3 taste
Cup 3 smell
What do you think is in cup 3?
I think it is

What is in the bags?
Your teacher will give you three bags with objects inside them.

- Get into groups. Take it in turns to feel the objects in the bag.
- Choose two words from the word box to describe each one.

<table>
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<th>soft</th>
<th>smooth</th>
<th>rough</th>
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<td>square</td>
<td>heavy</td>
<td>light</td>
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The objects in bag 1 feel
The objects in bag 2 feel
The objects in bag 3 feel

- What do you think is inside each one? Look at the words in the box.

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<th>marbles</th>
<th>dry beans</th>
<th>sand</th>
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</table>

I think bag 1 holds
I think bag 2 holds
I think bag 3 holds

1.4 Pollination and fertilisation

1 Why do plants make pollen?
Work in a small group. Write a summary of your ideas about why insects regularly visit flowers.

Insects visit flowers because

Extension

- Make some notes about hay fever.
- What is the role of pollen in causing hay fever?
- Use your notes to produce a booklet about hay fever for people to read in a doctor’s waiting room. Make sure you mention the role of pollen.

Practising my science language

Acting out pollination
Work in a group of five or six. On a separate piece of paper, plan a presentation of what happens in the process of pollination. You can either:

- act out pollination as it actually happens in nature
- or make up your own story to model pollination using the ideas of advertising, rewards and the movement of things from one place to another. You can create images as part of the story.

3.4 Spaceship Earth – the atmosphere

Helping people to understand science

A factory owner and a fisherman live 80 km apart. The fisherman is angry because he has just found out that acid rain is killing the fish. The factory owner cannot see what the fuss is about.

You know that you can explain what is happening. What will you say to these two people? Can you help both of them?

I will tell them

The gases and smoke from factories can be cleaned and some of the dangerous chemicals removed. This involves a filtration unit placed inside the factory, but it is expensive. Who do you think should pay for it?

I think

should pay for it because
Teacher’s Guide

Teacher’s Guide 1 – 6

The Teacher’s Guide comes with full support to help teachers plan and deliver active, engaging and productive lessons giving guidance on assessment and differentiation. Each topic includes a section on potential scientific language challenges learners may face. Full answers to all activities are also provided.

Teacher’s Presentation Kit 1 – 6

The Teacher’s Presentation Kit offers a suite of easy-to-use, materials for interactive whiteboards or projectors. It includes a digital version of the Learner Book enhanced with scientific language activities for front of class teaching as well as a packed resource centre full of activity sheets that can be downloaded and printed for whole class engagement. These help focus on the development of scientific skills, word cards and audio glossary for scientific vocabulary learning and teacher’s notes and full answers are included for all activities.

Science as enquiry

To learn how science works is to experience the joys of finding out, and the sense of wonder in the process of scientific discovery. We want learners to develop their critical thinking skills and the practical skills of an enquiry scientist. To know how to measure, record, plan investigations, to understand the importance of errors and the need to be able to explain the data they have recorded. Learners will have experience of the enquiry process. Experimenting with practical work, hands-on activities will help learners appreciate the work of real scientists. Investigating the effect of temperature on the boiling point of water is new science for a scientist but it is one to a young learner and has been well documented. Helping learners appreciate enquiring, systematic exploring their own ideas and recording their observations will be key skills in the Early Years Foundation Stage. By doing hands-on enquiry-based exploration, learners can become scientists for a day.

The skills of science are learnt by being involved in an active role in practical and developmental work. We need to help learners to learn to interpret data and to question results. These skills can then be developed and used in other areas of the curriculum and into future scientific work. The learners will be encouraged to communicate their ideas, work as a team, and present their investigations.

Assessment

How can we tell if learners have engaged in a meaningful way? How can we tell if learners have developed the skills they need? How can we tell if learners have progressed, and if they have understood the key learning outcomes?

Teachers who wish to learn about how to assess the scientific thinking of their learners will find this section particularly useful. The guide provides a range of activities to help teachers plan and assess learning. It offers ideas for the teacher to use formative assessment in relation to specific learning outcomes. The activities are designed to help learners understand the key learning outcomes. Some of the activities can be adapted for use in other subjects, such as Mathematics, Science and English.

The teaching of Miss Science primary

In Miss Science primary, the Cambridge Primary curriculum for science and its vocabulary can be done at home. The learning outcomes for each science topic are clear, so that parents and carers can help their learners to understand the key learning outcomes. The learning outcomes for each science topic are clear, so that parents and carers can help their learners to understand the key learning outcomes.

Teaching and learning in the classroom

All lessons in the Student Book involve learners in a number of activities that give a broad, vivid experience of each topic’s learning outcomes. The learning outcomes for each science topic are clear, so that parents and carers can help their learners to understand the key learning outcomes. The learning outcomes for each science topic are clear, so that parents and carers can help their learners to understand the key learning outcomes.

Everything that happened during break time and in previous lessons will be on the learners’ minds. One of the first tips is to ensure that learners are clear, so that parents and carers can help their learners to understand the key learning outcomes. One of the first tips is to ensure that learners are clear, so that parents and carers can help their learners to understand the key learning outcomes.
## Max Science: Discovering through Enquiry ISBN

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