



St Stephen's R.C Primary School

Every Child • Every Chance • Every Day

Love one another, as I have loved you.



Compassion



Ambition



Rejoice



Excellence

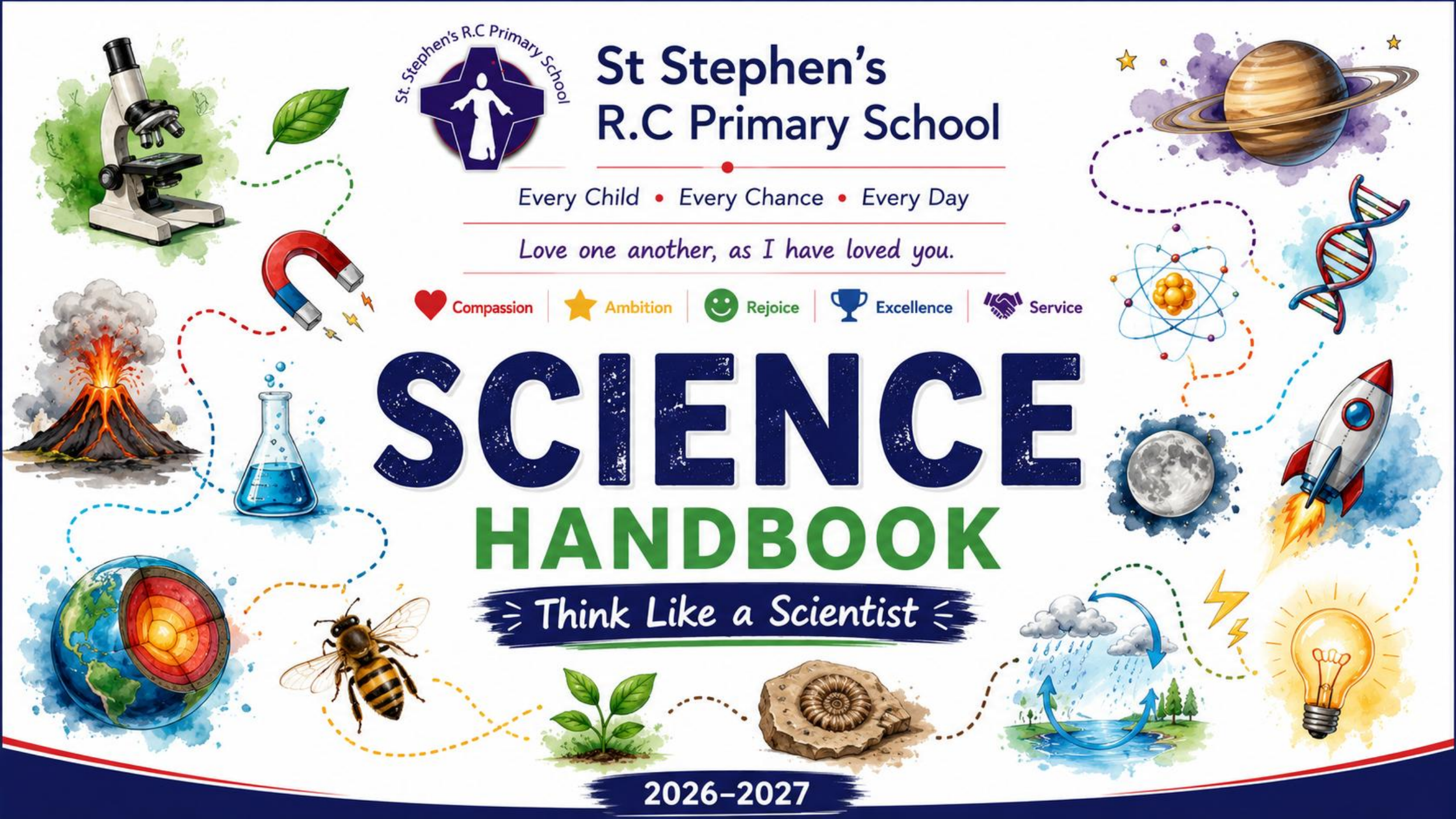


Service

SCIENCE HANDBOOK

Think Like a Scientist

2026-2027





St Stephen's R.C Primary School

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Our Intent

Developing curious, knowledgeable
and confident young scientists.



Our Vision

At St Stephen's, we believe science should inspire wonder and ignite curiosity. We provide children with the knowledge, skills and understanding they need to explore, ask questions and make sense of the world around them. Through practical enquiry, discussion and investigation, we develop confident young scientists who think critically, use evidence and respect God's creation. Our inclusive and vibrant curriculum ensures every child has the opportunity to succeed, regardless of their starting point.



Our Curriculum Aims



Be Curious

We inspire children to ask questions and be curious about the world around them.



Build Knowledge

We help children build secure scientific knowledge that helps them explain the world.



Investigate

We provide opportunities to investigate, explore and discover.



Explain

We encourage children to talk about science ideas and explain their thinking.



Use Evidence

We teach children to use evidence to support their ideas and draw conclusions.



Understand the World

We help children respect and care for God's wonderful creation.



Our Teacher Promise

At St Stephen's we promise teachers...

- ✓ Clear progression from EYFS to Year 6.
- ✓ Practical, engaging and meaningful lessons.
- ✓ High-quality resources that are ready to use.
- ✓ Reduced workload and purposeful planning.
- ✓ Lessons built around enquiry and curiosity.
- ✓ Confidence to teach science with support.
- ✓ Inclusive practice to help every learner succeed.



*We don't teach children to remember science.
We teach children to think scientifically.*



Curiosity today. • Discovery tomorrow. • Confidence for life.



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Our St Stephen's Science Lesson Structure

A clear, consistent journey to scientific understanding.

Think
Like a
Scientist



Every Lesson Has...



Learning Question
A question that drives our learning.



Big Idea
One sentence that captures the key understanding.



Blodwyn Says...

'Watch out for misconceptions! Let's think more deeply.'



Evidence Eddie Asks...

What evidence do you have?
Can you prove it?"



We use accurate scientific vocabulary and evidence to explain our ideas.

Lesson
Step

1



Retrieve It

We Do

What happens?

- Retrieve previous learning.
- Vocabulary recall.
- Prior knowledge questions.

Purpose:
Activate prior knowledge.

2



Learn It

I Do

- Teacher explanation and modelling.
- New scientific knowledge.
- Introduce key vocabulary.

Purpose:
Build secure scientific understanding.

3



Explore It

**We Do
→ You Do**

- Practical investigation.
- Observation, research and testing.
- Enquiry and data collection.

Purpose:
Learn through doing.

4



Blodwyn Says...

We Do

- Address the misconception.
- Discuss and debate.
- Agree or disagree? Why?

Purpose:
Challenge misconceptions.

5



Evidence Eddie Asks...

**We Do
→ You Do**

- Evidence-based reasoning.
- "What evidence do you have?"
- "Can you prove it?"

Purpose:
Encourage scientific reasoning.

6



Deepen It

You Do

- Greater depth.
- Application.
- Transfer learning to new situations.

Purpose:
Think deeper,
not just do more.

7



SOLO Scientist Challenge

You Do

- SOLO challenge for the lesson.
- Can you explain, compare, predict, justify or create?

Purpose:
Use SOLO thinking to go even deeper.

8



Check It

You Do

- Assessment for learning.
- Exit ticket, quiz, questioning or practical outcome.

Purpose:
Check understanding of the Big Idea.

Our Teaching Model

I Do



Teacher models and explains.

We Do



Teacher and pupils learn together through guided practice.

You Do



Pupils apply learning independently with increasing confidence.

Every science lesson follows the Gradual Release of Responsibility Model.

Every St Stephen's Science Lesson Includes...



Learning Question



Big Idea



Retrieval Practice



Practical Science (where appropriate)



Blodwyn Says... (Misconceptions)



Evidence Eddie Asks... (Reasoning with evidence)



Deepen It (Greater depth)



SOLO Scientist Challenge



Assessment for Learning (Check It)



Key:

I Do

We Do

You Do

The teaching model is shown at every stage of the lesson.



Scientists don't always get the right answer first time...
⇒ They keep asking better questions! ⇒



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The Five Types of Scientific Enquiry

Developing curious minds through a
range of purposeful investigations.



Working Scientifically Means...

- Observe carefully
- Ask questions
- Make predictions
- Measure accurately
- Record results
- Interpret evidence
- Explain findings

There are five key ways that scientists investigate the world around them.

1 Comparative & Fair Testing



"Which material
keeps us warmest?"

Children change one
variable and measure
the outcome.

2 Observing Over Time



"How does a
sunflower change
over six weeks?"

Children observe,
record and identify
changes.

3 Pattern Seeking



"Do taller children
have bigger feet?"

Children collect data
and identify
patterns.

4 Identifying & Classifying



"Can we group
these animals?"

Children sort,
compare and
classify.

5 Research Using Secondary Sources



"Why do astronauts
float in space?"

Children use books,
videos and trusted
sources.

Every Great Investigation...

- ✓ Starts with a question
- ✓ Makes children think
- ✓ Encourages prediction
- ✓ Uses accurate observations
- ✓ Records evidence
- ✓ Develops scientific vocabulary
- ✓ Ends with evidence-based conclusions

How enquiry develops across school



EYFS

Explore and
observe



KS1

Ask questions
and carry out
simple enquiries



Lower KS2

Plan, measure
and explain



Upper KS2

Evaluate, justify
and refine
investigations



All five enquiry types are revisited across every year group, becoming increasingly challenging as children's scientific knowledge, skills and independence develop.

Scientists don't always get the right answer first time...
⇒ They keep asking better questions. ⇐



Adaptive Teaching at St Stephen's

Removing barriers so every child can think like a scientist.

EEF
Evidence
Informed
Practice



We Adapt...

Not the science...
The way we teach it.



We don't
lower
expectations.

We remove
barriers.

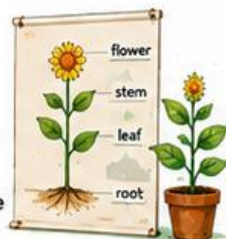
1 Pre-teach Vocabulary Word

- Introduce key scientific words before the lesson.
- Use visuals, symbols and real objects.



2 Make Learning Visible

- Diagrams
- Models
- Practical demonstrations
- Widgit symbols where appropriate



3 Scaffold, Don't Simplify

- Sentence stems
- Word banks
- Guided questioning
- Writing frames

Keep the science ambitious.



4 Practical First

- Handle equipment
- Observe real objects
- Learn through experience before recording.



5 Talk Like Scientists

- Partner talk
- Oracy
- Evidence Eddie questioning
- Scientific vocabulary



6 Challenge for All

- Deepen It
- SOLO Scientist Challenge
- Higher-order questioning

Every child thinks hard.



Every Child Can Succeed When...

- ✓ Learning is carefully scaffolded
- ✓ Vocabulary is explicitly taught
- ✓ Practical experiences come first
- ✓ Adults ask purposeful questions
- ✓ Support is gradually removed
- ✓ Expectations remain high



High expectations. ★ Appropriate support. ★
Scientific success for every child. ≤

Our inclusive approach reflects the EEF guidance on high-quality inclusive teaching.





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Vocabulary in Science

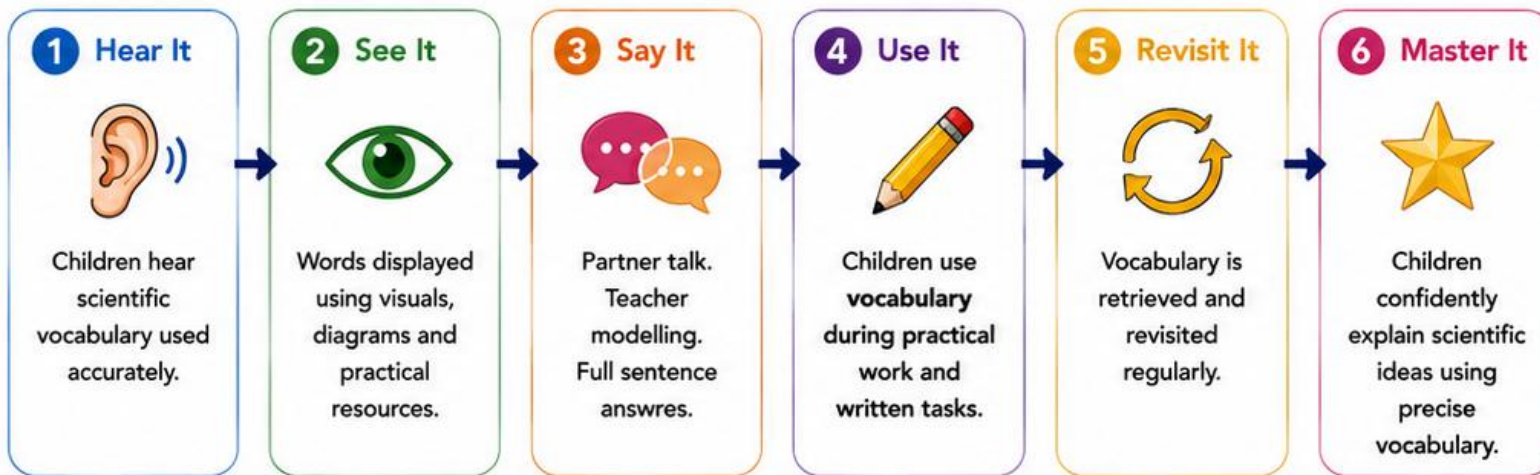
Words unlock scientific understanding.



Every Science Lesson Includes...

- ✓ Vocabulary retrieval
- ✓ New vocabulary explicitly taught
- ✓ Visual support
- ✓ Oracy opportunities
- ✓ Repeated exposure
- ✓ Vocabulary applied in context

The St Stephen's Vocabulary Journey



A strong vocabulary builds confident scientists.

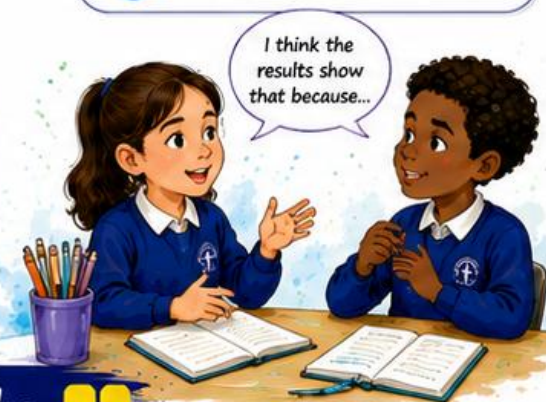
Vocabulary Strategies We Use

- Images and diagrams
- Real objects
- Sentence stems
- Retrieval practice
- Aa Word walls
- Talk partners
- Frayer models (where appropriate)
- Precision questioning

From Everyday Language to Scientific Language

Everyday	Scientific	Everyday	Scientific	Everyday	Scientific	Everyday	Scientific
Sticky	Adhesive	See	Observe	Big	Large	Hot	High temperature
Hard	Rigid	Mix	Dissolve / Combine	Small	Miniature	Cold	Low temperature
Bug	Insect	Push	Force	Go up	Increase / Rise	Break	Fracture
Tiny	Microscopic	Change	Transformation	Go down	Decrease / Fall	Get rid of	Remove / Eliminate

“Children cannot explain what they do not have the **words** to describe.”





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SOLO in Science

Helping children think more deeply about science.



Think
Deeper,
Question
Better!



SOLO in Every Science Lesson



Retrieve It

Usually Pre- or
Unistructural



Learn It

Build knowledge



Explore It

Multistructural



Evidence Eddie Asks...

Relational



Deepen It

Extended Abstract



SOLO Scientist Challenge

The deepest thinking

The SOLO Scientist Journey

Prestructural



"I'm not sure yet."

Children are
beginning to explore
the concept.

Unistructural



"I know one
important idea."

Recall a single fact
or simple idea.

Multistructural



"I know lots
of facts."

Describe several pieces
of knowledge.

Relational



"I can explain how
ideas connect."

Explain cause and effect.
Compare. Make links.

Extended Abstract



"I can apply my learning
somewhere new."

Predict. Evaluate.
Justify. Create.

Example SOLO Questions

● Name...	Can you name...?
● Describe...	Can you describe what happens...?
● Explain...	Can you explain why...? What do you notice...?
● Compare...	How are these similar or different?
● Predict...	What might happen if...?
● Evaluate...	Do you think...? What is good/bad about...?
● Design...	How could you design a way to...?
● Justify...	Why do you think...? Can you prove it?

What does deeper thinking look like?

	Surface Thinking		Deeper Thinking
	Name the parts of a flower	➡	Explain how each part helps reproduction
	State the planets	➡	Predict what would happen if Earth had no atmosphere
	Describe a circuit	➡	Design a circuit for a specific purpose
	Identify a habitat	➡	Evaluate which habitat would be most suitable and justify your choice



Can you use the
scientific word?



“Knowing more is important. Thinking more deeply is transformational.”

♥ We use SOLO to help every child become a **confident**, **curious** and **capable scientist**.

Assessment in Science

Checking understanding. Celebrating progress. Informing next steps.



We Assess Through...

Questioning

Practical investigations

Books

Exit tickets

Mini quizzes

Scientific discussion

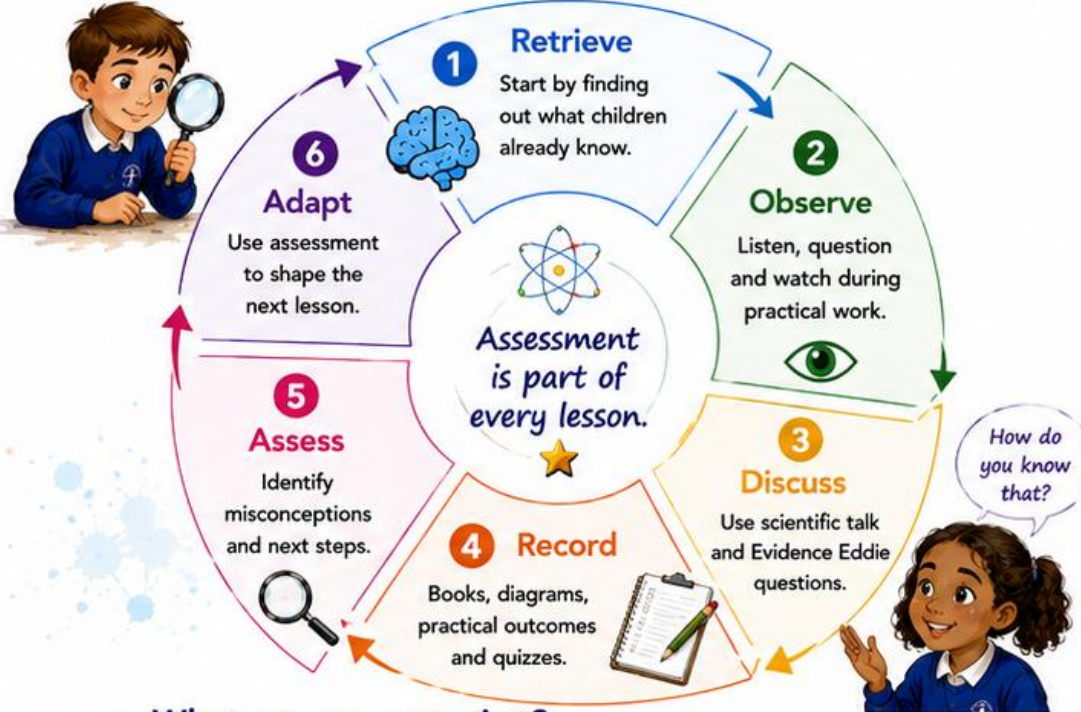
Observation

No single assessment dominates.

We use a range of evidence to build a full picture of learning.



The Assessment Cycle



Assessment at St Stephen's

- ✓ Retrieval every lesson
- ✓ Big Idea checked every lesson
- ✓ Evidence Eddie reasoning
- ✓ Vocabulary use monitored
- ✓ Practical skills observed
- ✓ Teacher assessment informs planning

What are we assessing?

Scientific Knowledge

Do children know the science?

Working Scientifically

Can children investigate effectively?

Scientific Vocabulary

Can children explain using accurate language?

Scientific Thinking

Can children reason, justify and apply?

What does success look like?

- ★ Explain using scientific vocabulary.
- ★ Use evidence to justify ideas.
- ★ Apply learning in new contexts.
- ★ Identify and correct misconceptions.
- ★ Think like scientists.



“ Assessment is not the end of learning... It is where better teaching begins. ”

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Checking understanding. Celebrating progress. Informing next steps.



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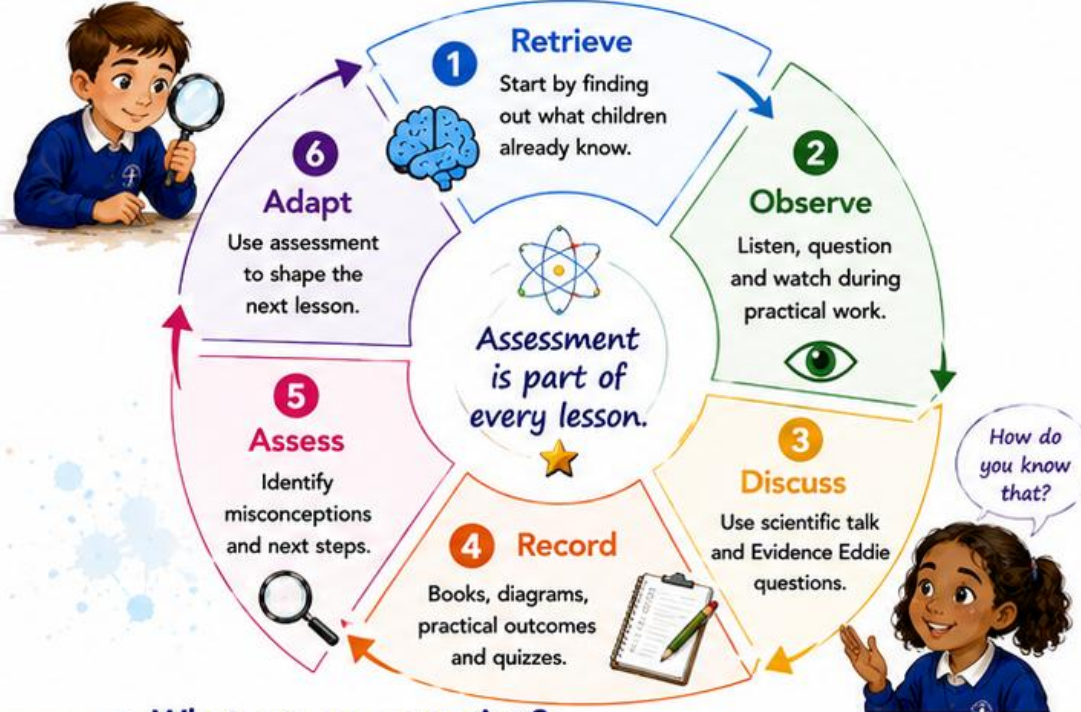
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Impact

Inspiring lifelong curiosity. Building confident young scientists.



The Impact of Science at St Stephen's

By the Time Our Children Leave Us...

- ✓ Think like scientists.
- ✓ Ask and answer scientific questions.
- ✓ Use evidence to justify conclusions.
- ✓ Apply knowledge to unfamiliar situations.
- ✓ Work collaboratively.
- ✓ Explain ideas using precise vocabulary.



Curious Thinkers

Children ask thoughtful questions and enjoy finding answers.



Secure Knowledge

Children build connected scientific knowledge over time.



Confident Communicators

Children use accurate scientific vocabulary to explain their thinking.



Skilled Investigators

Children plan, carry out and evaluate enquiries with increasing independence.



Critical Thinkers

Children justify ideas using evidence and challenge misconceptions.



Responsible Citizens

Children understand the importance of science in everyday life and caring for God's creation.



Science helps us understand
the world and our place in it.



Our Curriculum Journey



Intent

A clear vision for high-quality science for all.

High-Quality Teaching

Adaptive teaching, vocabulary, retrieval and strong pedagogy.



Practical Enquiry

Hands-on investigations build understanding and excitement.



Deep Scientific Thinking

SOLO, evidence, vocabulary and reasoning deepen understanding.



Confident Scientists

Children leave us curious, capable and ready for what's next.



I wonder
what happens
if...?



How can we
make the world
a better place?

THINK
LIKE A
SCIENTIST

“ Every child. Every chance. Every day. ”



Science at St Stephen's isn't just about learning facts. It's about nurturing curiosity, developing confidence and preparing children to understand, question and shape the world around them.