



## The Epistemic Insight Initiative

CPD Webinar 2: Ways to teach Epistemic Insight



# Who is in the room?



0

EYFS/KS1 teacher or practitioner

0

KS2 teacher

0

Primary leadership

0

Teaching assistant



2

HE lecturer/researcher



5

ITE student (UG, PG, Schools direct)

0

Too unique for labels :)





Exciting new scheme for Years 4-7 which address National Curriculum topics e.g. air resistance, friction. We have free resources and equipment to share with 30 schools.

**When:** The project will run from now until the end of the year - stay as long or not - as you like!

**What's on offer:** Free printed investigation cards, free resources and equipment with opportunity to attend free CPD webinars and to ask for support from local Epistemic Insight research lead

**Why:** By getting involved in the scheme, children in your class will be doing hands-on science enquiry - and the investigations can be taken home in the event of a local lockdown or quarantine.

**What do teachers do:** We are asking teachers to use these free resources and to give the children in their class a short before and after survey, with headteacher consent.

(Also open to trainee teachers on placement with supervisor support)

**What we will do:** Support the teacher with the investigations through the CPD webinars and development of their own lesson plans. Contact [Lasar@canterbury.ac.uk](mailto:Lasar@canterbury.ac.uk).

**How do I get involved:** Book onto as many of the webinars as you like through:

<https://www.eventbrite.co.uk/o/lasar-centre-at-cccu-30754621852> and contact

[Lasar@canterbury.ac.uk](mailto:Lasar@canterbury.ac.uk), if you are interested to be a teacher researcher in your school.





Ways to teach Epistemic insight	<a href="https://tinyurl.com/Ways-to-teach-EI">https://tinyurl.com/Ways-to-teach-EI</a>	5 <sup>th</sup> October
Essential Experiences in Science: Why do spinners spin?	<a href="https://tinyurl.com/Why-do-spinners">https://tinyurl.com/Why-do-spinners</a>	12 <sup>th</sup> October
Introduction to EI and EES repeat session	<a href="https://tinyurl.com/Intro-to-EI-Repeat">https://tinyurl.com/Intro-to-EI-Repeat</a>	14 <sup>th</sup> October
Essential Experiences in Science: Why did the Titanic sink?	<a href="https://tinyurl.com/Why-did-the-Titanic">https://tinyurl.com/Why-did-the-Titanic</a>	9 <sup>th</sup> November
Bridging questions: How do we make sense of music?	<a href="https://tinyurl.com/Make-sense-of-music">https://tinyurl.com/Make-sense-of-music</a>	16 <sup>th</sup> November
Essential Experiences in Science: Why plants matter	<a href="https://tinyurl.com/Why-plants-matter">https://tinyurl.com/Why-plants-matter</a>	23 <sup>rd</sup> November
Bridging questions: Reaching the South Pole	<a href="https://tinyurl.com/Reach-South-Pole">https://tinyurl.com/Reach-South-Pole</a>	30 <sup>th</sup> November
Essential Experiences in Science: Grip or Slip	<a href="https://tinyurl.com/Grip-or-Slip">https://tinyurl.com/Grip-or-Slip</a>	7 <sup>th</sup> December
Bridging questions: What do maps tell us?	<a href="https://tinyurl.com/What-do-maps">https://tinyurl.com/What-do-maps</a>	14 <sup>th</sup> December



# I am interested to know...



Strongly disagree

In my class, I often have the opportunity to teach about disciplinary knowledge and what makes a discipline distinctive

2.9

When teaching science, I often compare science with another discipline

3.6

Strongly agree





Epistemic insight is knowledge about knowledge – particularly knowledge about disciplines and how they interact.

It is both a pedagogical approach which recognises the distinctiveness of disciplines and an intellectual virtue that is both teachable and assessable by highlighting a discipline's preferred questions, methods and norms of thought



# What is distinctive about science?



observation

facts questioning  
hands on  
proves hypotheses  
draws on all areas  
measurable  
exploration  
falsifiable  
hypothesis  
experiments  
inquiry





### Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and **all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science.** Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the **power of rational explanation and develop a sense of excitement and curiosity about natural phenomena.** They should be encouraged to understand how science can be used **to explain what is occurring, predict how things will behave, and analyse causes.**

### Purpose of study

A high-quality history education will **help pupils gain a coherent knowledge and understanding of Britain's past and that of the wider world.** It should inspire pupils' **curiosity to know more about the past.** Teaching should equip pupils to **ask perceptive questions, think critically, weigh evidence, sift arguments, and develop perspective and judgement.** History helps pupils to understand the complexity of people's lives, the process of change, the diversity of societies and relationships between different groups, as well as their own identity and the challenges of their time.





Key Stage 1

- asking simple questions and recognizing that they can be answered in different ways

Lower Key Stage 2

- Asking relevant questions and using different types of scientific enquiries to answer them

Upper Key Stage 2

- asking their own questions about scientific phenomena

Key Stage 3

- become aware of some of the big ideas underpinning scientific knowledge and understanding.

Key Stage 4

- develop understanding of the nature, processes and methods of science [...] that help them to answer scientific questions about the world around them

I can ask a valid question for science!  
I can recognise a question science likes to answer!

I know I have been doing science because...





Bridging Questions are pedagogically engineered to bring the similarities or difference of how (usually two) key disciplines interpret or investigate a question



Let's look at another example!

I can think like a scholar when I can:

- Explain how different disciplines investigate a question
- Illustrate how another discipline is different to science



This bridging Question focuses on the disciplines of **science** and **history** to interpret or investigate the question.



- Preferred questions
- Methods
- Norms of thought

## Why did the Titanic sink?

Free investigation cards, materials and teacher notes available – help us research this question in your classroom!

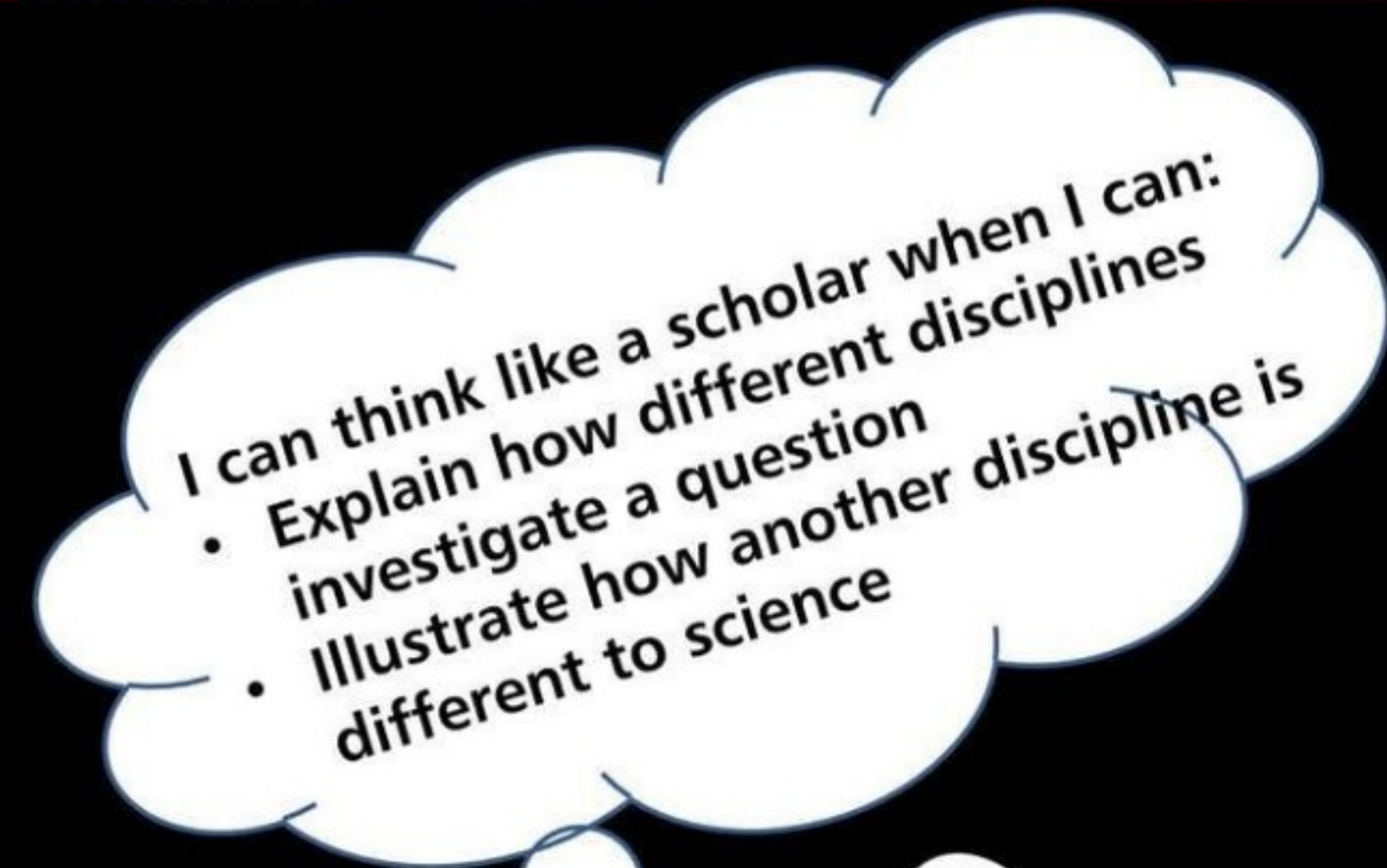


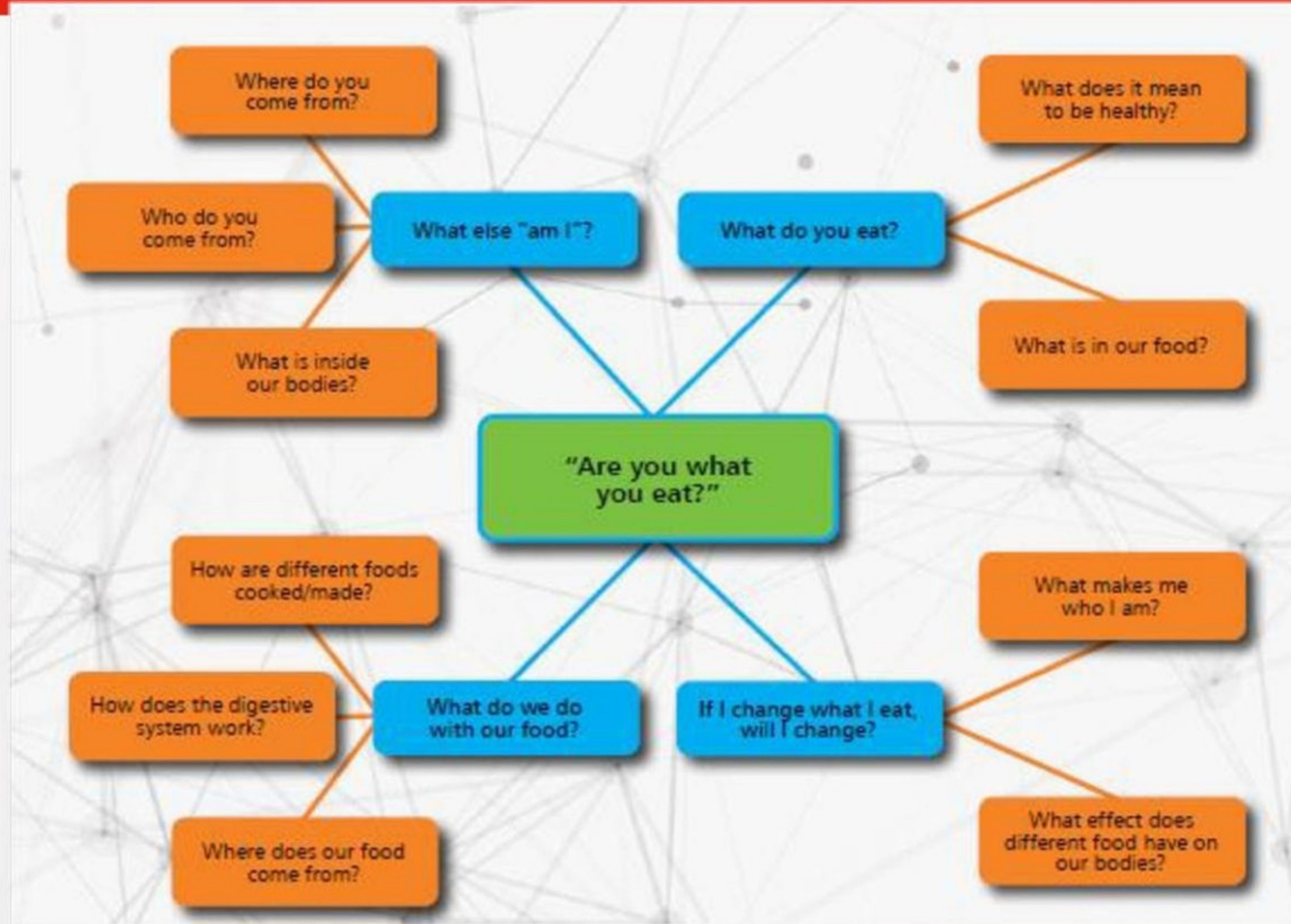


Signpost preferred questions, methods and norms of **thought** of each discipline to help your students to answer these questions:

1. How does my/this discipline **interpret** the question? (**Questions**)
2. How does my/this discipline **investigate** the question? (**Methods**)
3. How would my/this discipline know it has a **good answer**? (**Norms of thought – what it values**)
4. How can I make a better answer?

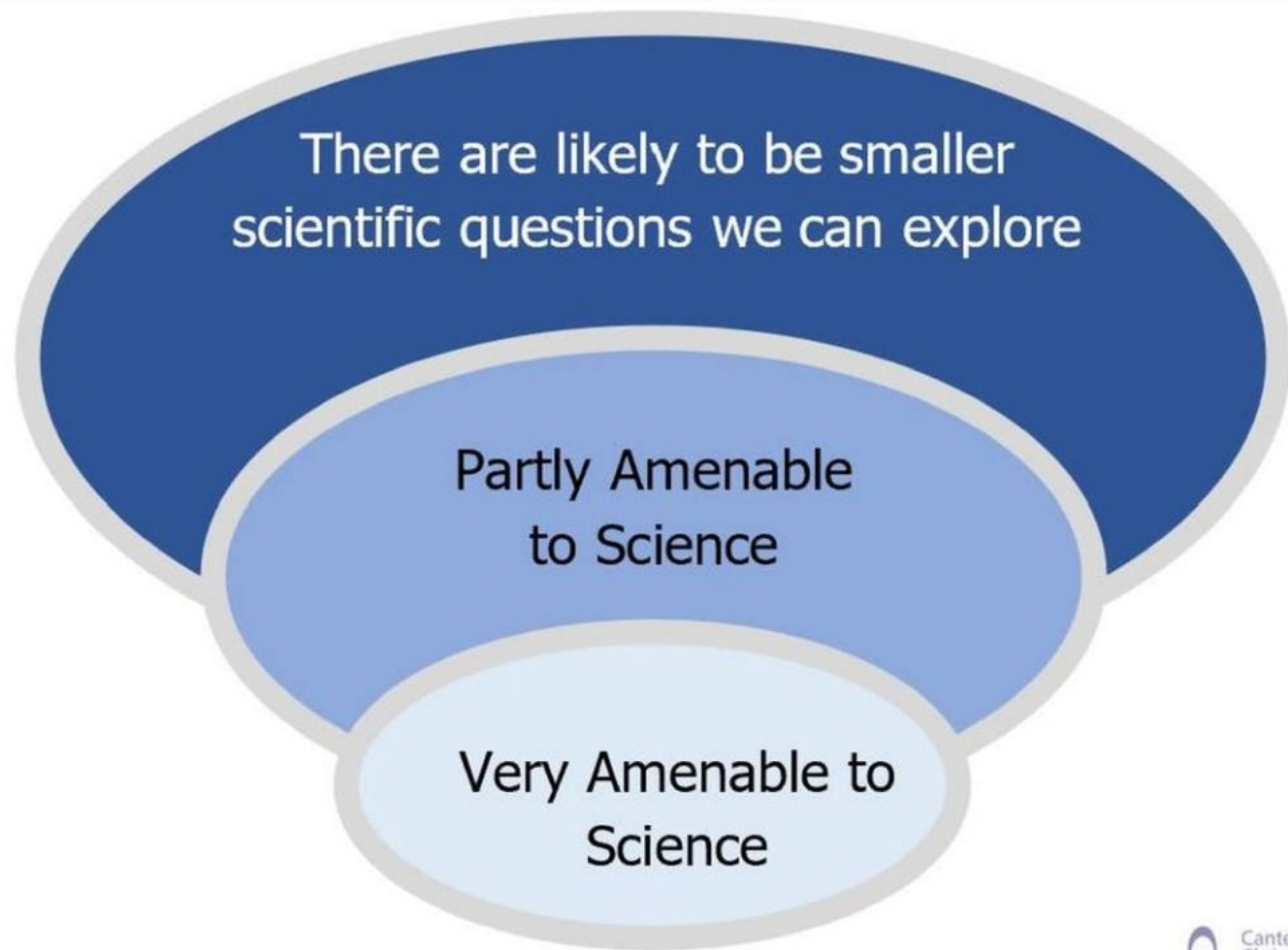
\*Methods questions and norms of thought not content





## The Discipline Wheel:

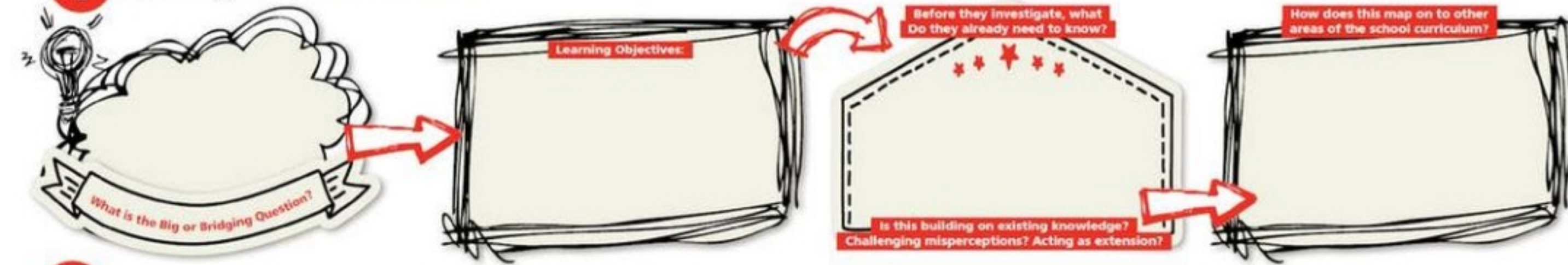
Put a question in the middle



## Epistemic Insight

## 5 minute lesson plan – bridging subject boundaries

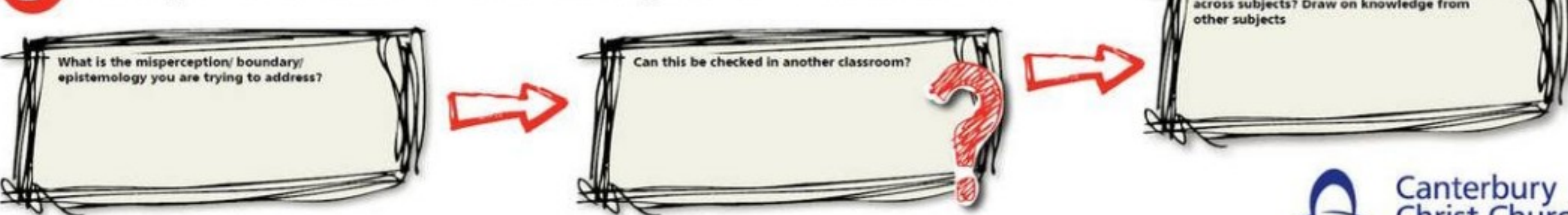
### 1 Building on Current Practice



### 2 Developing Epistemic Insight: How can the students be supported to answer these three questions?



### 3 Building Permeable Classroom Walls: Forming links across the curriculum



1. **Build on current practice** - curriculum content / student's understanding of methods/norms of thought/ curriculum mapping already undertaken
2. **Ask yourself & your students 3 key questions** – these highlight the strengths & uniqueness of disciplines & help students to navigate the pedagogical engineering of subject division & curriculum content
3. **Helping students navigate the curriculum** requires explicitly building links between disciplines AND helping them understand the unique contributions they can make to the same issues/questions

Working across departments to highlight this through tools (e.g. discipline wheel), regular use of disciplinary language, or through checking learning in other subject lessons will better support students to navigate their curriculum.



# How will you respond...



Strongly disagree

I will use epistemic insight strategies to teach about disciplinary knowledge and the distinctiveness of disciplines

4.3

By comparing disciplines, I will teach the nature of science in real-world contexts and multidisciplinary arenas

4.3

It has been valuable to learn how to teach disciplinary knowledge and epistemic insight

4

I would like to know more about getting involved in the Essential Experiences in science project

4.3

Strongly agree





If you would like to know more about EES please provide contact details - go to [menti.com](https://www.menti.com)

Name

Email address

School address or ITE tutor group



## Why do spinners spin?

This session will explore why this question is a **good question for science to answer**.

Falling objects will be investigated to consider the effects of air resistance upon a paper spinner. Through several **repeatable** challenges, students can **observe** the effect of natural forces including friction and gravity upon the spinner to make it slow down, fall faster or spin faster. Different objects can also be investigated including **testing** out what makes a good parachute?





### Upper Key stage 2

“Science begins with observations of the natural world and constructing ways to explain our observations.

Some methods are more scientific than others.”

			
LEARNING OUTCOMES	Relationships between science and religion	The nature of science in real world contexts and multidisciplinary arenas	Ways of knowing and how they interact
UPPER PRIMARY	Science and religion are mostly concerned with different types of questions, including different types of why question.	Science begins with observations of the natural world and constructing ways to explain our observations. Some methods are more scientific than others.	Science has some similarities and some differences with other ways of knowing that we learn about in school.
LOWER SECONDARY	Today we ask big questions about human personhood and the nature of reality that bridge science and religion. Some people say that science and religion are compatible and some people say they are not.	Science informs our thinking about every aspect of our lives. Some questions are more amenable to science than others. There are some questions that science hasn't yet and may never be able to answer.	A school is a multidisciplinary arena. Different disciplines have different preferred questions, methods and norms of thought.
UPPER SECONDARY	Science and religion are not necessarily incompatible.	Scientism is not a necessary presupposition of science.	Some questions are more metaphysically sensitive than others.

