



# The Epistemic Insight Initiative

**CPD Webinar 6:  
Essential Experience of Science:  
Why do seeds need to grow?**





# Who is in the room?



EYFS/KS1 teacher or practitioner



KS2 teacher



Primary leadership

0

Teaching assistant

0

HE lecturer/researcher



ITE student (UG, PG, Schools direct)

0

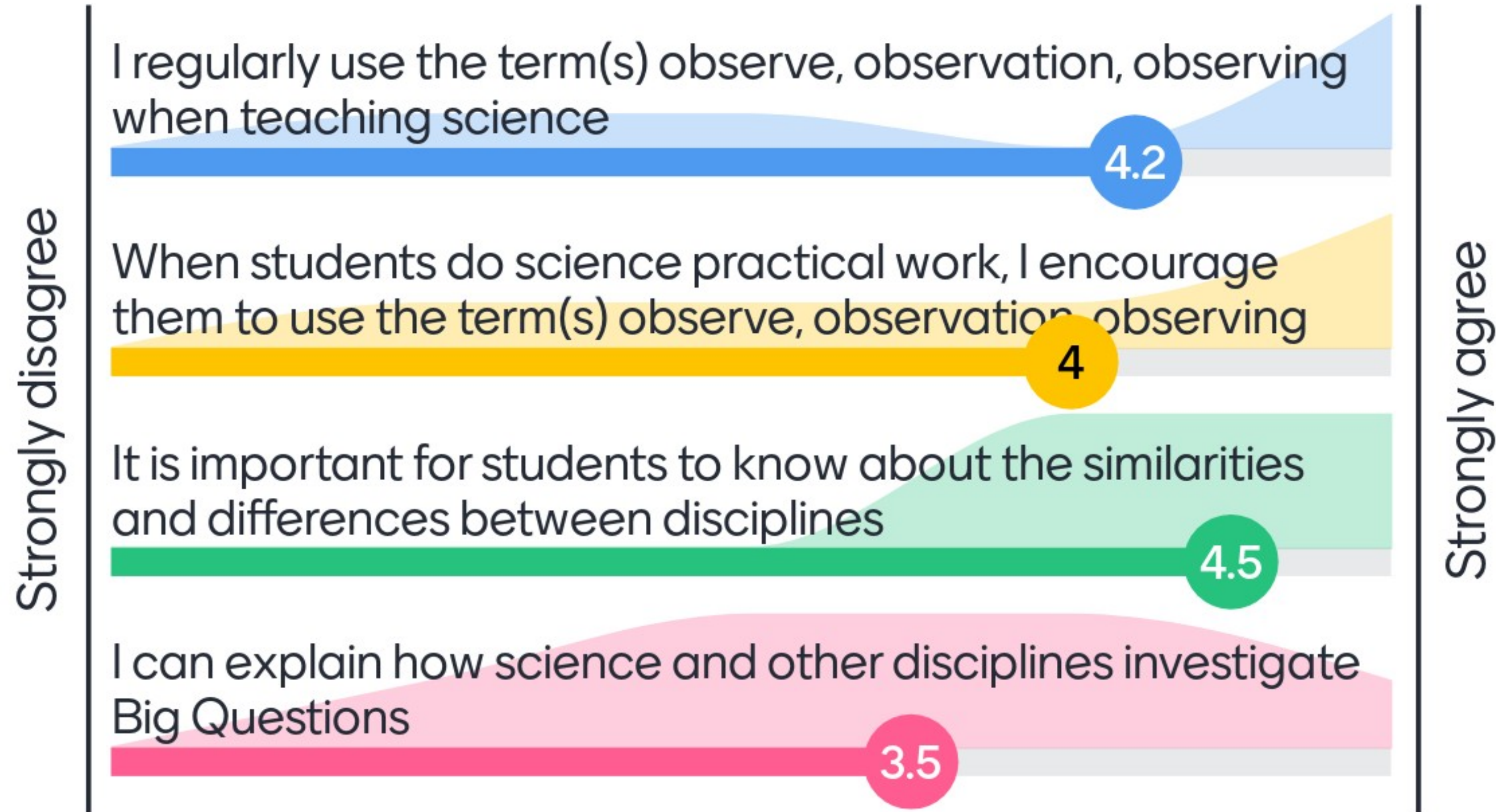
Too unique for labels :)





# I would be really interested in your responses

to:

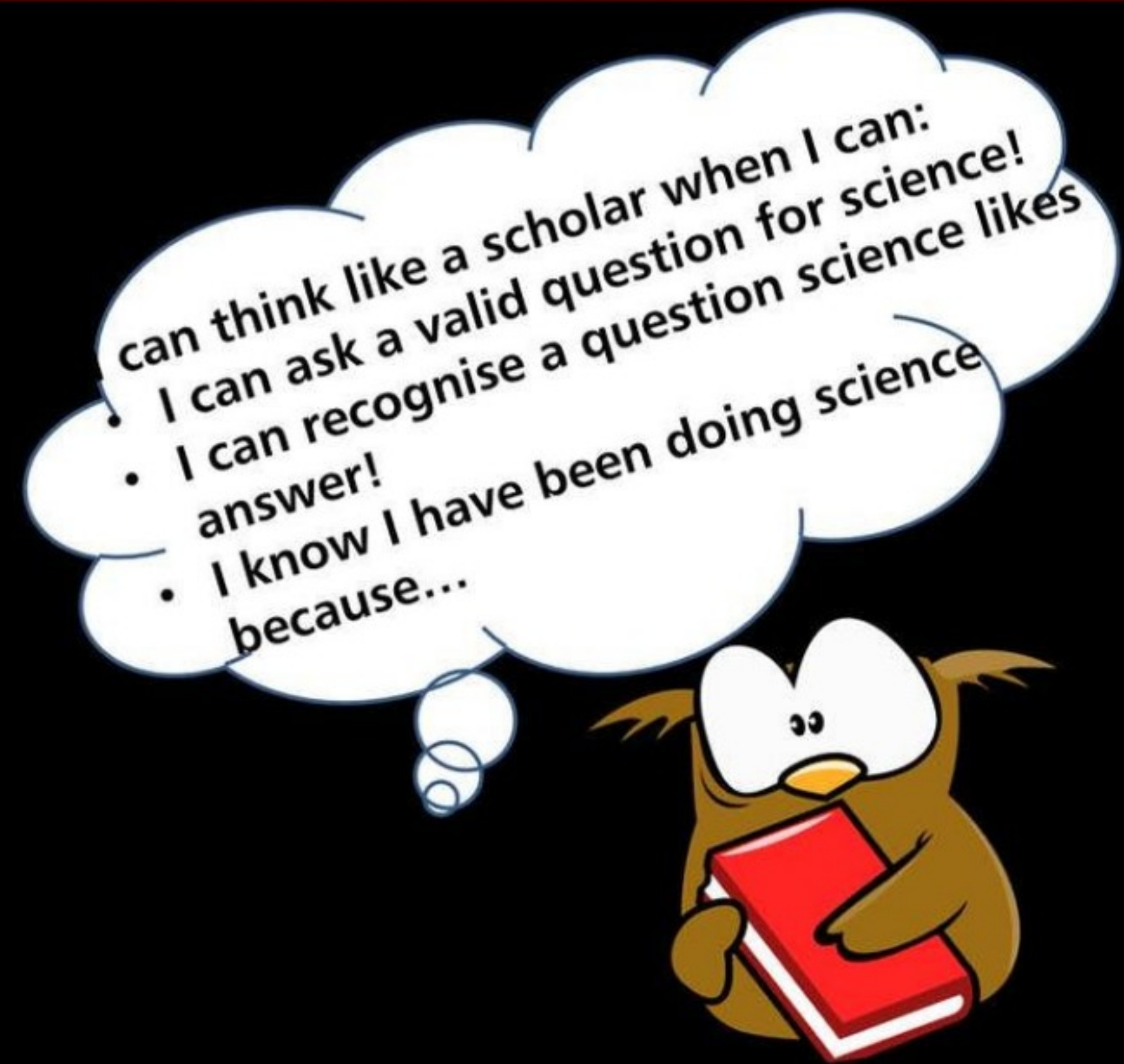




Teachers can support students to answer three questions:

1. **How does a discipline interpret the question?**
2. **What methods would this discipline use to investigate the question?**
3. **How would a scholar of this discipline know they had a good answer?**

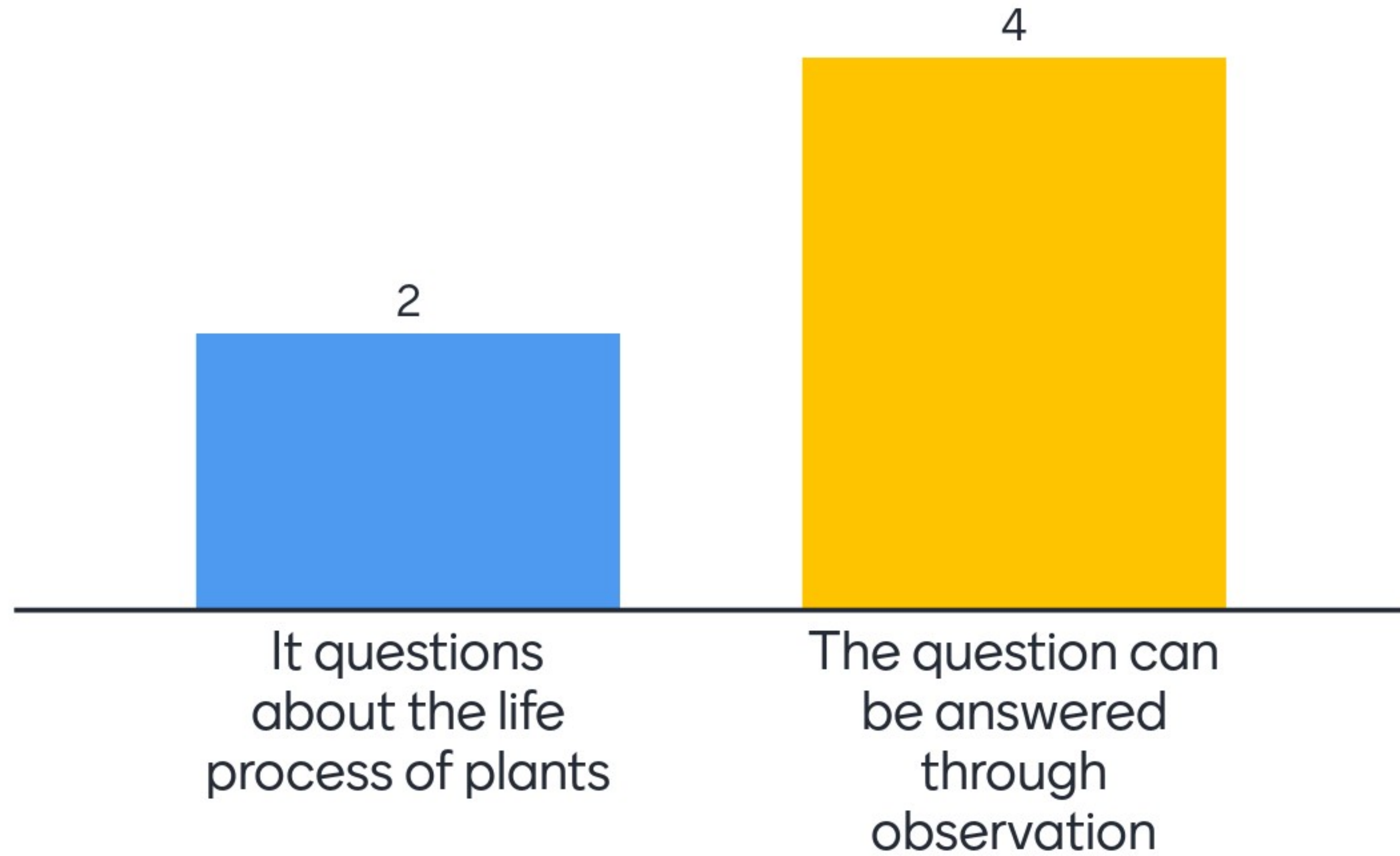
(What does the discipline value?)



Lets look at a science question. Why do seeds need to grow?  
But what makes this question, a good question for science to answer?



# 'Why do seeds need to grow?' Why is this a good question for science to answer?

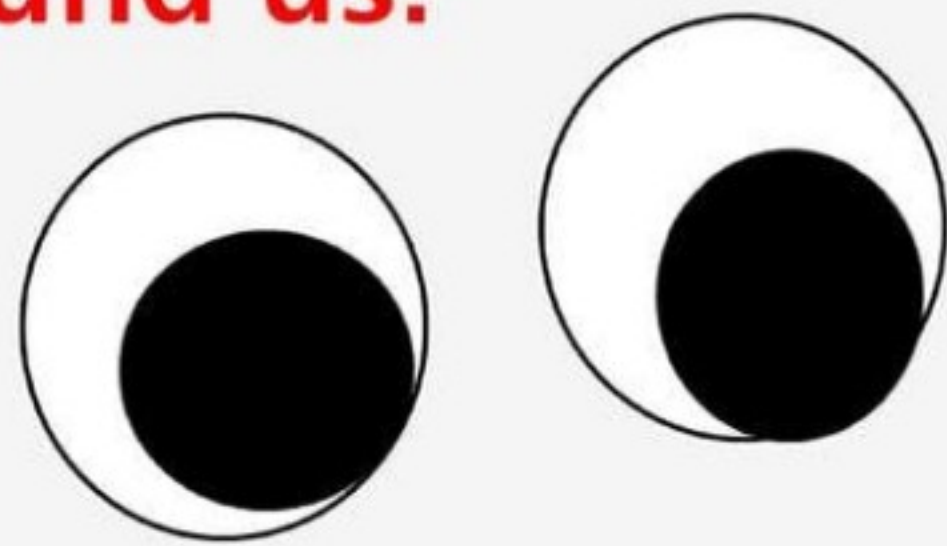






Science answers questions which investigate the nature of the world around us.

Observation



Why do seeds need to grow?

There are likely to be useful smaller scientific questions we can explore

Partly amenable to science

Very amenable to science

The bubble tool





## Why do Seeds need to grow?

*What is the session about?*

This session aims to support children and teachers in using the scientific language of '**observe**' and '**observations**' to help children to work scientifically. Compare science with another discipline to appreciate that science is only one way to answer questions.

*Research question in school*

Can children:

- identify 'observe' and 'observations' as key to investigating scientifically?
- appreciate the similarities and differences between science and other disciplines
- sort questions into different disciplines

*National curriculum content*

Science: Living things and their habitats - plants  
History: Achievements of the earliest civilisations  
Religious education, Art, English Literature

*Support & Free Materials*

1 Investigation card, experiment materials, Teacher notes, Student worksheets plus CPD webinars

- Teaches scientific enquiry
- Builds understanding of science as a discipline
- Follows EI pedagogy
- Hands-on
- Observations
- Distinctiveness of science
- Compare science to other disciplines





## National Curriculum KS2 Links

*Observations  
from Activity 1*

### Working scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

*Children  
record  
what they  
observed*

*Activity  
1*

### Living things and their habitats

Pupils should be taught to:

- describe the life process of reproduction in some plants and animals

*Children  
predict what  
they will  
observe*





# What do seeds need to grow?

These dandelions get their energy from light. They capture sunlight on their leaves. But it's different for seeds. Scientists tell us that a seed only needs to be warm and damp to germinate (start growing). Let's see if they're right!

In this investigation we investigate the germination of another well known plant ...

## Predict, Observe, Record

You'll need two transparent plastic beakers and two or more broad beans. Line the beakers with damp kitchen towel and push a bean between the side of the beaker and the towel. Cover one beaker with a box. Check your beans daily and add water if the towel seems dry. Record your observations of the beans. Would it be a good idea to repeat the investigation, why?



Record the progress by taking photos or using a ruler to measure the length of the green shoot.

Science can help us to understand and appreciate plants – how they grow, what they need to grow and which ones are good sources of food. What about the other disciplines that you study at school? What can they tell you about 'Why plants matter'? And can there be many answers that are right?



# Being a scientist!

Predict

Observe

Measurement

Record

Scientific enquiry



## Hook Questions

1. How does a tiny seed produce a big plant?
2. Why do people grow plants in their homes?
3. Can we grow plants on other planets?

Can Science give us answers to all these questions?

Seeds investigation – observe what happens!

Resources: Plastic beakers, Kitchen roll, Broad bean seeds

Children can check on their bean every day and observe how the seeds germinates.

Recording their observations by drawing or taking photos of the changes. Could we repeat the experiment – why could this useful?

## Observation game

Children find something in the classroom

Give 3 clues:

I observe with my scientist eye, something that is...

**cold, shiny and metal**” (chair leg)

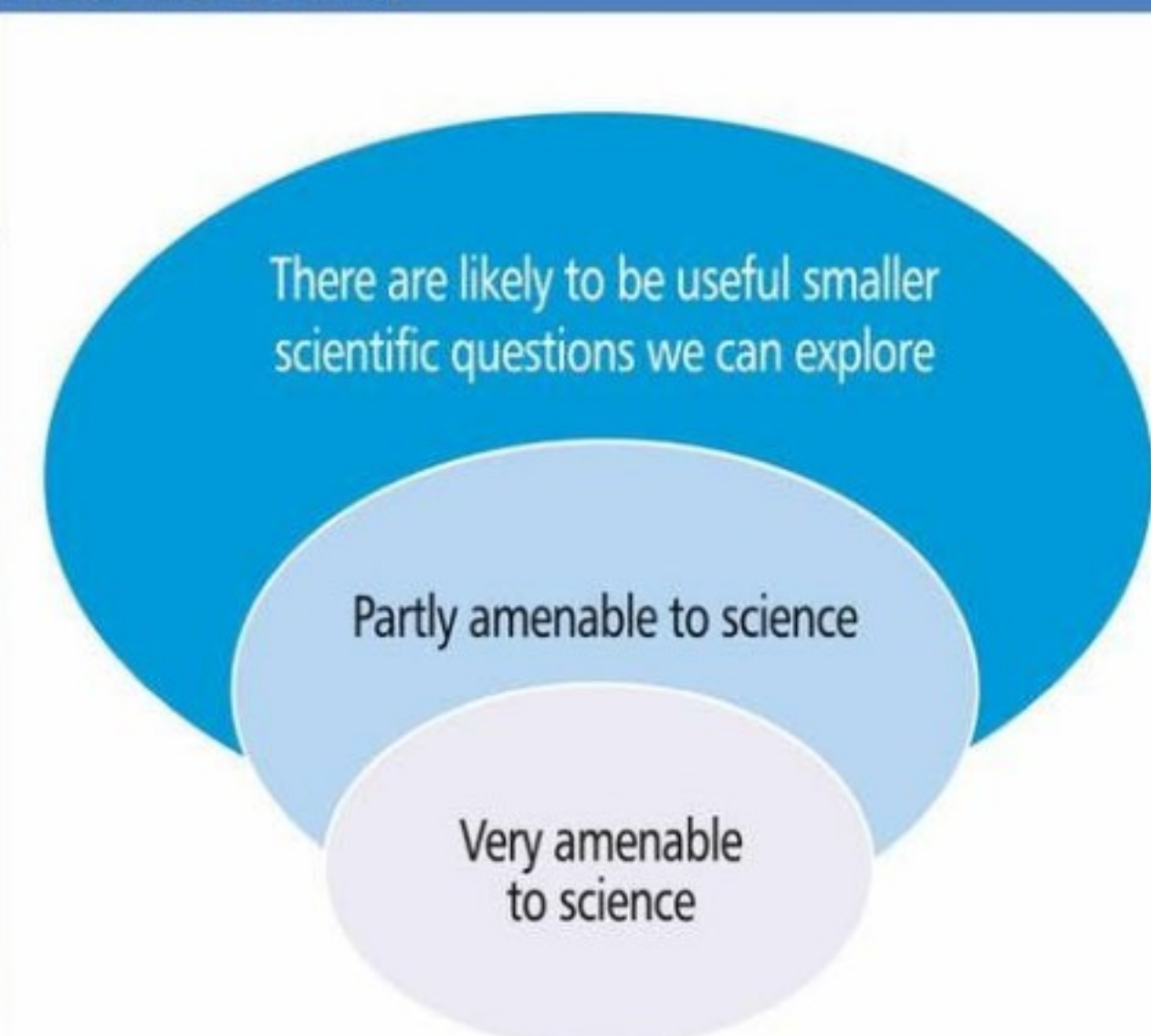
## Plenary

Revisit the questions:

1. How does a tiny seed produce a big plant?
2. Why do people grow plants in their homes?
3. Can we grow plants on other planets?

Is this a good question for science?

What other discipline(s) can help us and how?

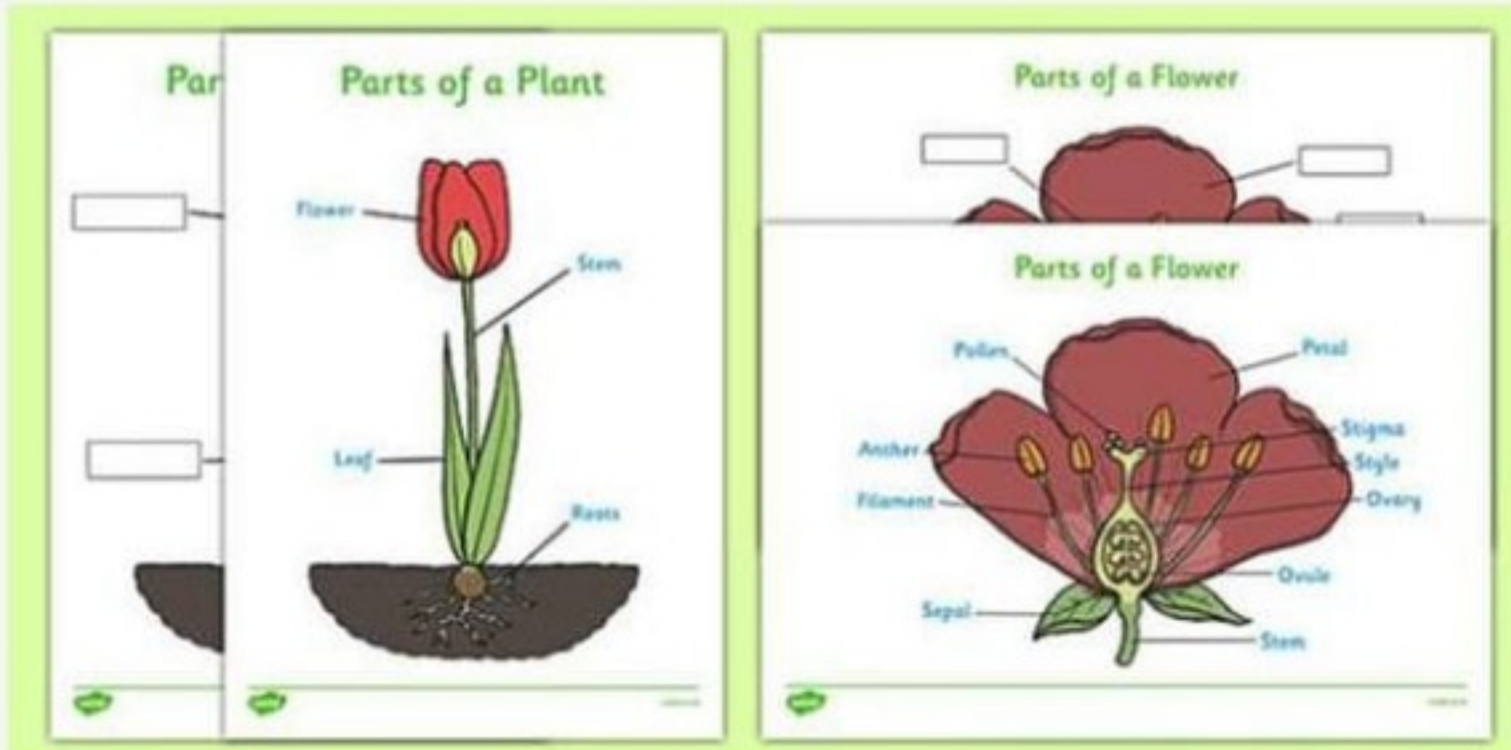




- 3. Make observations of your bean every day. Draw the changes that you observe happening as it **germinates**.
- 4. Record your observations. Draw a picture of your bean after placing it in the beaker.

*(Don't forget to label the beaker, paper towel, seed and any changes you observe of the seed!)*

<p><u>Day 1</u></p> <p>I Observe .....</p> <p>.....</p>	<p><u>Day 2</u></p> <p>.....</p> <p>.....</p>	<p><u>Day 3</u></p> <p>.....</p> <p>.....</p>
<p><u>Day 4</u></p> <p>.....</p> <p>.....</p>	<p><u>Day 5</u></p> <p>.....</p> <p>.....</p>	<p><u>Day 6</u></p> <p>.....</p> <p>.....</p>



Remember!  
What do  
scientists do  
to answer  
questions?

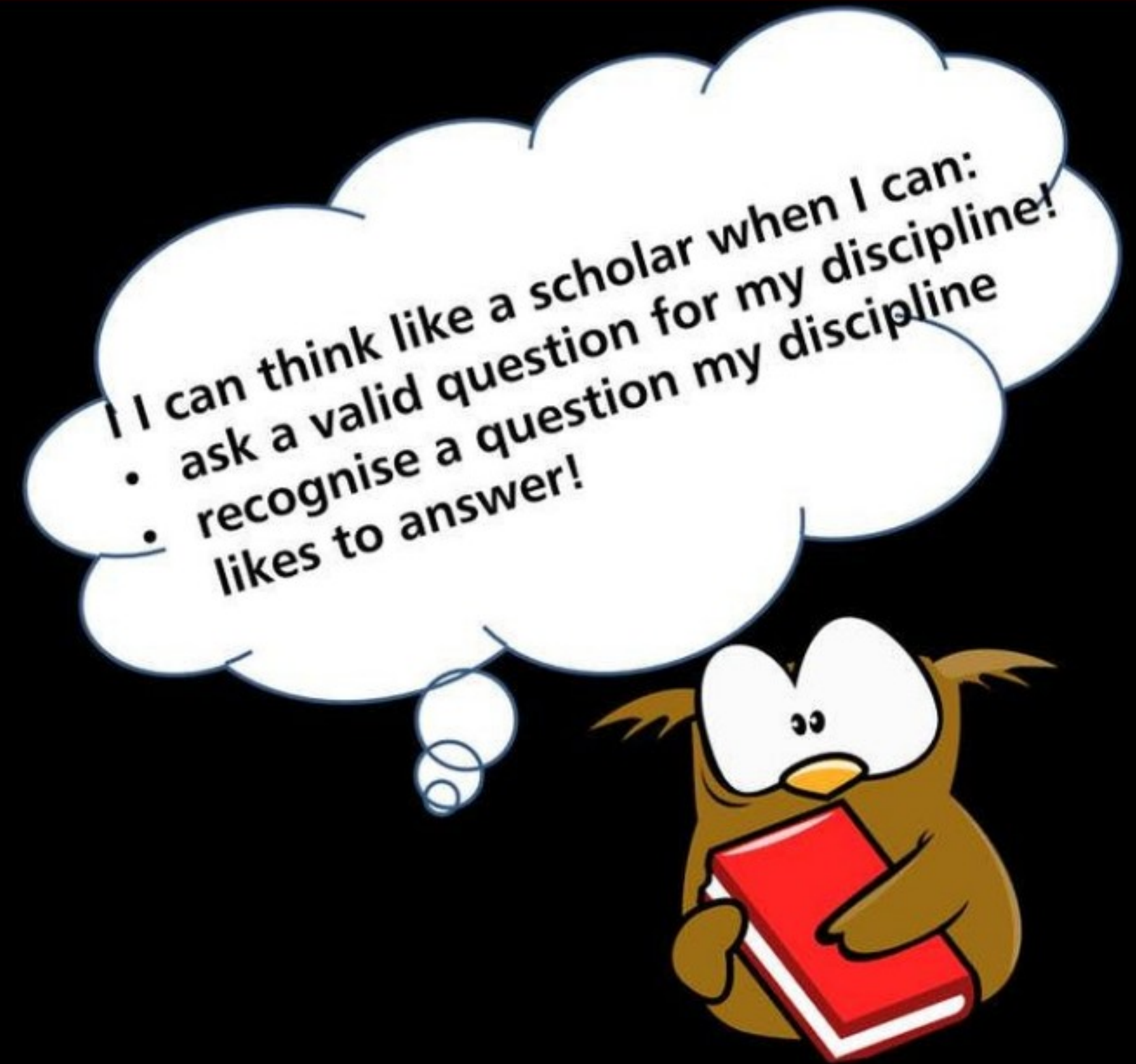




Teachers can support students to answer three questions:

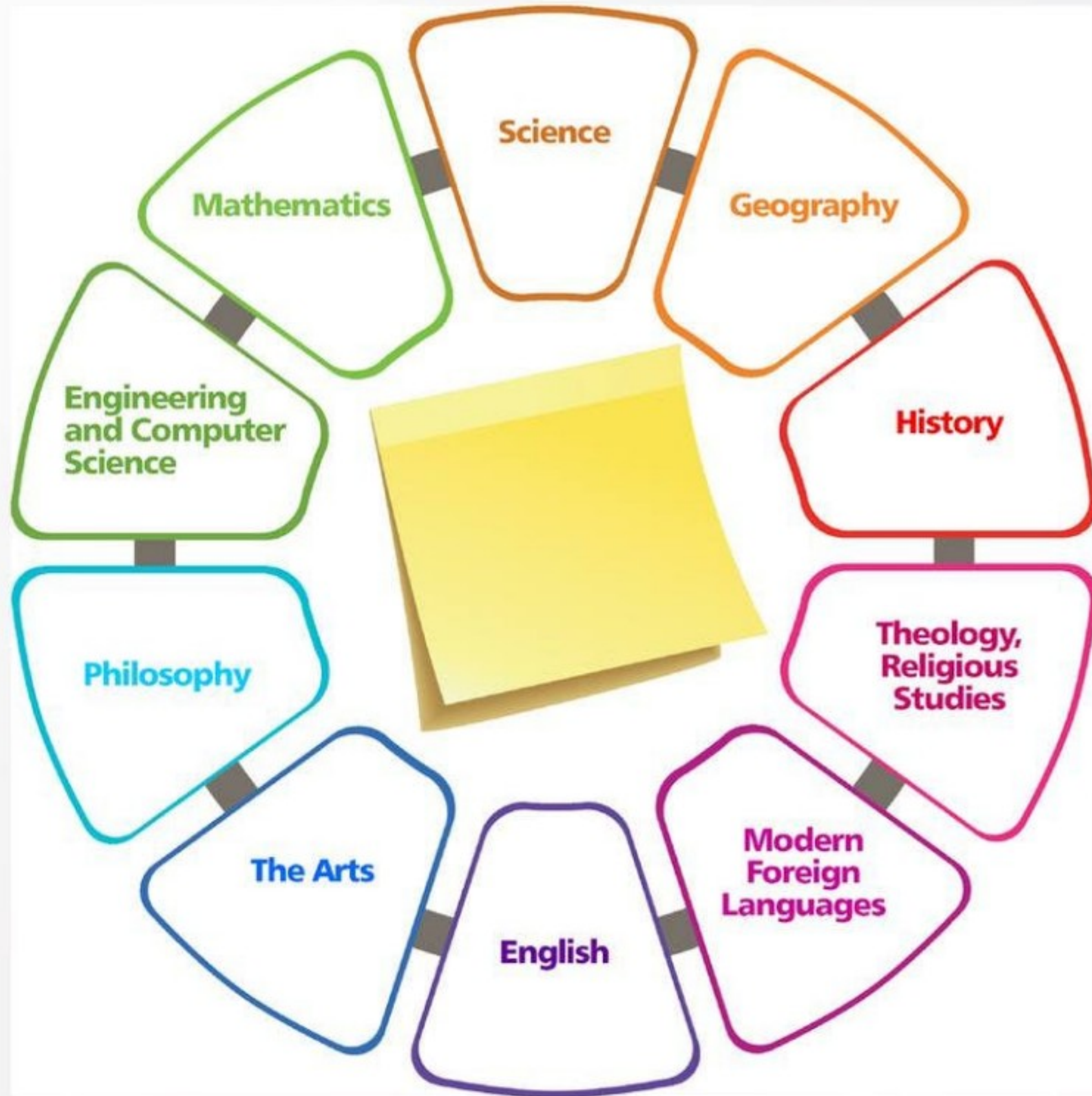
1. **How does a discipline interpret the question?**
2. **What methods would this discipline use to investigate the question?**
3. **How would a scholar of this discipline know they had a good answer?**

(What does the discipline value?)



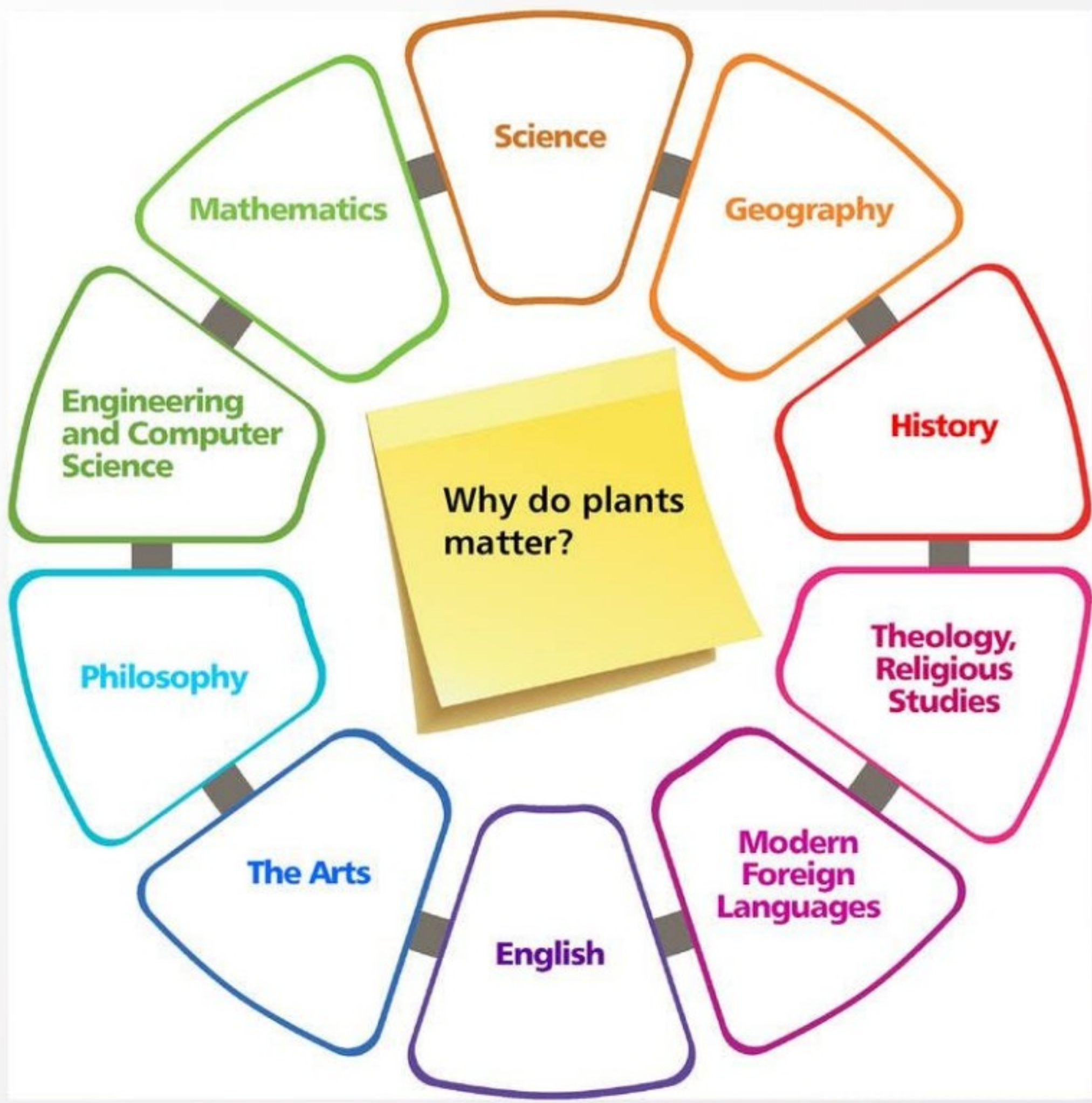
Lets look at the big question. **Why do plants matter?**  
Is this a good question for science to answer fully?





1. How does a tiny seed produce a big plant?
2. Why do people grow plants in their homes?
3. Can we grow plants on other planets?





## Why do plants matter?

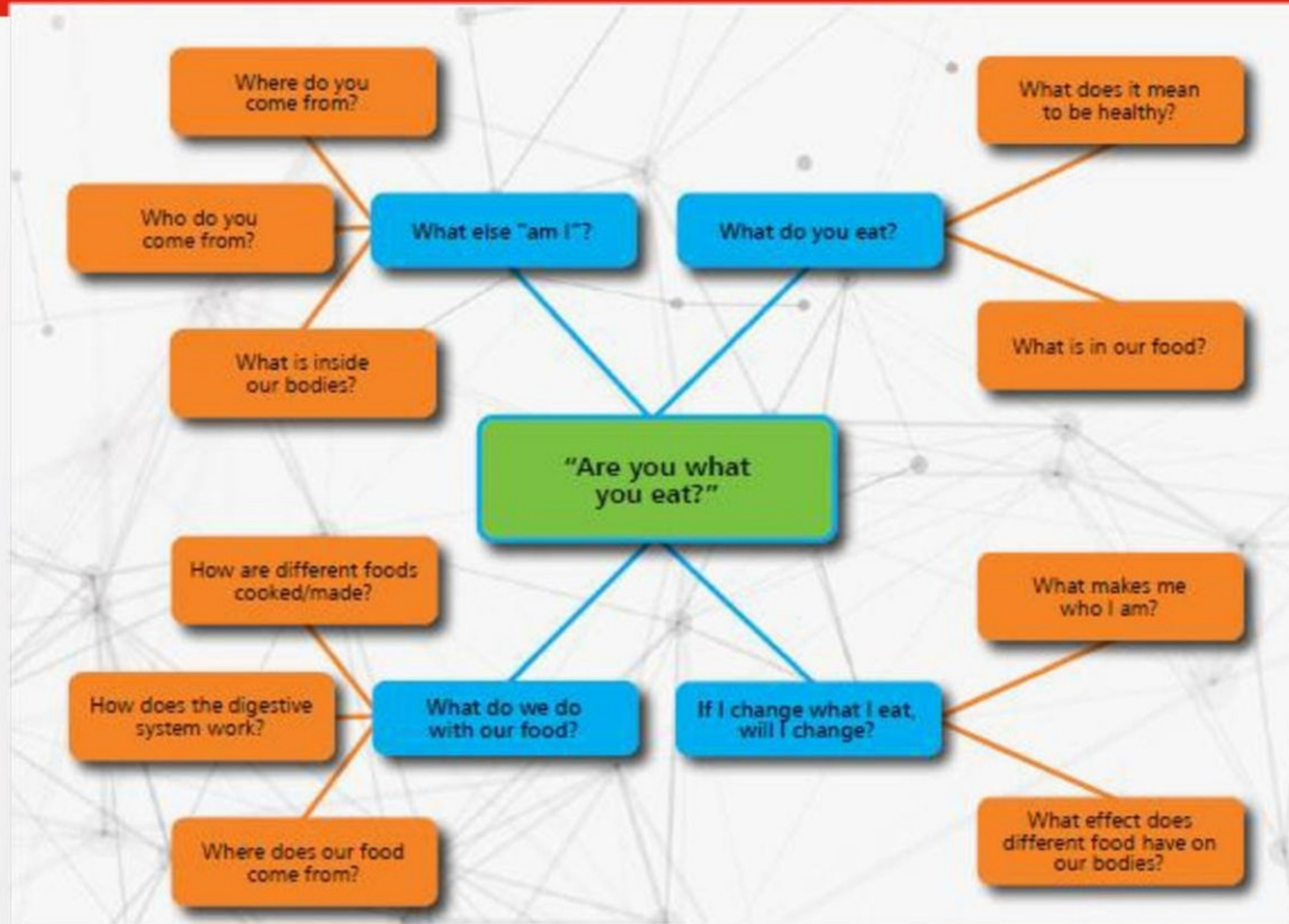
They believed the person may come back to life. Seeds were left with them as an emergency food source.

Seeds and food were often buried in the tomb with a mummy.

History tells us that seeds were important in life and death to the Ancient Egyptians too.

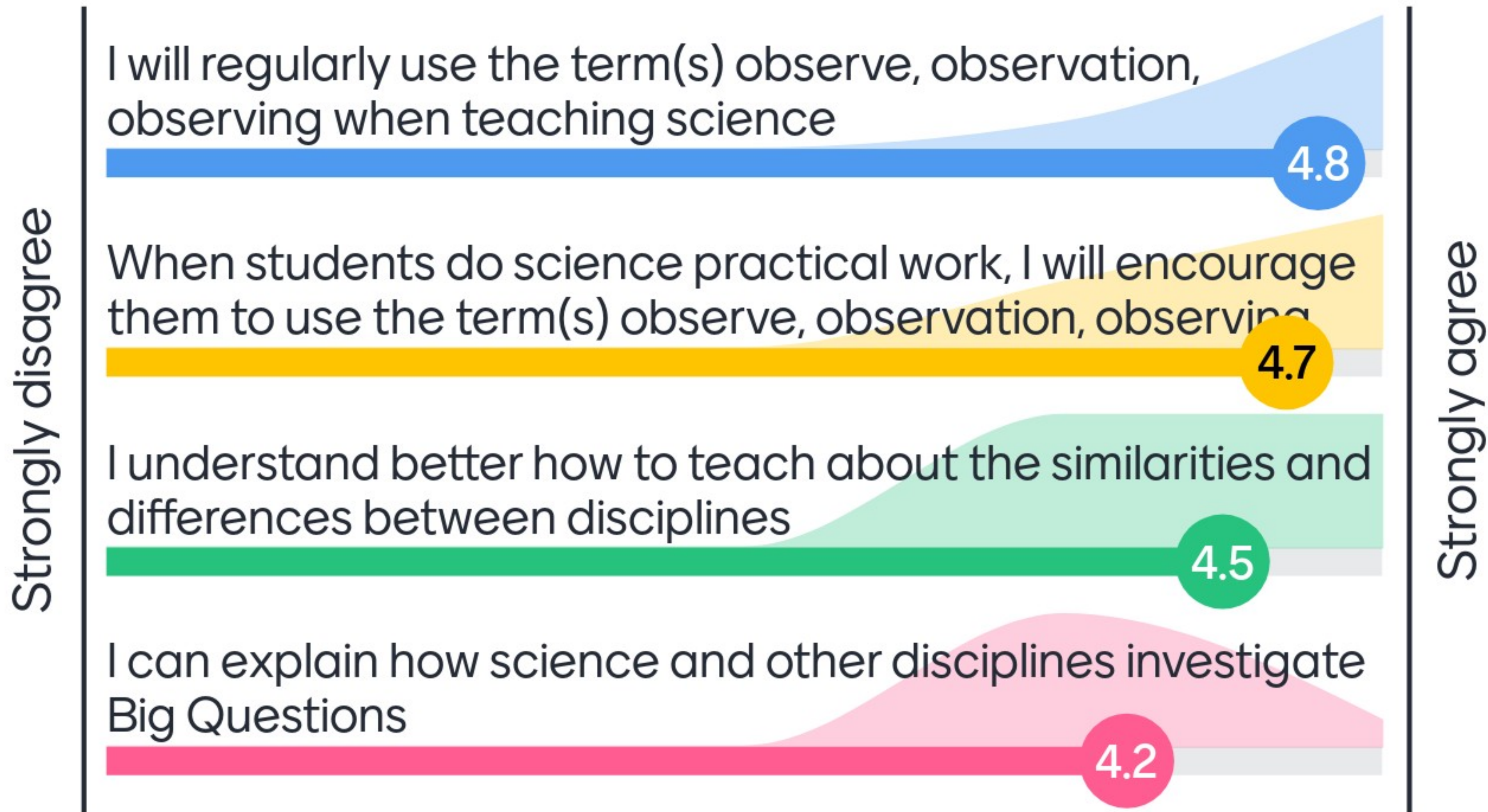








# How will you respond?







Exciting new scheme for Years 4-7 which address National Curriculum topics.  
Free resources and equipment to share with 30 schools.  
Starting with these Free webinars and some downloadable resources.

**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. Opportunities for teacher bursaries. Find out more.

**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.





**Join our teacher researchers: Survey your class before/after a card investigation. Gain free resources and equipment (Headteacher consent required)**

Name

Email address

School address or ITE tutor group





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, space and survival	<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







## What do we need to survive and to work?

This session will explore a bridging question which focuses on the disciplines of **science** and **history** to interpret or investigate the question. It will compare science and history and consider their similarities and differences to develop students' understanding of science in real-world contexts and multidisciplinary arenas.

- Preferred questions
- Methods
- Norms of thought



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

