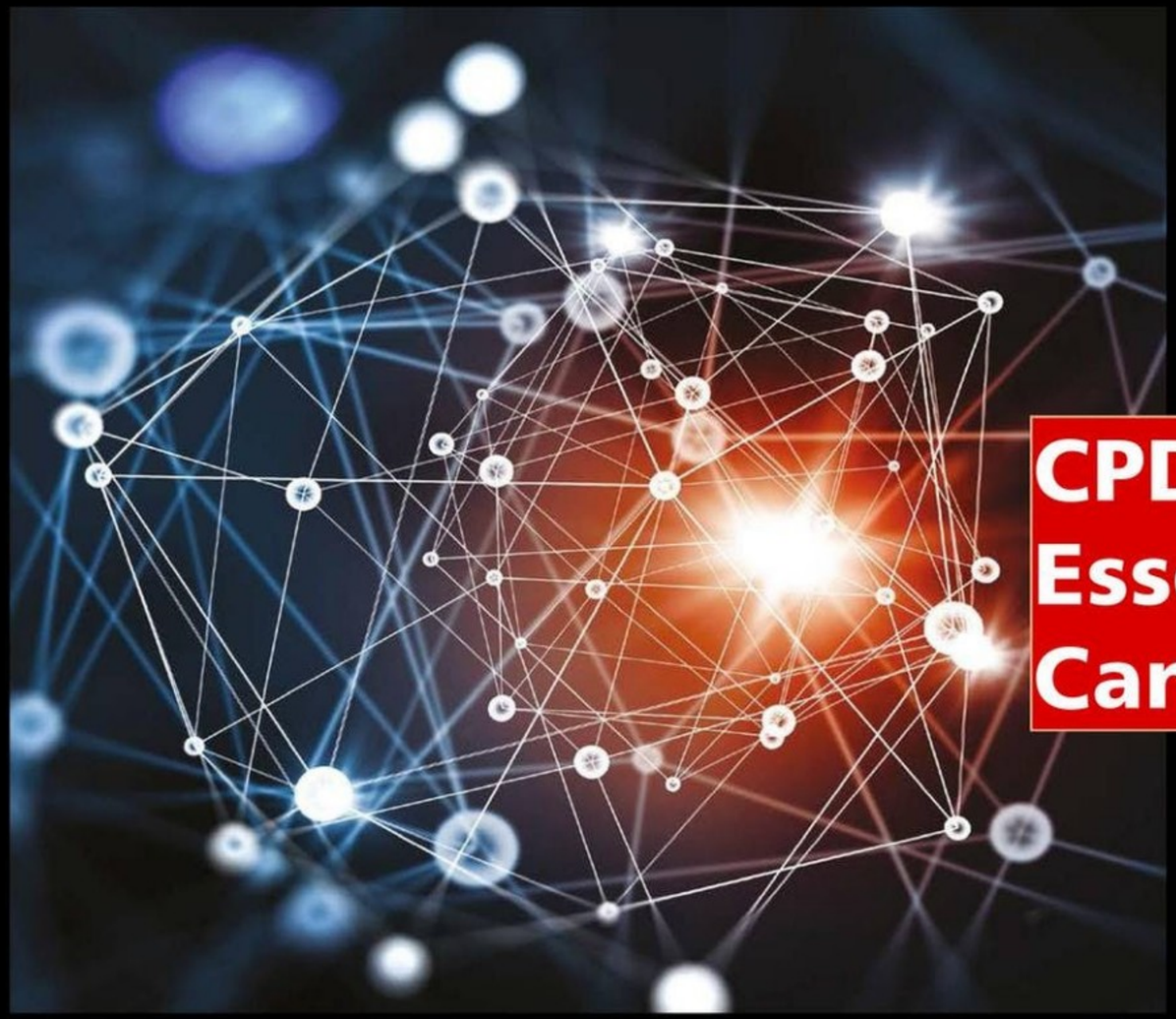
Epistemic Insight



The Epistemic Insight Initiative

CPD Webinar 6: Essential Experience of Science: Can it ever be good to slip?

www.epistemicinsight.com
LASAR@canterbury.ac.uk

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Canterbury Christ Church University

Who is in the room?

0
EYFS/KS1 teacher or practitioner

2
KS2 teacher

0
Primary leadership

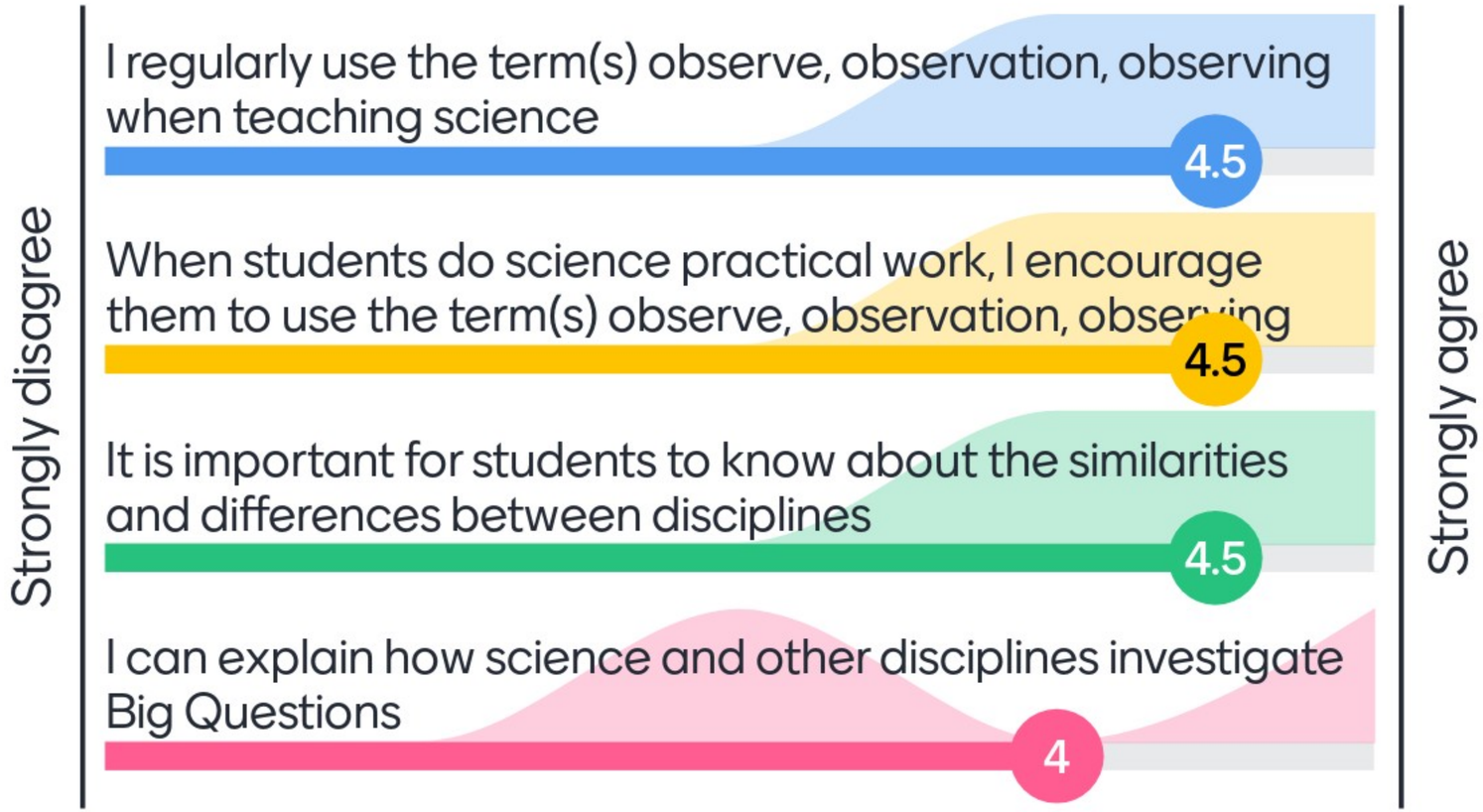
0
Teaching assistant

0
HE lecturer/researcher

0
ITE student (UG, PG, Schools direct)

0
Too unique for labels :)

I would be really interested in your responses to:



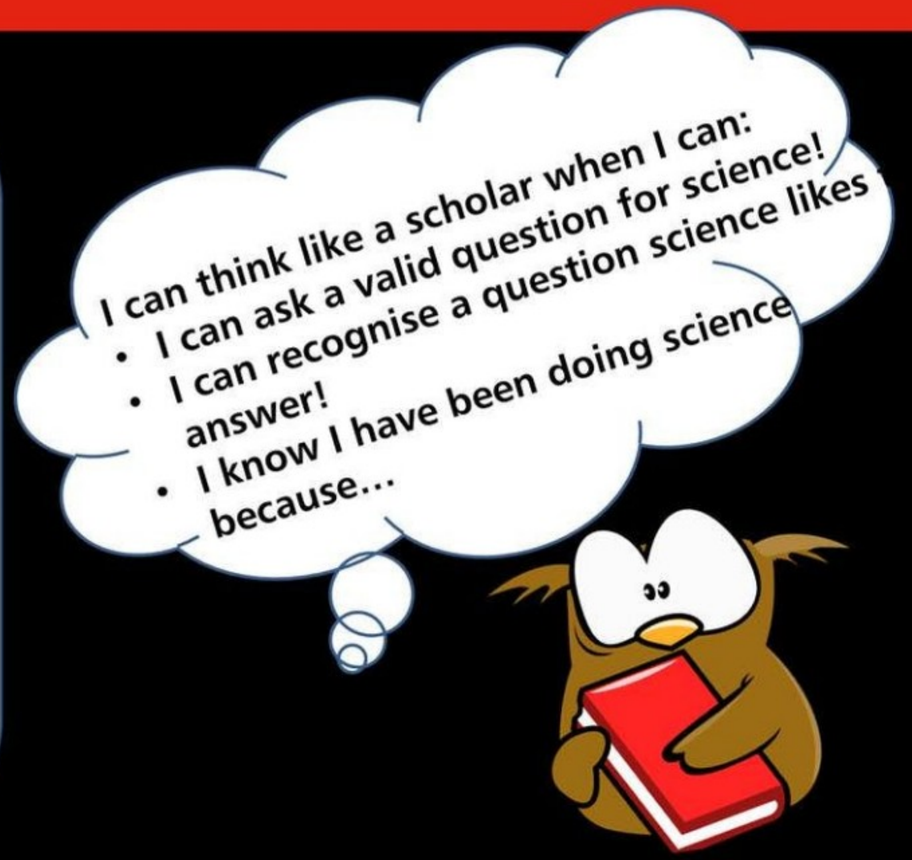
Epistemic Insight

Epistemic insight: teachable and assessible

Teachers can support students to answer three questions:

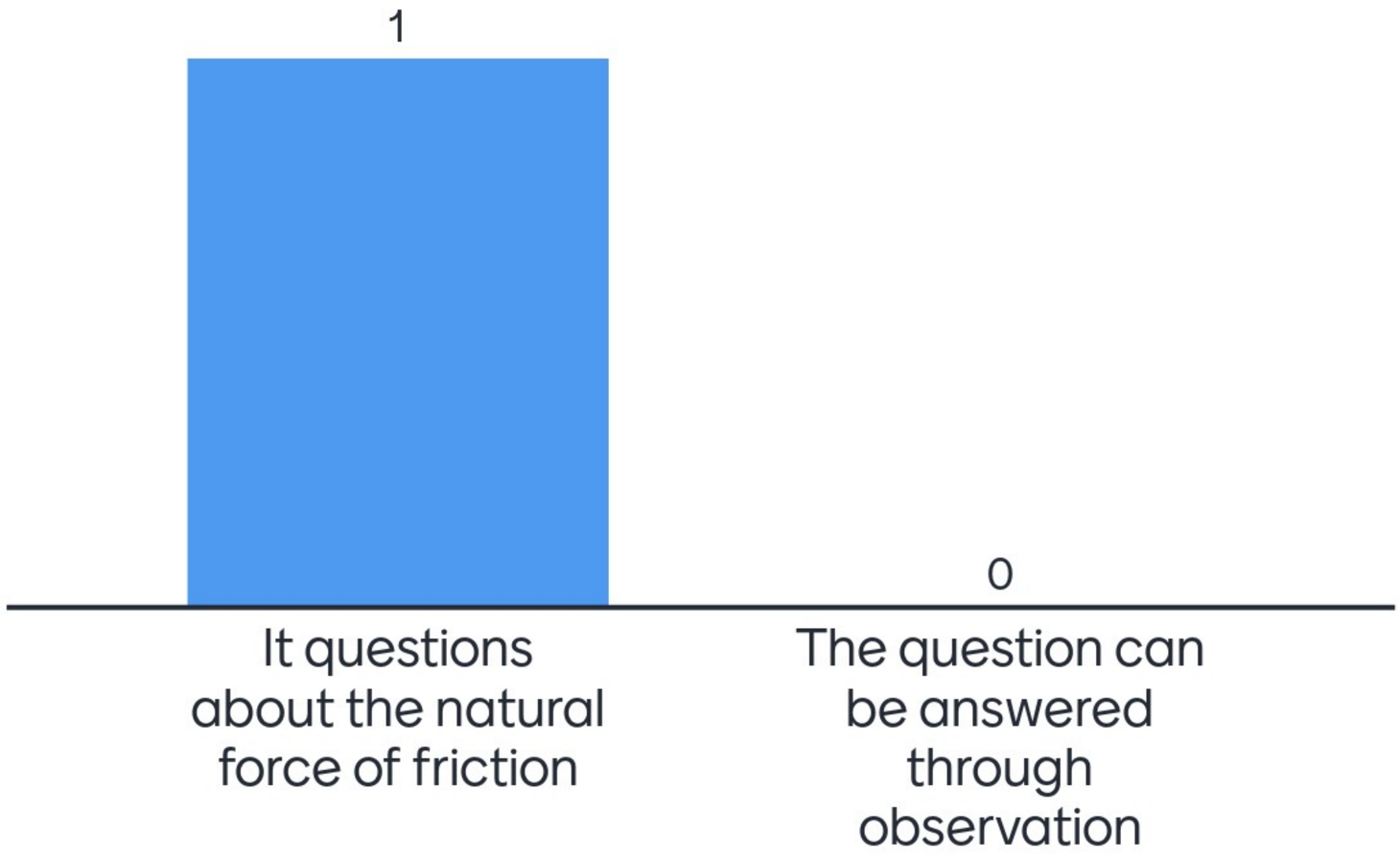
1. **How does a discipline interpret the question?**
2. **What methods would this discipline use to investigate the question?**
3. **How would a scholar of this discipline know they had a good answer?**

(What does the discipline value?)



Lets look at a science question. Which objects slip fastest?
But what makes this question, a good question for science to answer?

'Which objects slip fastest?' Why is this a good question for science to answer?

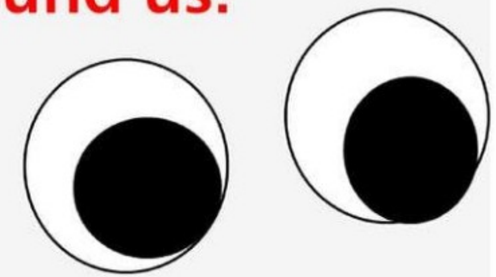


Epistemic Insight

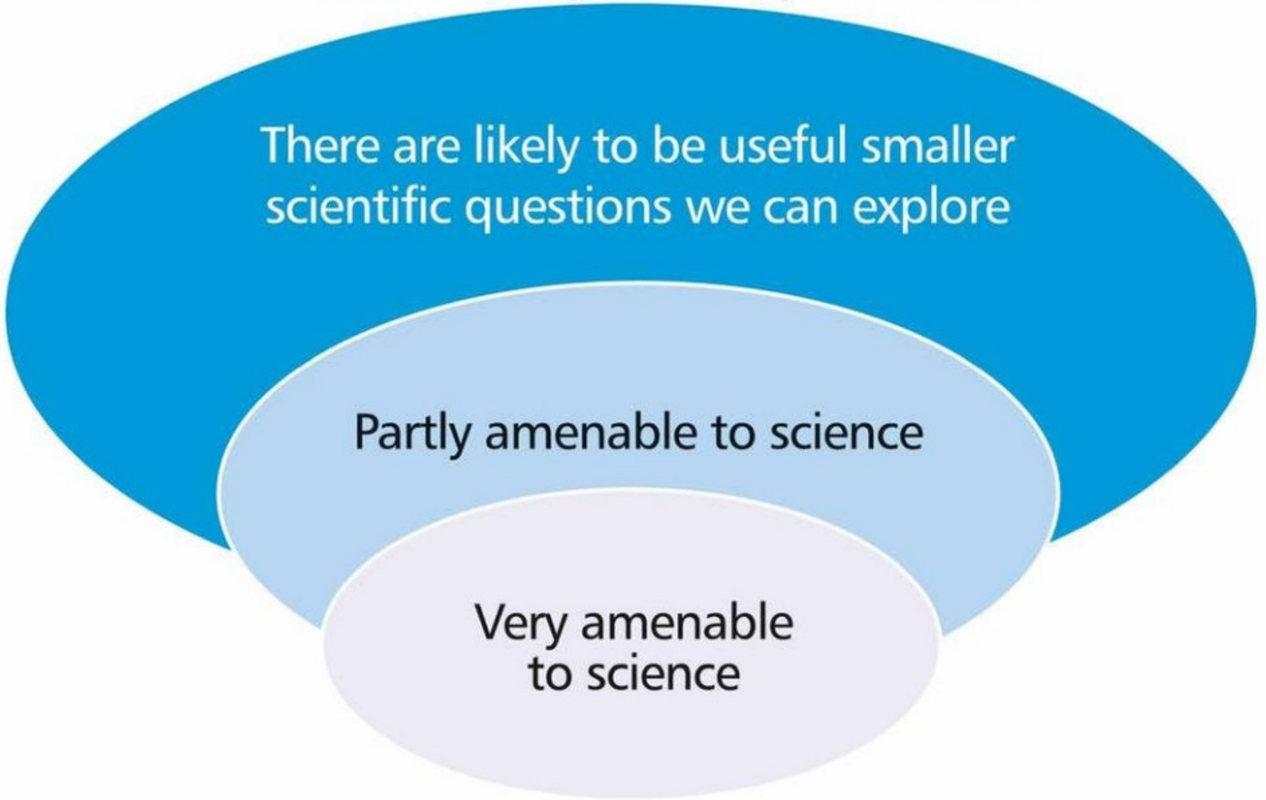
A good question for science!

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

Observation



Which objects slip fastest?



The bubble tool

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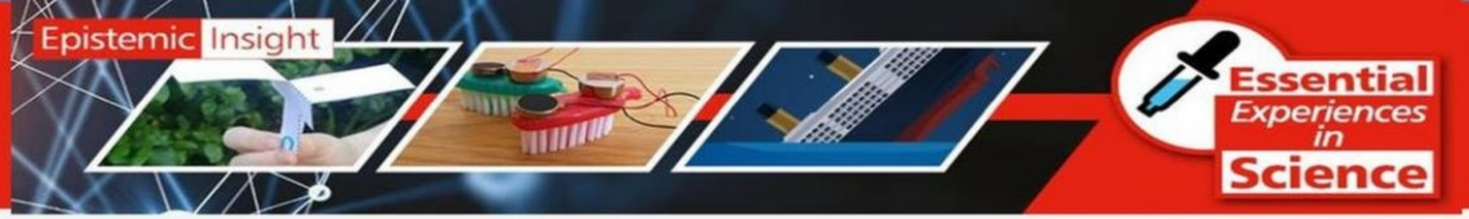

Can it ever be good to slip?

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: Forces – the effects of friction that acts between moving surfaces Design and technology: the design of innovative, functional, appealing products that are fit for purpose
Support & Free Materials	1 Investigation card, experiment materials, Teacher notes, Student worksheets plus CPD webinar

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

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National Curriculum Links

Working scientifically UKS2 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 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.	***Science Substantive knowledge*** *Forces* *Pupils should be taught to:* *Identify the effects of water resistance. They might explore resistance in water by making and testing boats of different shapes.*
Design and Technology KS2 Aims for all pupils: · develop the creative, technical, and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world · build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users · critique, evaluate and test their ideas and products and the work of others	***Design and Technology Substantive knowledge*** *Use of research and development … to inform the design of…products…'fit for purpose' aimed at particular individuals or groups*

Epistemic Insight

Being a scientist!

- Predict
- Observe
- Measurement
- Record
- Scientific enquiry

Epistemic Insight

Teacher notes

Essential Experiences in Science

Hook Questions

1. Which objects slip the fastest?
2. What is the best design for a bowling alley shoe?
3. How can I stick the pages of two books together without glue?

Can Science give us answers to all these questions?

2. Which objects slip the fastest?

- Which objects slip down a cereal box ramp fastest **PREDICT**
- Angle the cereal box and repeat **OBSERVE**
- Repeat each object at least three times CHECK/**AGREE RESULTS**
- Why did some objects grip better and others slip easier **RECORD**
- Extension - **MEASURE**

1. How can I stick the pages of two books together without glue?

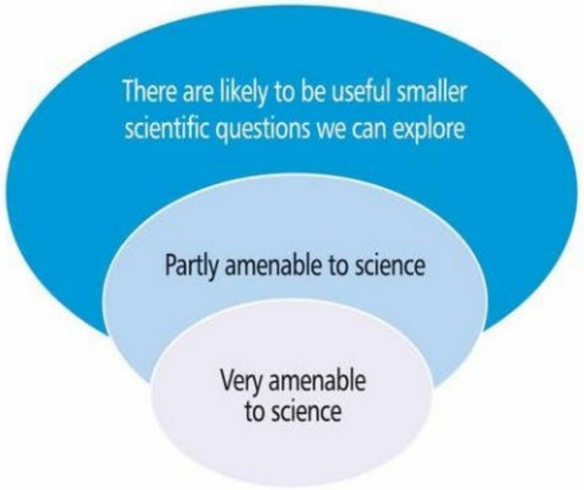
- Interlink two books by fanning the pages together **PREDICT**
- Try and pull apart **OBSERVE**
- What could change? **FAIR TEST**
- What happens? **RECORD**

Plenary

Revisit the questions:

1. Why do I slip when the pavement is icy?
2. What is the best design for a bowling alley shoe?
3. How can I stick the pages of two books together without glue?

Is this a good question for science?
What other discipline(s) can help us and how?



Epistemic Insight

Science Activity Sheet

Object	Height of ramp (cm)	Observation notes
Paper towel	10 cm	It has a bumpy texture and pattern on. I think this helped it grip.
Button	5 cm	It has a shiny, smooth surface so I think this is why it slipped more easily than the paper towel.
Rubber	20 cm	It has a rough surface that sticks easily to the ramp. It juddered down the ramp and kept getting stuck.

- Test each object again
- Measure the steepness of the ramp.
- At what point did the object slip? U
- Use a ruler to measure height of ramp
- Record results

Epistemic Insight

Epistemic insight: teachable and assessible

Teachers can support students to answer three questions:

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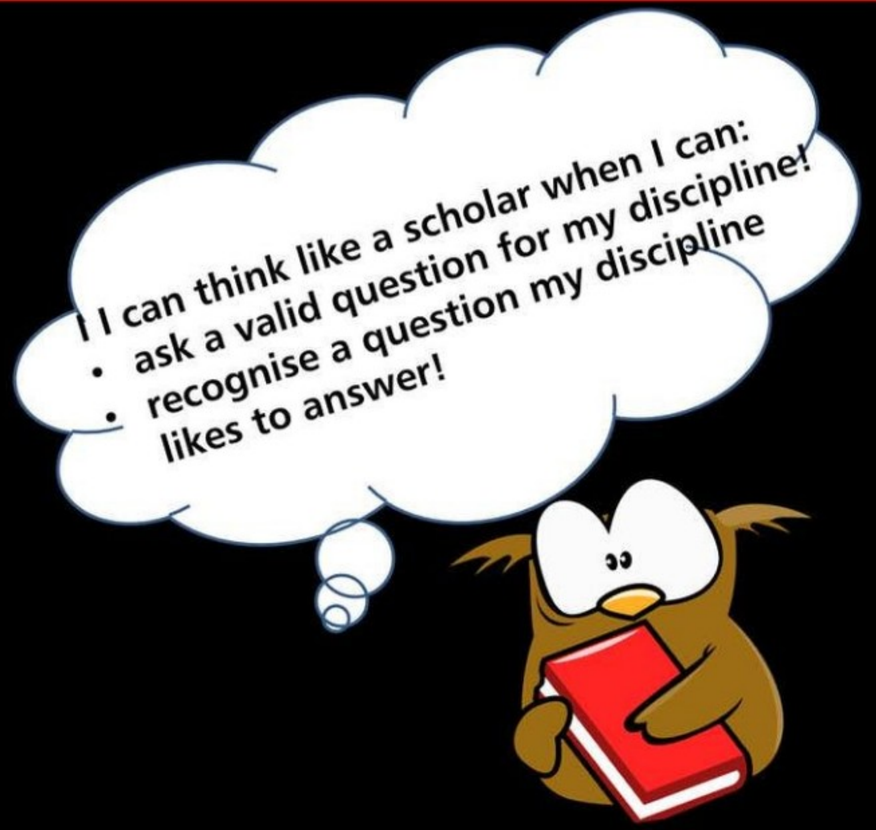
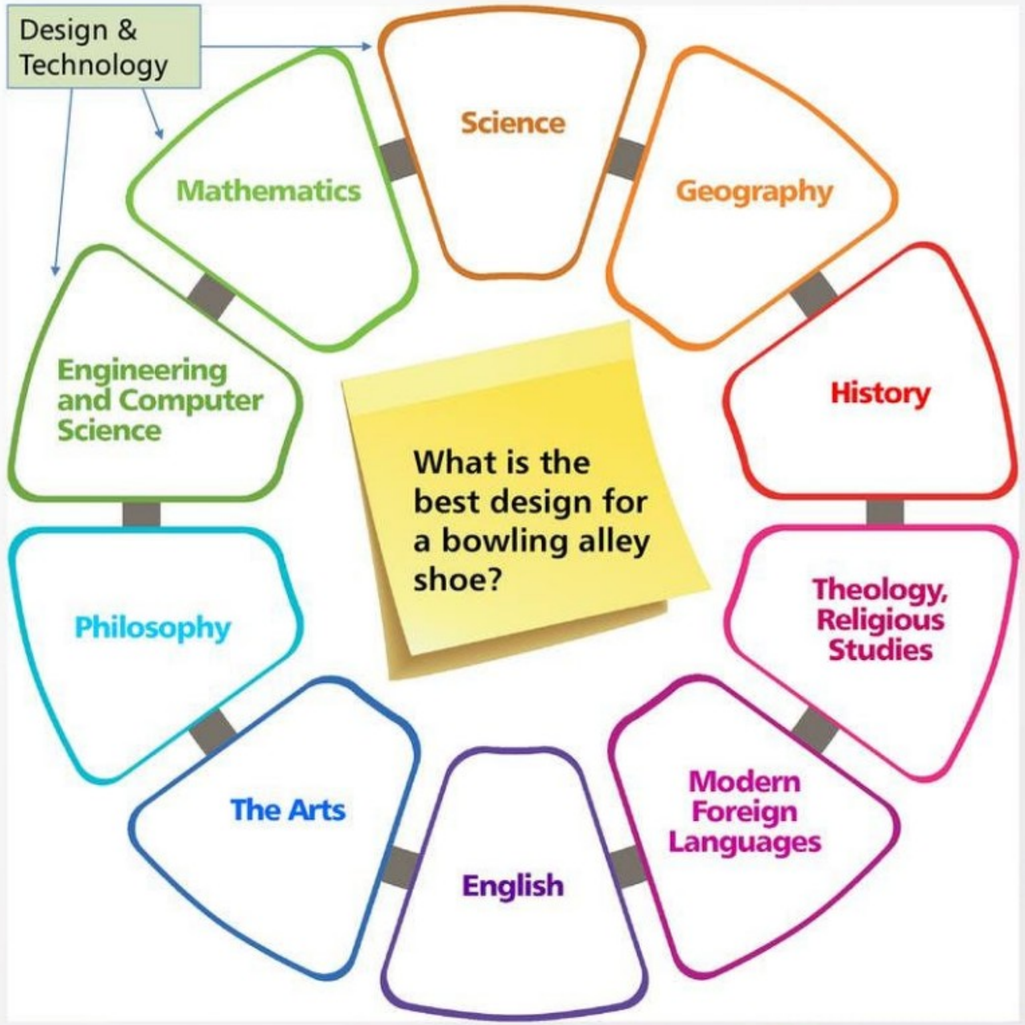
(What does the discipline value?)



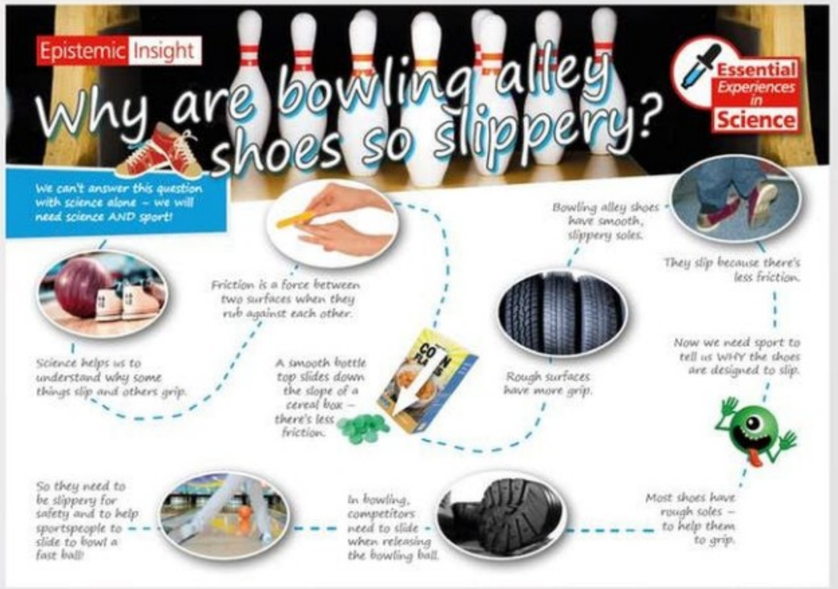
Lets look at the big question. Why are bowling alley shoes so slippery?
Is this a good question for science to answer fully?

Epistemic Insight

Discipline wheel



Design and Technology

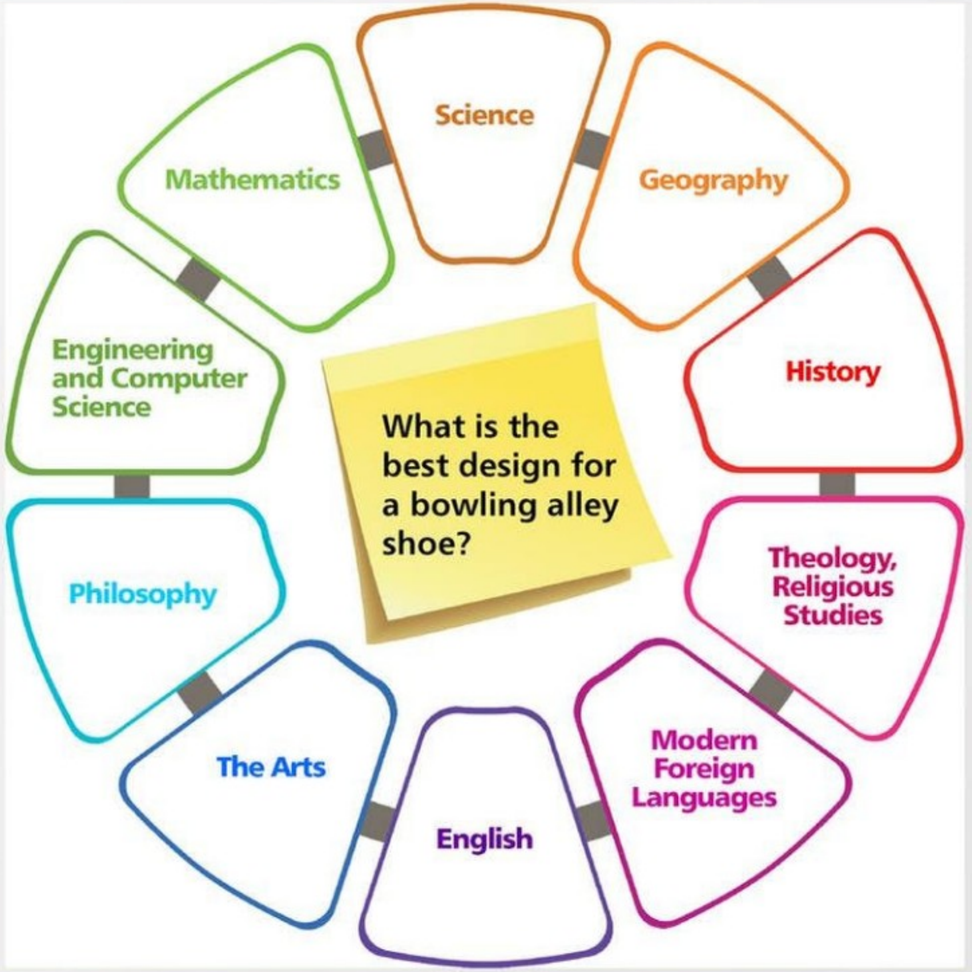


Epistemic Insight

Discipline wheel

Being a scientist

- Observe
- Experiment
- Test
- Predict
- Repeat
- Measure
- Compare
- Scientific evidence

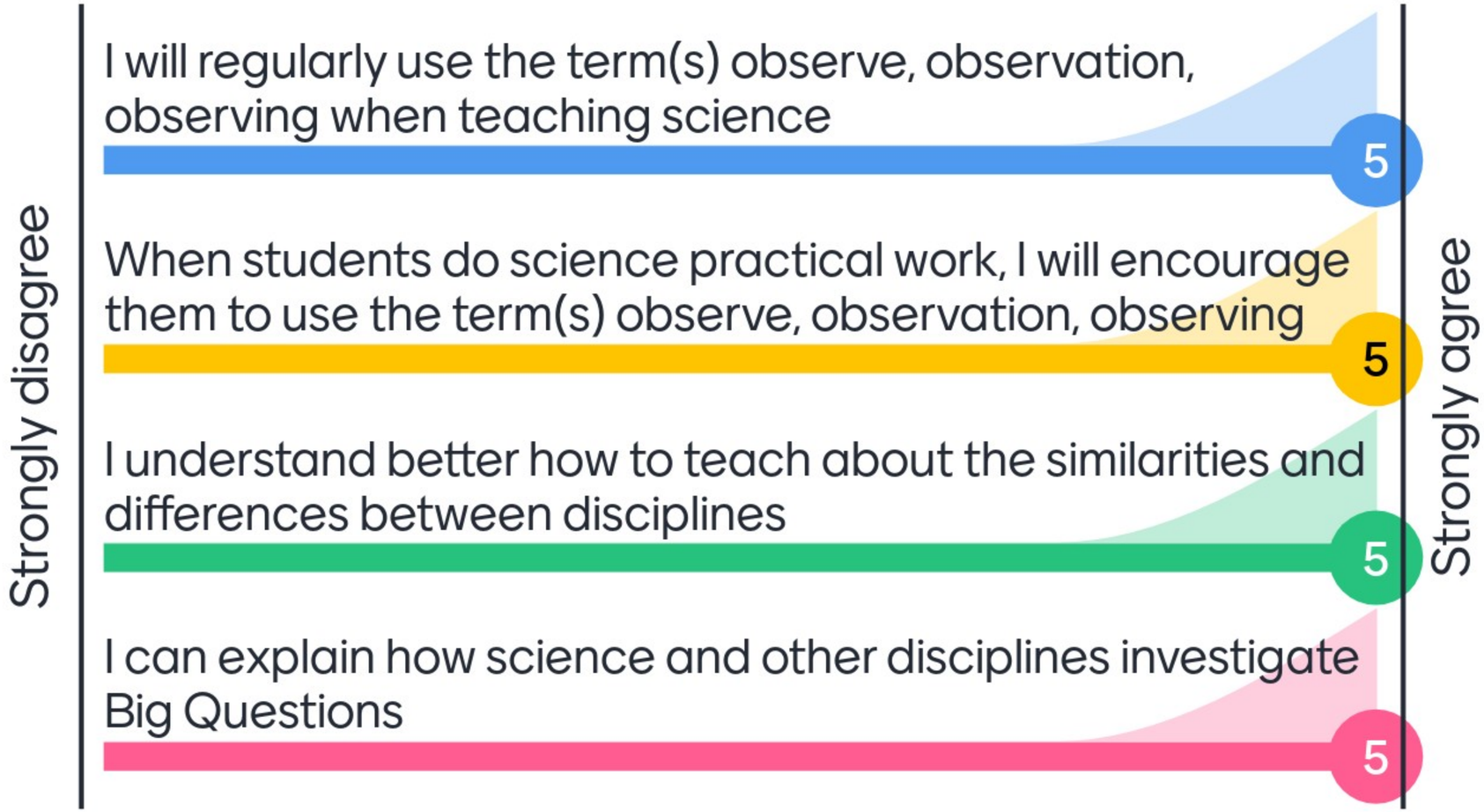


Being a designer

- Design
- Creativity
- Critique
- Evaluate
- Test
- Practical
- Innovation
- Draw from Maths, engineering, science

How are the methods similar or different?
How do we make a better answer? Could we look at other disciplines?

How will you respond?



Epistemic Insight

Essential Experiences in Science

Exciting learning 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.

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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.

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, 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)

Epistemic Insight

Next session: 1st February

What do maps tell us?

This session will explore a bridging question which focuses on the disciplines of **Geography** and **English** to interpret or investigate the question. It will compare Geography and English, considering their similarities and differences to develop students' understanding of different ways of knowing within real-world contexts and multidisciplinary arenas.

- Preferred questions
- Methods
- Norms of thought

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