Transforming teacher education - introducing ITE students to Epistemic Insight: a workshop

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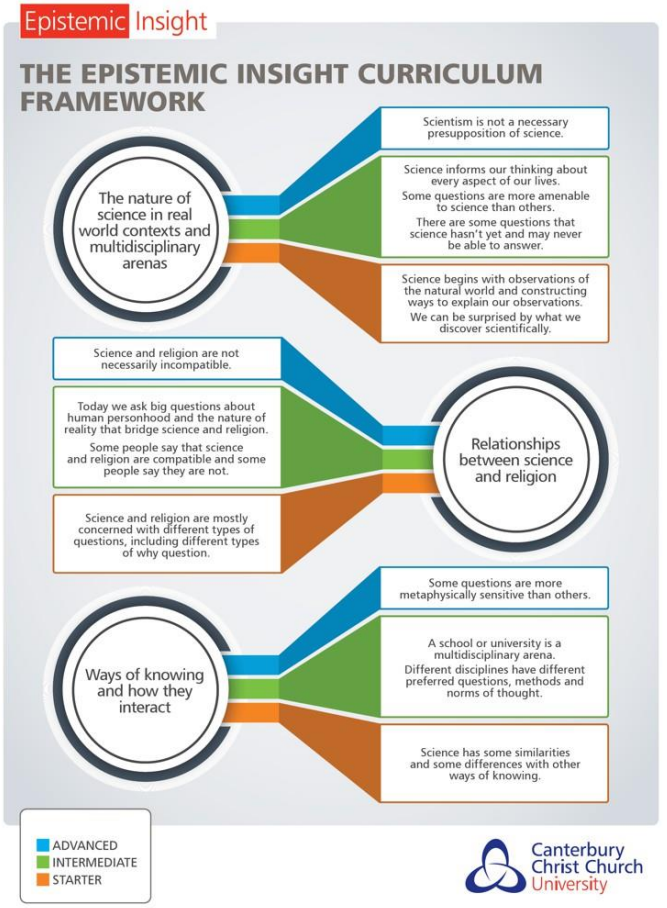
Epistemic Insight

UCET CONFERENCE 2022

The Epistemic Insight Initiative at CCCU is a £1.5 million **research and curriculum innovation project** that combines **research-engaged teaching** with a national **research project in schools and in a consortium** of participating HE institutions.

The initiative proposes an **educational framework for schools and teacher education with curriculum objectives and teaching strategies** designed to detect and address gaps caused by **entrenched compartmentalisation**

Available here https://bit.ly/3udAtsY



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Epistemic Insight

Consortium Partners

Canterbury Christ Church University

Epistemic Insight Consortium Lead: Dr Aga Gordon; **Epistemic Insight Initiative PI**: Professor Berry Billingsley

University of Bedfordshire

Biology Education Research Group (BERG)
Special interest group of the Royal Society of Biology

BQiC

University of Leicester

University of Northampton

OARS Education

University of Oxford

University of Bristol

Canterbury Christ Church University

CIEC
Centre for Industry Education Collaboration

University of Roehampton London

St Mary's University Twickenham London

University of Sunderland

University of Chester

University of Hull

Leeds Trinity University

University of West London
The Career University

WGSG

University of Birmingham

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Activities across the consortium

- ✓ **Embedding** EI in ITE curricula – transformational teaching and learning
- ✓ **Collaboration** across the consortium
- ✓ **Co-creation** of teaching resources and research instruments
- ✓ **Student involvement** in co-creation of research via epistemic insight sessions
- ✓ **Research** across the consortium for evidence-based teaching
- ✓ **Bespoke sessions** depending on tutor experience and student needs

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Epistemic Insight

What is epistemic insight?

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Intellectual virtue – teachable & assessable

- Knowledge about knowledge – particularly methods and norms of thought within disciplines and interactions between disciplines

Pedagogical approach

- Moving beyond discipline content through recognising the distinctiveness of and interaction between the disciplines

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Why epistemic insight?

- ✓Develops critical thinking, curiosity and thirst for knowledge
- ✓Builds students' capacities for connecting knowledge across disciplines
- ✓Enriches answers to Big Questions and global issues

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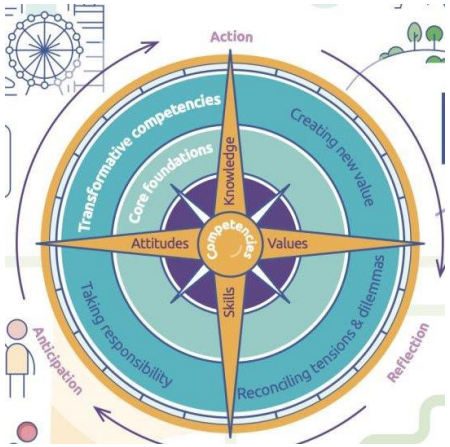
Affinity of EI with Ofsted, OECD, UNESCO

- ✓Call for more holistic view of curriculum (Ofsted)
- ✓OECD - future ready students need ‘working knowledge how disciplines can work together to address real-world problems’ and ‘capacity to think across boundaries of disciplines’
- ✓OECD Learning Compass 2030 – calls for students’ agency
- ✓UNESCO – a need to address global challenges in a holistic way



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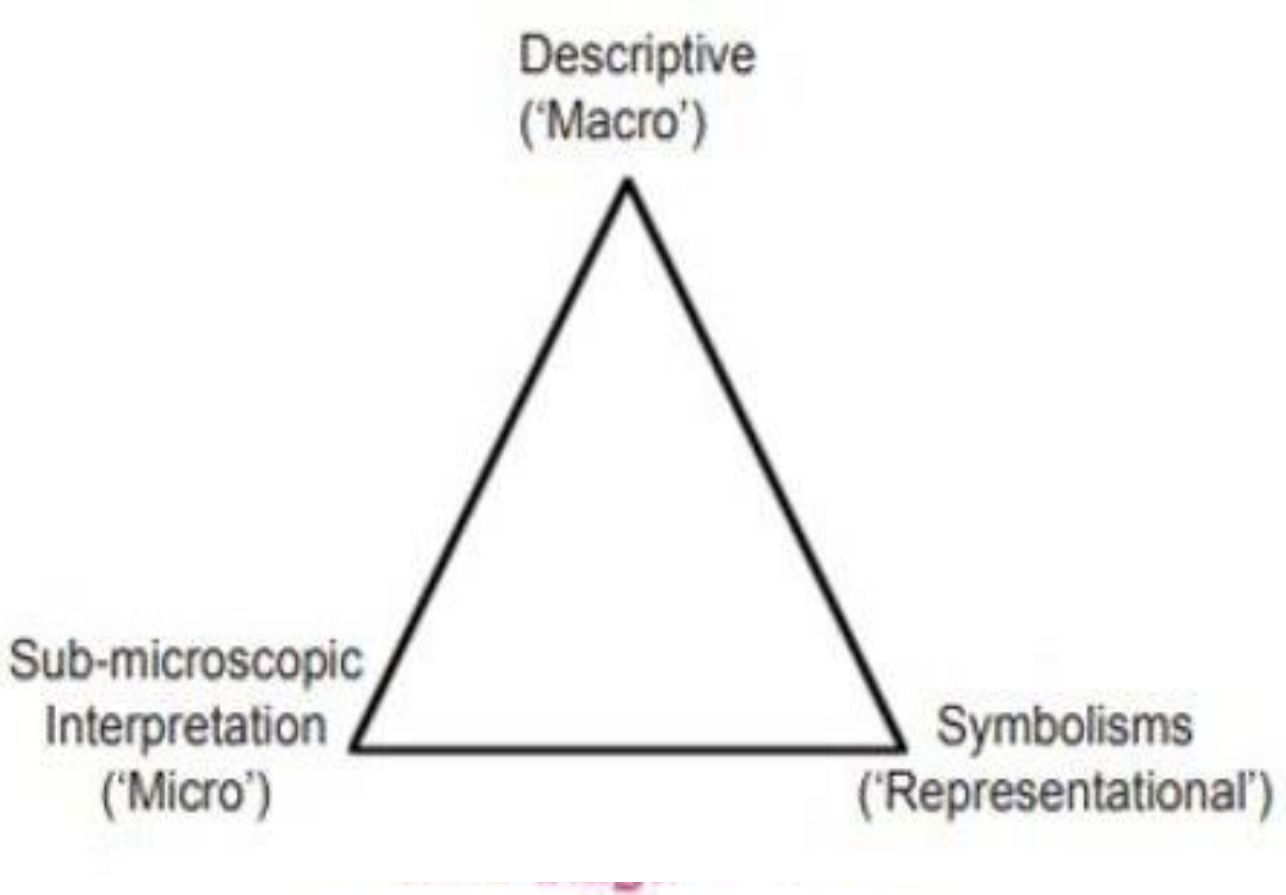
How is EI distinctive from existent pedagogical approaches?

multiliteracies

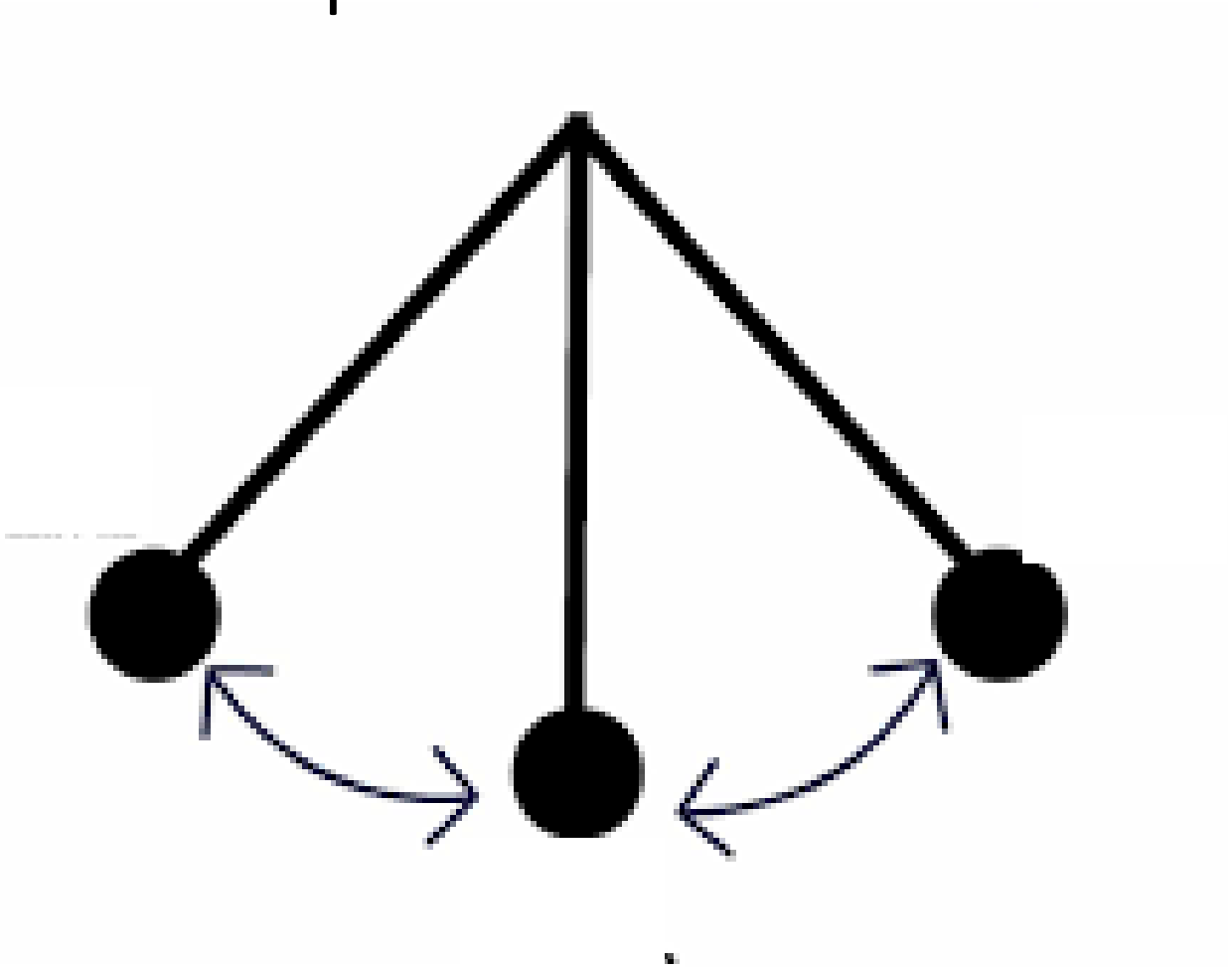


The New London Group (1996) 'A Pedagogy of Multiliteracies: Designing Social Futures', *Harvard Educational Review*, 66(1), pp. 60–93. doi.org/10.17763/haer.66.1.17370n67v22j160u.

Taber, K. S. (2013). Revisiting the chemistry triplet: drawing upon the nature of chemical knowledge and the psychology of learning to inform chemistry education. Chemistry Education Research and Practice, 14(2), 156-168. doi: 10.1039/C3RP00012E

A dichotomous position?

Didactic Pedagogy



Authentic Pedagogy

Cope, B. and Kalantzis (2015) "The things you do to know: An introduction to the pedagogy of multiliteracies inCope, B. and Kalantzis, M. eds., *A pedagogy of multiliteracies: Learning by design*. Palgrave Macmillan New York pp. 1-36.

metacognition

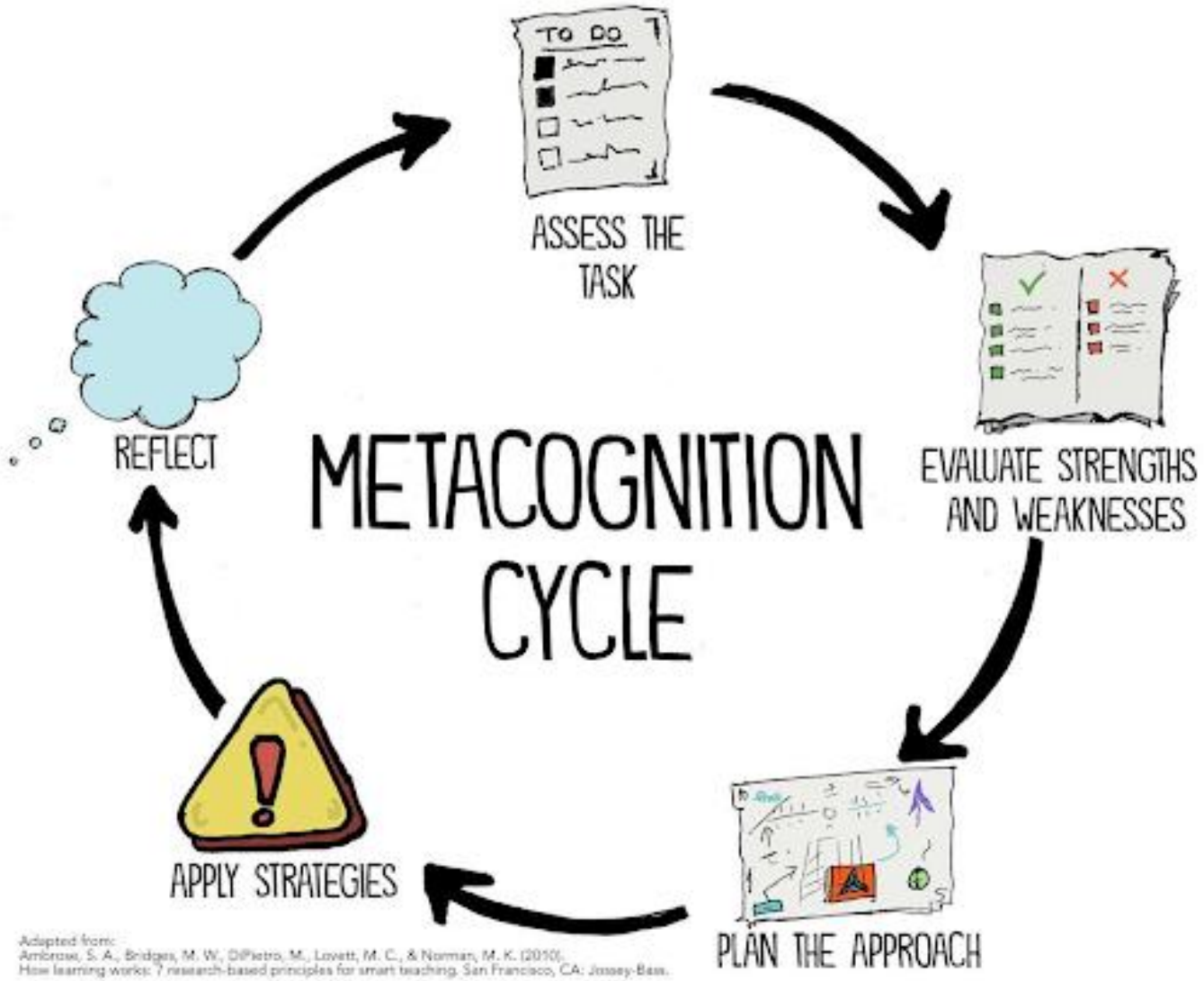


Image taken from https://www.thescientificteen.org/post/metacognition-thinking-about-thinking

Reference Gauthier, L., 2014. How learning works: 7 research-based principles for smart teaching. *Journal of the Scholarship of Teaching and Learning*, pp.126-129.

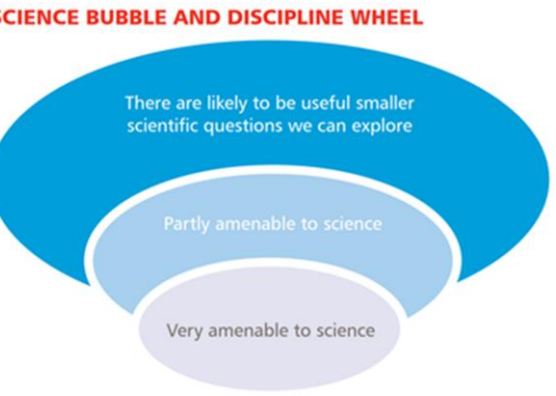
Exemplar metacognitive strategies

Technique	Description
1. Elaborative interrogation	Generating an explanation for why an explicitly stated fact or concept is true
2. Self-explanation	Explaining how new information is related to known information, or explaining steps taken during problem solving
3. Summarization	Writing summaries (of various lengths) of to-be-learned texts
4. Highlighting/underlining	Marking potentially important portions of to-be-learned materials while reading
5. Keyword mnemonic	Using keywords and mental imagery to associate verbal materials
6. Imagery for text	Attempting to form mental images of text materials while reading or listening
7. Rereading	Restudying text material again after an initial reading
8. Practice testing	Self-testing or taking practice tests over to-be-learned material
9. Distributed practice	Implementing a schedule of practice that spreads out study activities over time
10. Interleaved practice	Implementing a schedule of practice that mixes different kinds of problems, or a schedule of study that mixes different kinds of material, within a single study session

Note. See text for a detailed description of each learning technique and relevant examples of their use.

Donker, A. S., de Boer, H., Kostons, D., Dignath van Ewijk, C. C., & van der Werf, M. P. C. (2014) Effectiveness of learning strategy instruction on academic performance: A meta-analysis. *Educational Research Review*, *11*, 1–26. https://doi.org/10.1016/j.edurev.2013.11.002. (Table taken from p6)

Setting a justification for Epistemic Insight



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Metacognition

Questions

Methods

Ways of thinking/
Norms of thought

Self regulation of learning

Zimmerman gives a helpful description of what a successful self-regulated learner looks like:

‘These learners are proactive in their efforts to learn because they are aware of their strengths and limitations and because they are guided by personally set goals and task-related strategies, such as using an arithmetic addition strategy to check the accuracy of solutions to subtraction problems. These learners monitor their behaviour in terms of their goals and self-reflect on their increasing effectiveness. This enhances their self-satisfaction and motivation to continue to improve their methods of learning.’

Zimmerman, B. J. (2010) ‘Becoming a Self-Regulated Learner: An Overview’, Theory into Practice, 41 (2)

- Connection to EI

Introducing EI at University of Leicester

- PGCE Science and RE students
- One day event
- Introduction
- Workshops
  - Saviour siblings
  - Is a robot alive
- Video responses
  - The voice of students as captured on the day

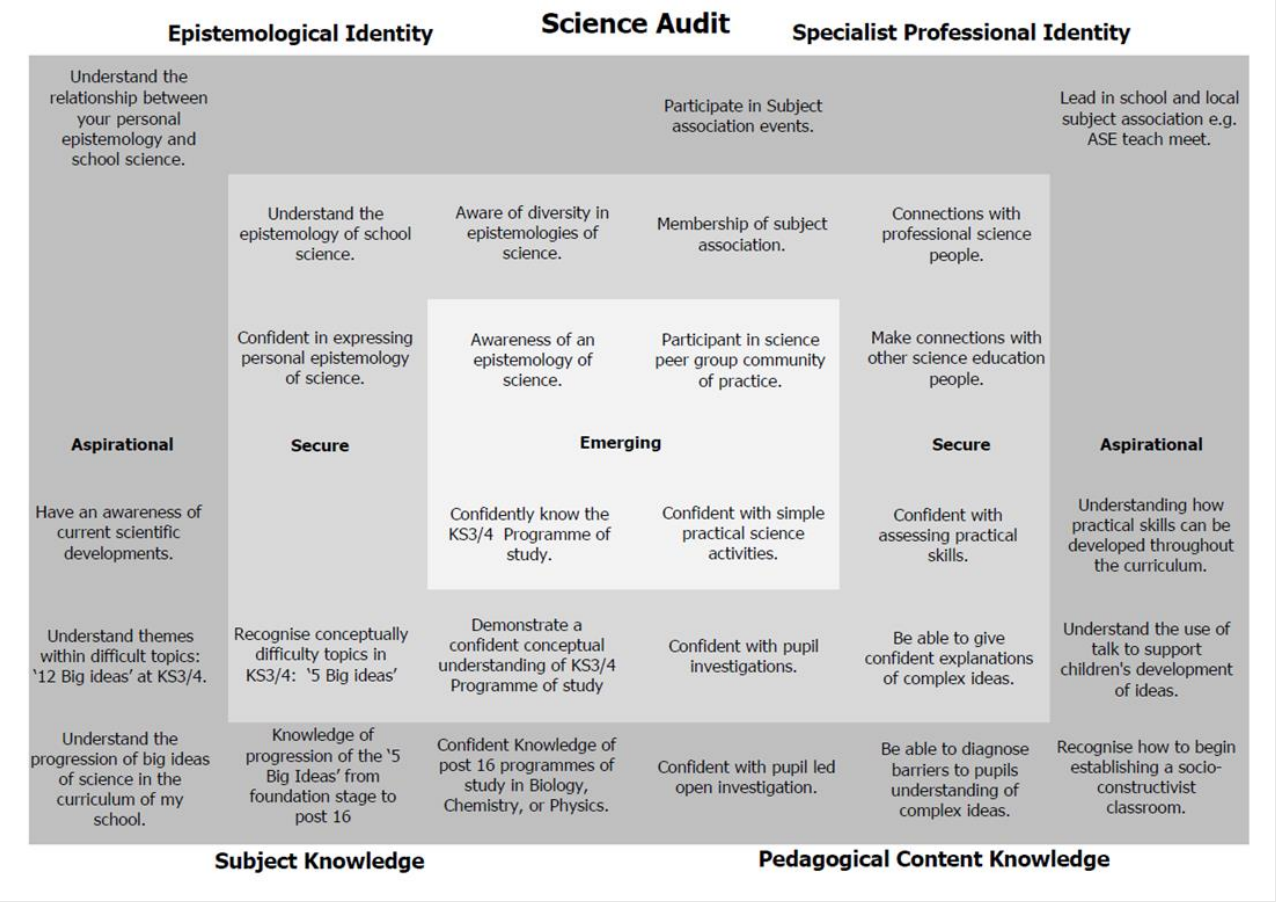
Student Responses

Captured from the videos

- Defining Epistemic Insight
- Using the tools – the need for expert input
- Agency

Looking Ahead

- Reimagining the Audit
  - *Epistemic identity*
- Science Curriculum
  - *Integrating Epistemic Insight*
- Teacher Agency



Richard III project

- 10 years since the discovery under a Leicester car park
  - Multi disciplinary team
- Co production with PGCE students (Science, RE, History, Social Science)
- Expert input from the discovery team
  - Using exiting resources
- Working with The King Richard III visitor centre

- Why using EI is important

Examples from St Mary's

- How is your discipline distinctive?
- Saviour siblings
- What does it mean to be alive?
- Why did the titanic sink?
- How do you cure the loneliness pandemic?
- How do we create a sustainable future?
- AI case studies of exams during Covid and driverless cars.

Impact at St Mary's

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Epistemic Insight in Initial Teacher Education

Aga impact across the consortium – Birmingham as a case study

Epistemic Insight Session at the University of Birmingham

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University of Birmingham– co-created and co-delivered a series of workshops with colleagues at UoB to a group of secondary PGCE, specialisms included – history, geography, physics, chemistry, biology and RE

Sessions:

✓ What is Epistemic Insight (EI), tools and strategies

✓ Interactive sessions exploring Big questions – What is a footprint? How is tea made? and Why did Titanic sink?

✓ Sustainability workshop – exploring marine population decline using EI tools

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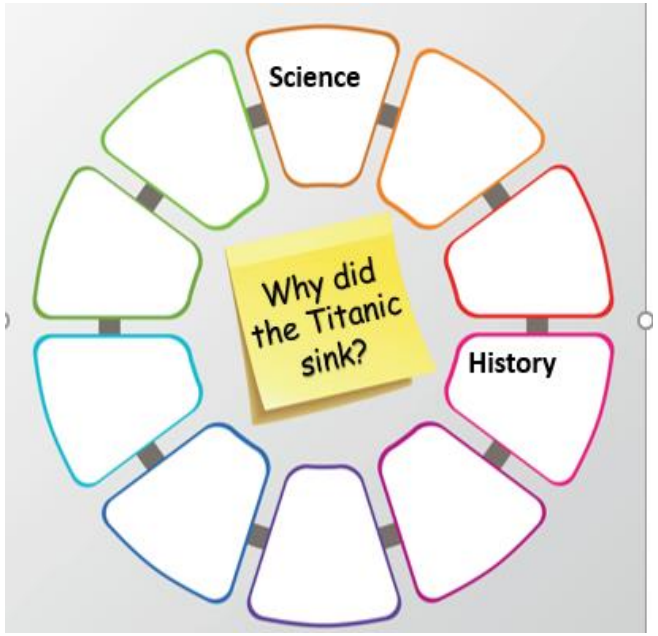
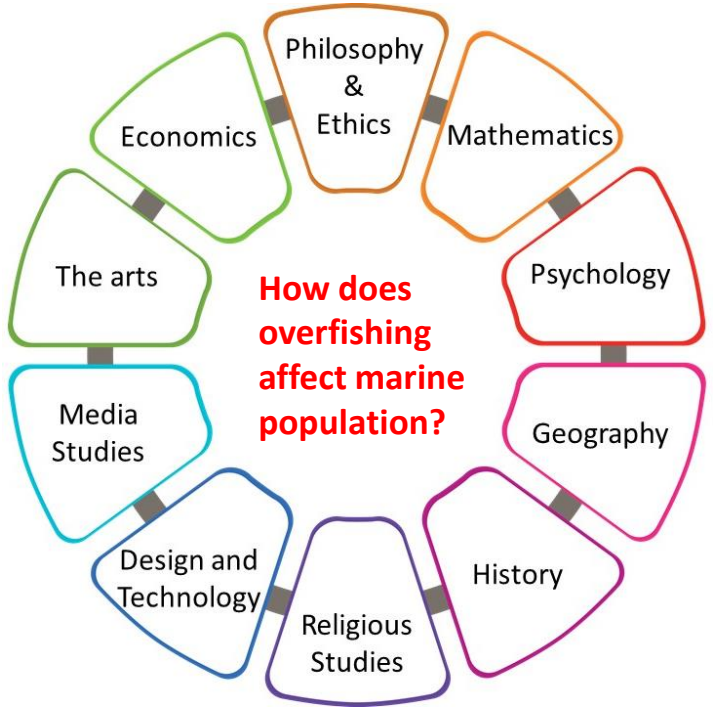
Resources and pedagogies used





Mind-mapping

Group discussions

Expert committee exploration

Knowledge exchange across disciplinary specialisms

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Example of students' work – University of Birmingham

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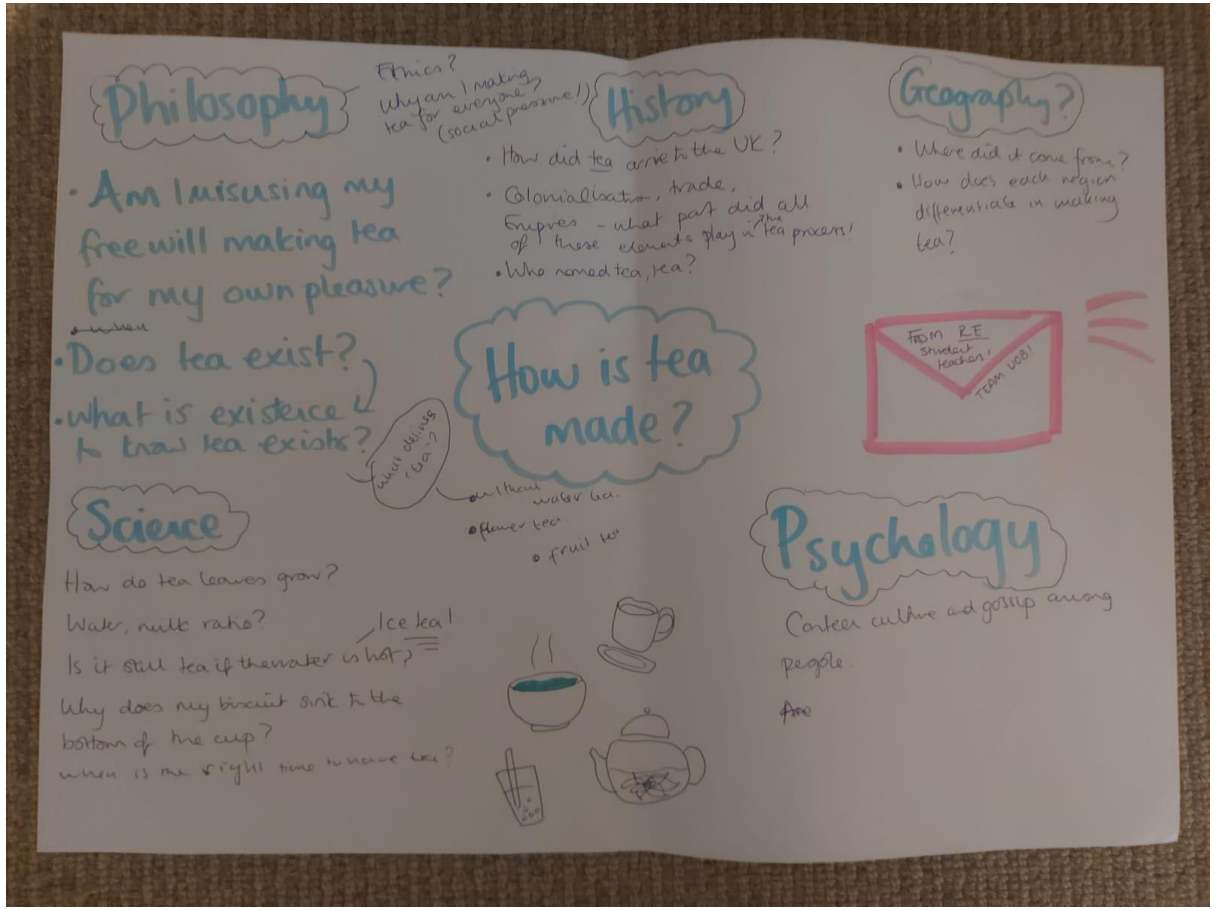

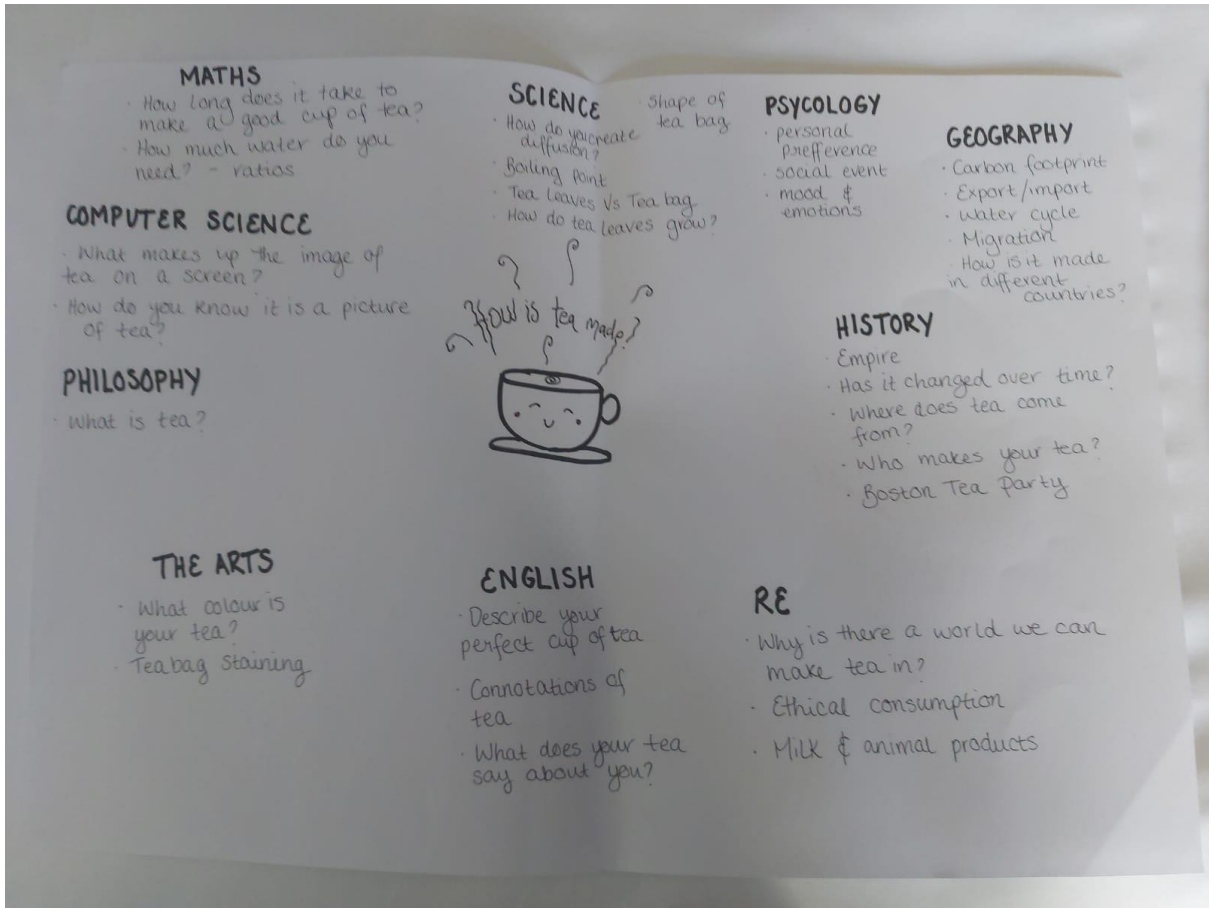

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Epistemic Insight — Student voice

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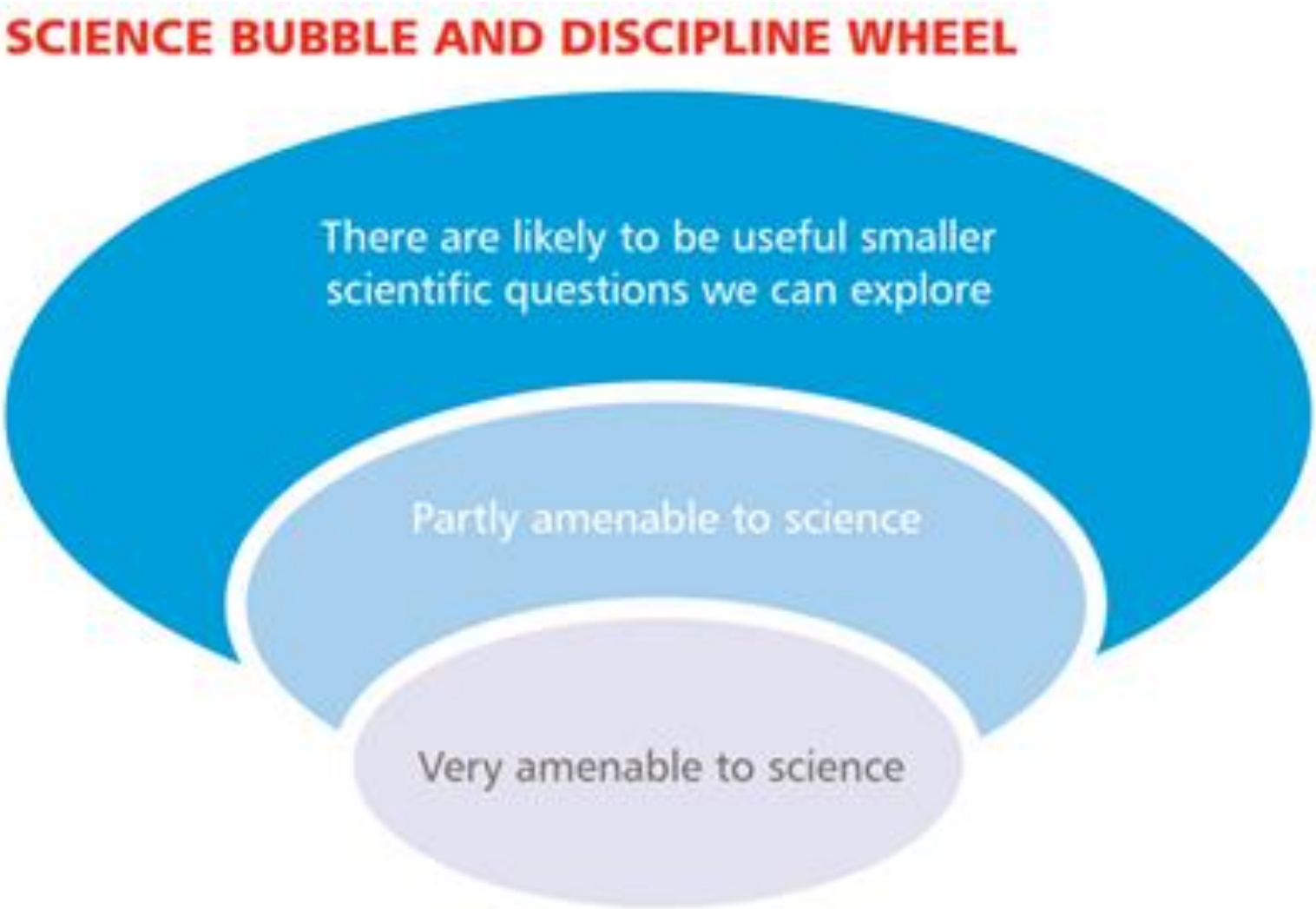
Has learning about epistemic insight changed your understanding of teaching - if so, how?

- ✓ It has allowed me to think about practical ways may I can work with other discipline
- ✓ Developing a broad insight between subjects and helping students to think critically.
- ✓ interdisciplinary education is important.
- ✓ yes - I would love to include this in my lessons particularly lower ability closes to get them engaged.
- ✓ yes it has helped me see how there are cross curricular links we can embed in lessons.
- ✓ Thinking about Big Questions generating curiosity and talking to departments in school.

Introducing the Discipline wheel and bubble tools



Introducing the Discipline wheel and bubble tools

The take home message

Exemplar questions to explore

- 1. Can a Robot Dance?
- 2. How do I know you have a toothache?
- 3. How do you know that I am in love?
- 4. How do you know the sun will rise tomorrow?
- 5. 6. How is the SARS-CoV-2 virus transmitted?
- 7.Should we ban cattle farming to reduce climate change?
- 8. Should Freedom day have happened on 19th July 2021?
- 9. How do we know global warming is causing climate change?
- 10. How can I be confident the sun will rise tomorrow?